THE

NATURAL HISTORY

OF THE

SCARBOROUGH DISTRICT

VOLUME ONE
Dear Sir,

In answer to your letter dated March 17th I have pleasure in sending herewith a copy of Vol.1 Natural History of the Scarborough District. Vol.11, Zoology, should appear about the end of the year.

The work you mention "Complete Flora and Fauna of the Scarborough District" refers to the same book, it was already in active preparation in 1949 and its final title was not settled until later.

Yours faithfully,

[Signature]

Joint Editor
Scarborough Field Naturalists' Society

P.S. We have no regular bulletin or journal yet.
THE NATURAL HISTORY OF THE SCARBOROUGH DISTRICT

VOLUME 1 - GEOLOGY and BOTANY
WILLIAM SMITH
From a portrait by Forau in the Rooms of the Geological Society of London

See note on page
THE NATURAL HISTORY OF THE SCARBOROUGH DISTRICT

VOLUME 1 - GEOLOGY and BOTANY

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with a Foreword by
Professor W. H. PEARSALL, D.Sc., F.R.S., F.L.S.,
Quain Professor of Botany in the University of London
at University College

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Extract from letter of 31 May 1954 from F. C. Rimington, Joint Editor of The Natural History of the Scarborough District, Vol. I, to L. Bairstow:

"The question of the precise publication date is not easy..... the binders sent me exactly eight copies on or about November 10th last.,"[sic] "but is"[sic] "was almost Christmas before the last copies arrived. "We usually say that we published in December 1954"[sic - but obviously a slip for 1953!] "but a case could be made out for November!"

L. Bairstow,
8 June 1954.

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WILLIAM SMITH, 1769-1839.

William Smith, one of the greatest pioneers of modern geology, was born at Churchill in Oxfordshire, the son of the village blacksmith. His father died in 1776, and when his mother re-married, he was left a good deal to his own resources. He taught himself elementary mathematics and surveying, and laid the foundations of his study of stratigraphical geology. As a surveyor he was employed in coal-mining and canal-making and thus gained exceptional opportunities for his great work on the study of the relation of definite fossil species and the strata in which they were found.

From time to time he published treatises and maps embodying the results of his researches. These brought him name and fame but unfortunately money difficulties caused him to lose his home and possessions. After some years of struggle he became (1828-33), land-steward to Sir John Johnstone, at Hackness. Here he thus came in touch with a band of local workers, including William Bean and John Williamson the geologists, and Thomas Hinderwell the local historian. Owing to their efforts the Scarborough Philosophical Society was founded and the Scarborough Museum was built in 1828-29, largely to Smith's design. In 1835, Smith left Hackness Grange and lived in Newborough House in Bar Street, a district long since rebuilt. In 1831 he received the first award of the now coveted Wollaston Medal, and in presenting it, the President, Adam Sedgwick, called him "the Father of English Geology," a title which has clung to him ever since. In 1839, while on his way to a meeting of the British Association in Birmingham, Smith caught a chill and died at Northampton, where he was buried.
FOREWORD

By Professor W. H. PEARSSALL, D.Sc., F.R.S., F.L.S.
Quain Professor of Botany in the University of London at University College.

North Yorkshire is a pleasant place and the Scarborough district is not least among its attractions. Here in a compact area are samples of most of what makes North Yorkshire so charming—varied rocks, moors and wolds, valleys and escarpments, woodlands and meadows. The Vale of Pickering has long been numbered among the classical sites in glacial geology and recent excavations at Flixton are yielding revealing information about the early post-glacial period, its flora and fauna. All these things bear on the origins of the present variety and interest of the plant and animal life.

It may seem odd that so interesting a place should have had to wait so long for a description of its biological interests but the pages that follow give some idea of the magnitude of the descriptive task involved as well as of the thoroughness with which it has now been completed.

It is thus a pleasure to commend this work both to naturalists and to the general public. It is a labour of love and one which appears at an opportune moment. If a knowledge of this varied life is useful in interpreting the past, it will be equally useful for comparison with the future. The face of England is rapidly changing. We must envisage much of North Yorkshire being converted to woodland once more, a type of vegetation now sparse after 3,000 years of human activity. We must hope to reproduce the best of the old, the forest that was once there, coupled with a greater soil fertility and a greater productivity. We must not lose sight of the present beauty and variety. When we learn that North Yorkshire is to be scheduled as a National Park, we can congratulate ourselves that now we have the means to sample and understand its natural history. We hope that in the future more attention may be given to its preservation than has always been possible in the past.
PREFACE

For a century and a half Scarborough has been notable for its keen naturalists, some of whom have won national, or even international, fame. Among them have been William Smith, the founder of the science of stratigraphical geology; the botanists (Professor) William C. Williamson and George Masse; the entomologists Robert Lawson, said by E. C. Rye to be the finest beetle-collector in Europe, and Thomas Wilkinson who worked out many hitherto unknown life-histories in the Microlepidoptera; William Bean the conchologist, and in our own time W. J. Clarke, the noted student of marine life.

In 1820 a number of local naturalists mooted the idea of a philosophical society, which was actually formed in 1827 under the presidency of Sir J. V. B. Johnstone, Bart., and in 1829 the rotunda of the museum was opened. In 1858 this society was amalgamated with the Archaeological Society, and in 1861 the wings of the museum were added to the original circular building. In 1889 the Field Naturalists' Society was founded and was finally affiliated with the Philosophical and Archaeological Society.

With many hard-working and competent field-naturalists as members and with equally competent visitors to the town, a considerable body of information concerning the natural history of the district was built up and carefully recorded. In addition much was published in the two organs of the Yorkshire Naturalists' Union—the "Transactions" and "The Naturalist." This information has now been collated and as far as possible checked by able authorities, and forms the subject-matter of the present work. It aims at giving as far as possible a comprehensive and accurate account of the plant and animal life of the district during the years of which we have knowledge, and will thus be available for future generations who may wish to study any floristic or faunistic changes that may take place.

It is probable that data have been missed, but as far as we have been able to check them, any errors of inclusion are due to mistakes in identification which almost inevitably take place at times. The Editor (c/o The Museum, Wood End, The Crescent, Scarborough), will be very glad to receive information as to mistakes and omissions which can then be entered in the Recorders' record-books.

The Society acknowledges the debt of gratitude it owes to the many eminent naturalists who through the years have helped unstintedly in the elucidation of the many problems which have confronted its members. In the compilation of the present volumes we have consulted many authorities and in almost every case we have received cheerful uncomplaining help, even though at times it has involved much work. It is hoped that every such authority has been thanked in the appropriate section, but if one has been omitted, it has been through inadvertence and not to any lack of appreciation of the valuable aid rendered. In particular we would thank Professor W. H. Pearseall of the University of London for contributing the Forward, and Professor E. A. Spaul of the University of Leeds, who has been our guide, mentor and friend from the inception of this work to its completion.
The publication of this book would have been impossible without generous financial assistance from the Royal Society, the Corporation of Scarborough, the Executive Committee of the (late) Scarborough Philosophical and Archaeological Society, and the executors of the late W. J. Clarke.
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ACKNOWLEDGEMENTS

The Editors desire to express their grateful thanks to the following for permission to reproduce the photographs which illustrate this book. The Geological Society of London for the loan of the frontispiece block, the Scarborough Corporation (Pl. II and III), the British Museum of Natural History (Pl. IV and V), Mr. J. P. Best (Pl. VI and VII), and Her Majesty's Forestry Commission (Pl. VIII).
THE SCARBOROUGH DISTRICT

G. B. Walsh

Landwards, the area studied in this survey is roughly circumscribed by a line running from Robin Hood's Bay to Sleights and Goathland, then down Newton Dale to Pickering, and across country to Malton, Weaverthorpe and Flamborough. Seawards, it has no definite boundary, but is more or less delimited by the area fished by the local fishing-boats.

A description of the coast will be found in the Introduction to the paper on "Marine Fauna".

The land falls very naturally into three main areas—the moors, the Wolds and the Vale of Pickering in between, with the two smaller divisions of the cliffs and the moorland valleys.

The moors occupy the whole of the northern part of the area, rising rapidly from the plain to a height of about 500 feet and then more gradually to a height of about 960 feet in the north of our district. During the Glacial Epoch their surface rose above the ice but was doubtless covered with snow. Whether there were nunataks on which forms of life could persist seems to be very doubtful and conclusions based on the present known distribution of insects and plants on unglaciated areas are likely to be invalidated as knowledge accumulates. As the Ice Age passed away, an elaborate system of lakes and overflow channels followed which gave the moors so much of the characteristic structure and appearance which they have to-day. For an account of this interesting subject the student is referred to the works of Prof. P. F. Kendall and Dr. F. Elgee. For many centuries the moors were fairly thickly populated by prehistoric man who has left many relics of his existence in earthworks, ancient tracks, tumuli (howes), and in tools and weapons. These are still being carefully investigated and many of the results are exhibited in the Scarborough Museum. There are few signs of Roman influence on the moors of our area, the camps at Cawthorn and the road across Wheeldale Moor being just outside our western boundary. For further discussion on the moors the reader is referred to the sections on "Geology", "Afforestation", "Flowering Plants" and "Lepidoptera".

To the south, the Wolds rise fairly steeply on their northern edge. They are characteristic chalk hills with a thin layer of soil, rounded contours and dry valleys. For many centuries they were comparatively thickly peopled by prehistoric man, but they persisted into modern times as dreary wastes which were some of the last haunts in Britain of the wolf and the great bustard. Until the middle of the 19th century they were chiefly sheep-runs until the Sykes family of Sledmere introduced modern farming methods and the Wolds became fertile agricultural land.
Between the moors to the north and the Wolds to the south lies the Vale of Pickering, running east and west. As the Ice Age passed away this area collected the water from the hills all round it and formed "Lake Pickering", which overflowed through Malton Gap and Gilling Gap. Then for thousands of years it formed a sodden marshy tract slowly filling with peat which is now 9-18 feet in depth. It had no roads across it—even in Roman times there was no road from Malton to Pickering, though there was a rough raised causeway from Sherburn to Wykeham. Travellers had to cross by a dangerous track from Staxton to Seamer with the help of guides who lived at the "Hospital" kept by the Knights of St. John at Spital Corner at Staxton; or else they went round by the morainic higher ground that followed the coast from Filey to Scarborough. In 1807 the Hertford River was cut to drain the marshy land and in later years more drainage work, such as the Sherburn Cut, was taken in hand, but even yet this area is a favourite haunt of various species of waterfowl. According to the late Prof. A. Gilligan, through the centuries the sand from the bed of the lake has been driven by the north-west winds to form a sandy area between Flixton and Sherburn on which are the famous Ganton Golf-links, and which yields sand for building purposes. At Star Carr, near Seamer, Mr. J. A. W. Moore has discovered an important Mesolithic lake settlement which is being investigated by Dr. J. G. D. Clark, of Cambridge University, and this may well prove to be the richest settlement of this age in north-western Europe.

These three features, moors, Wolds and Vale of Pickering, run eastwards to the sea, forming very characteristic coast scenery. The Wolds end in the magnificent chalk cliffs of Speeton, Bempton and Flamborough; the culminating point is a nearly perpendicular precipice at Speeton which is upwards of 400 feet high; southwards, the height diminishes until at Flamborough the cliffs are only 150 feet high. They are the breeding haunt of numerous sea-birds, such as guillemots, puffins and kittiwakes, and the eggs are collected during late May and early June, great care being taken not to take so many as to reduce the source of supply. The moors form their highest cliffs at Ravenscar which is upyards of 600 feet above sea-level. There are not the same precipices here as at Bempton, but there is a plant-covered undercliff called Beast Cliff almost untouched by human hand, the home of foxes, badgers and cormorants, and carpeted with ferns and wild flowers. Between these northern and southern cliffs of Ravenscar and Bempton is a stretch of cliffs of varying height with many beautiful bays, as at Scarborough, Cayton and Filey. As a rule the cliffs are relatively low, capped with boulder clay, and in many places, e.g., Hayburn Wyke, Cornelian Bay, Cayton Bay and Primrose Valley, clothed with vegetation.

The last division is the moorland valleys. These are usually glacial overflow valleys, sometimes, as in Newton Dale and to a less extent in Forge Valley, steepsided and of romantic beauty, sometimes of a gentler but still beautiful character as in Thornton Dale.
SCARBOROUGH FROM THE SPA

By kind permission of the Scarborough Corporation
(Ellerdale), Lowdales, Highdales and Troutsdale. The lower portion of each dale flattens and widens as it approaches the plain, but the steep sides and the narrower upper portion are usually well timbered. Most of these dales formerly formed part of the Royal Forest of Pickering, the greatest forest in Yorkshire, which at the time of the Conqueror was 16 miles long and 4 miles wide. Little by little this was cut down until it disappeared as an entity in the 17th and 18th centuries. Raincliffe Wood, which covers 700-800 acres, is about 3 miles from the middle of Scarborough. It derives its name from Hrafn, who was probably one of the Scandinavian invaders. The oldest record relating to it under its present name is dated 1282, when it probably formed part of the Forest of Pickering; it has apparently been woodland ever since that time. It was more or less replanted about 1860 by the Earl of Londesborough and the only noteworthy old trees in it now are the three oak trees in the middle path through the wood, which are perhaps about 350 years old. After various vicissitudes the wood finally became the property of the Corporation of Scarborough to be preserved in perpetuity as a piece of typical English woodland. The wood is rich in animal and vegetable life, and has many lovely paths.

It will be seen that until fairly modern times each of the great divisions of the district—the moors, the Wolds and the Vale of Pickering, was inhospitable in character. The soil was poor and difficult to cultivate, passage across them was difficult and in early days almost impossible; and so they were, by their very inaccessibility, cut off from the rest of England and from the social and religious changes of the time. Thus the Reformation passed unnoticed in some of the remoter areas, and so we find little nests of the old religion still surviving in secluded spots such as Egton Bridge. Roads were few and far between. The main east and west roads from very early times followed a track between the rough country of the uplands and the marshy country of the plain. In Saxon times little villages were built on these roads, usually where a stream from a valley crossed it; thus on the northern road there are Ayton where the Derwent crosses, Brompton with its springs, and Thornton-le-Dale where Dalby Beck crosses it; Pickering is built on the delta of the glacial overflow stream from Newton Dale; on the road at the foot of the Wolds similar phenomena determine the position of such villages as Flixton and Ganton. In the moorland area there are only two north to south roads, both following high ground—one from Thornton-le-Dale and Pickering to Whitby, and the other from Scarborough to Whitby. Other roads running north from the Pickering Valley lose themselves in the moorland valleys such as Beedale and Sawdondale, or run into a transverse valley such as Troutsdale. The high road from Scarborough to Filey follows the coastal moraine and then passes over the Wolds to Bridlington. In the Wolds themselves there are few north to south roads of any importance.
Even at the present time the district is far from the great centres of population and is sparsely populated, especially in the Pickering Valley and on the high moors, in some parts of which it is possible to tramp for hours without meeting a human being or seeing a sign of human dwelling. The only town of any size is Scarborough (45,000), with far smaller populations at Filey, Pickering and Robin Hood's Bay.

The numerous village names ending in -ham and -ton betoken a strong Saxon element in the population, with a later sprinkling of a Danish element with village names, such as Newby and Scalby, ending in -by. Probably many settlers were Norse or Swedish and there are Norse or Swedish place terms such as "force", "foss", "wyke" and "dike", and village names such as Skelder and Darnholm. Like their Scandinavian ancestors most of the people to-day have grey or blue eyes, they omit the initial aspirate and speak slowly and deliberately.

Great changes are now taking place in the general character of the area, partly as a direct or indirect result of the two wars:—

1. The military have taken many thousands of acres of moorland, such as Fylingdales Moor for practice with artillery or trackless vehicles. The effects of this on the countryside are wholly bad, vegetation is destroyed and so the surface layer is exposed to erosion by wind and water; fires are started which do much damage; owing to the destruction of the plant covering which served as a storehouse for water, rain runs away rapidly instead of being conserved for periods of drought; and many wild creatures of interest to the hiker and the nature-lover, e.g. the grouse and curlew, are being destroyed or driven away.

2. Afforestation is covering much of the moorland with forests of coniferous trees, and though in many ways it is a useful and desirable service, nevertheless it destroys the moors as many of us know and love them.

3. A definite change is taking place in the tree population. Hedgerow timber is being cut down and not replaced. Furthermore, deciduous woodland is being felled, and if replaced at all, supplanted by coniferous forests. This is having a marked influence on the appearance of the countryside and also on the plants and animals that are associated with the different types of woodland. It is an excellent thing that a large area of woodland—mainly deciduous—such as Raincliffe Wood should have been acquired by the Scarborough Corporation, so that future generations may see this type of beautiful English woodland at its very best.

4. Drainage too, is taking away many of the haunts of plant or bird. In an endeavour to prevent floods, rivers are straightened and trees on their banks are removed so that water may get away; whether this is wholly good remains to be seen, for riparian occupiers point
out that trees hold up the banks and that their removal may cause the loss of valuable agricultural land. Drainage in the Vale of Pickering is lowering the water-table, and so rendering more land available for agriculture.

5. Changed agricultural practices are having very pronounced results. The increasing use of the mechanical tractor has rendered possible the cultivation of larger fields; so hedgerows have been destroyed or at any rate cut low, and field margins have been removed. The injurious effects of the removal of the hedgerows, which acted as a wind-break, are seen in pronounced wind-erosion now taking place, and the destruction of hedgerow timber has taken away much of the typically English beauty of the countryside. Mechanical tractors, etc., by destroying nests and nesting birds, are already responsible for the loss to the countryside of the corncrake and the decrease in numbers of the lapwing; and by rendering unnecessary the use of so many horses have lowered the amount of stable manure available for the land, and so have necessitated the increased use of artificialis. It is probably too early yet to say whether these will have any injurious effect on farmland, but certainly less humus is available, and it has been pointed out that the increased incidence of certain diseases, for example, club-root, may be due to loss of alkalinity of the soil due to the use of acid manures, such as superphosphate and ammonium sulphate.

6. Finally, the use of tarmac on roads is probably harmful to roadside vegetation and animal life, but it is difficult to say whether its influence is more destructive (though in a different way) than the clouds of dust which used to be raised on the old macadam roads. Certainly there was a period, just after the beginning of the century, when dust was blamed for the destruction of larvae of the tiger moth and drinker moth which were feeding on roadside vegetation. Nowadays there is a certain amount of evidence that they are commoner than they were. Finally, perhaps rain draining from the roads may affect the fish life of the rivers.

The correlative of this at sea is the highly injurious effect of floating oil from the tanks of ocean-going vessels. One effect of this is all too evident in the occurrence of many dead sea-birds which are thrown up on our coasts each year; these have died an extremely painful death due not merely to the coating of oil on the plumage with resulting inability to fly or to keep warm, but also to its actual lethal action on the alimentary canal which suffers extensive injury causing death.

The only information available as to the climate of the district is that kindly furnished by the Borough Meteorologists of Scarborough and Bridlington; owing to lack of equipment similar information was not available for Whitby, nor from the Grammar Schools at Whitby and Pickering. The information received is as follows, the records being the average over a period of ten years:
### Natural History of the Scarborough District

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Rainfall</th>
<th>Sunshine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degress Fahrenheit</td>
<td>Inches</td>
<td>Hours and Minutes</td>
</tr>
<tr>
<td>January</td>
<td>43.9</td>
<td>2.86</td>
</tr>
<tr>
<td>February</td>
<td>46.2</td>
<td>2.06</td>
</tr>
<tr>
<td>March</td>
<td>49.0</td>
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<tr>
<td>April</td>
<td>56.5</td>
<td>1.94</td>
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<tr>
<td>May</td>
<td>57.3</td>
<td>1.64</td>
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<tr>
<td>June</td>
<td>63.8</td>
<td>.85</td>
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<tr>
<td>July</td>
<td>65.1</td>
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<tr>
<td>August</td>
<td>69.1</td>
<td>2.88</td>
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<tr>
<td>October</td>
<td>57.1</td>
<td>2.91</td>
</tr>
<tr>
<td>November</td>
<td>49.2</td>
<td>3.84</td>
</tr>
<tr>
<td>December</td>
<td>44.6</td>
<td>1.93</td>
</tr>
</tbody>
</table>

Average 55.4 53.6
Total 27.68 24.73 1496, 15 1407, 00

The dominant wind is the south-west, but in April and early May the north-east often blows for some 4-6 weeks; it is a cold dry wind which causes April to be the driest month of the year at Scarborough. Bridlington is partially protected from it by the Wolds and by Flamborough Head, whereas Scarborough has no headland to the north and the moors, being further away, afford little shelter; this explains the greater difference in temperature in April between the average temperature at Bridlington (56.5 F.) and that at Scarborough (51.0 F.). On the high moors the wind is very powerful, and so the vegetation is stunted. Moreover, as the cold dry winds blow in spring, they often kill opening buds and young leaves on trees, so that growth is checked on the north and east, and the trees tend to lean over to the land side.

The temperature in the immediate neighbourhood of Scarborough is much influenced by its proximity to the sea, this influence showing itself within about 2-4 miles from the sea; thus in winter the streets in Scarborough may be wet with rain, at the Mere there may be sleet, and at Ayton snow and frost. Conversely, in the summer it may be quite cool by the sea, whereas Ayton is warm. As to the effects of elevation, the temperature falls about 1° F. for every 100 yards of ascent, so that on Fylingdales Moor (960 feet), the mean temperature is about 3.5° lower than in Scarborough.

The rainfall, too, is much influenced by elevation, increasing towards the higher moors. F. Elgee, 1912, "The Moorland of North-Eastern Yorkshire", p. 59, says, "In the heart of the moorland the rainfall is reported to be as high as 36 inches . . . over the whole moorland area the average probably lies between 32 and 36 inches, an average of 7 to 11 inches higher than at many places in the plains".
THE SCARBOROUGH DISTRICT

The lower total hours of sunshine recorded for Scarborough as compared with Bridlington may be occasioned by the close proximity of high hills immediately to the west of the town which, on the average cut off the sunshine about a quarter of an hour earlier each day during the whole of the year.

For a further discussion on the climatic and other ecological factors of the area the reader is referred to the articles on "Afforestation", "Flowering Plants" and "Lepidoptera", to F. Elgee (t.c.) and to J. G. Baker, 1906, 2nd edition, "North Yorkshire".

There are few mineral products of any importance. Sand and gravel, mainly of glacial or river origin, are worked in many places and there are quarries for chalk and for building stone. Jet from the Whitby shales has been used for ornaments since prehistoric times and alum used to be made at the Peak Alum-works just north of Ravenscar, until it was ousted by cheaper foreign material almost a century ago; the works later were used for brickmaking. Surface coal of flood origin is used to a slight extent by local farmers north of Staintondale, but it is of poor quality and of no economic significance; hopes were raised by a deposit of iron ore near Bickley, but it too is only poor in quality and quantity. Peat is used as fuel on many farms and cottages, as are "flaughts" which consist of the top layers of a heather moor. There are large peat workings on the Harwood Dale Moor just north of the Falcon Inn. The area is shown on the map as being about 30 acres, but the area worked is considerably less, probably not more than two or three acres. The peat is 10-14 feet thick and overlies an old forest consisting of Scots pine and birch, the stumps of which are left standing when the peat is removed. Certain people have "rights of turbary" or rights to cut peat, and it has been generally assumed that these are the tenants of the Derwent Estate and certain cottagers in the Harwood Dale area, but apparently there are no records, apart from one appertaining to Murk Head Farm, either to prove or disprove the claim.

In 1950 it has been reported that rich deposits of potassium compounds, chiefly sylvinite (potassium chloride) and polyhalite (a compound sulphate of potassium, calcium and magnesium) have been found in the most northern parts of our area and just outside it. If anticipation is equalled by achievement, this is a fact of profound national and economic significance, but it is far too early yet to say what effect it will have on the amenities of the district or on the distribution and density of population, both natural and human.

Such, in very brief outline, is the district covered by this Survey. Its great variety of ecological conditions has resulted in a very rich fauna and flora, as revealed in the following pages; but the authors and compilers are well aware that future workers still have before them a wide field of investigation, many parts of which have been very inadequately studied or not even touched.
THE GEOLOGY OF THE SCARBOROUGH AREA


Geologically, this area of North East Yorkshire is amongst the most interesting in the country; in fact, there are few areas where the whole sequence of strata throughout the whole era can be studied as thoroughly and in such small compass. The entire Jurassic series from the Lower Lias to the Upper Oolites and above them to the Cretaceous, which succeeded the Jurassic, are to be found within a few miles of Scarborough.

Such an area could not fail to attract geologists, and many whose names are amongst the greatest and whose work has had lasting effect may be recalled. William Smith, "The Father of English Geology," who lived at Hackness, began the work and his results were first published in 1799. His nephew, John Phillips, followed him, and later, Professor Williamson, son of the first curator of Scarborough Museum, continued the study of the region and there were many others. Many books have been written about the district and to these the reader should turn if he wishes to pursue the subject in greater detail. The object of this chapter is to introduce him to the geology of the area against which the Scarborough Naturalists' Society carries out its work. As the underlying rocks determine very largely the soils of the area, except where they are overlain by more recent deposits, such as boulder clay, this district, with its variety of soils, provides a widely differing flora and fauna amongst which the naturalist finds ample material for his observations.

For those not so familiar with this part a brief glance at the purely physical structure may be a useful introduction. From this point of view the area falls into three well defined sections; the Moors to the north, the Vale of Pickering in the centre, and the Wolds to the south, the whole forming two anticlinal ridges with a faulted synclinal trough between. The Moors have their axis of folding running westwards from Ravenscar, the rocks dipping to the north and south of this axis. The longer slope is to the south where the strata dip beneath the Vale of Pickering, the shorter to the north where it is bounded by a fault along the valley of the River Esk. On the east the arch of the anticline has been cut into by the sea, forming the fine cliffs north of Scarborough, especially at Ravenscar, while to the west it has been deeply dissected into numerous beautiful dales, and at a later date further cut into by glacial action, one outstanding example of the latter being Newton Dale.

The Vale of Pickering, once the bed of a glacial lake, has the flatness of contour which belongs to almost undisturbed sedimentary deposits and exhibits many features which remind one of some parts of the Fen District of East Anglia.

South of the Vale rise the slopes of the Wolds, which, like the Moors, have a southward dip, disappearing finally under the recent deposits of the Humber Plain. The earth movements which produced these folds took place, in all probability, during the Tertiary Epoch, a period of great earth movements which produced many of the great mountain ranges of the world.
THE ROCKS OF THE DISTRICT.

It is difficult to describe in any detail the various rocks to be found in the district. They should be studied either in a museum where they can be seen and possibly handled, or in situ when exploring the district. It may be useful, however, at this point, to give a brief account of the chief features of some of the more widely distributed rocks, which belong, in general, to the Lias and the Oolitic (see table). Of these rocks, the Lias, the earliest, has three divisions:—the Lower, which in its upper part consists of ironstone separated by blue shale and in its lower part of limestones similarly separated; the Middle series composed mainly of shales and shaly sandstones with nodules of ironstone, which, farther north, give rise to the Cleveland iron ore beds; the Upper series consists mainly of shales interbedded with limestones or calcareous shales, in the upper part of which is the Alum Shale and in the lower part the Jet Rock. The Jet, which once provided the material for a very thriving industry at Whitby, was formed from vegetable matter in the shale, hardened by the access of air. The Alum Shale was once worked to a considerable extent near Robin Hood's Bay and at Saltwick Nab, near Whitby. The works associated with this mineral were discontinued about 1821. Next in the series and more recent than the Lias come the Lower Oolites, which are, in the main, calcareous rocks, a one-time shallow-water deposit. The limestone of this series is oolitic or pisolitic, i.e. composed of larger pea-sized grains, and showing distinctive current bedding. In fact only the clays appear to have had quiet water conditions for their formation.

It is in Yorkshire that these rocks reach their finest development, and these estuarine deposits are here separated by marine beds, such as the Grey Limestone and the Millepore.

Of these Oolites the Dogger includes beds of sandstone, limestone and shales with concretions to which the name "Dogger" is usually applied. The Estuarines are alternations of shales and sandstone with occasional thin seams of coal; they are sandy in the lower regions and shaly in the upper. The Scarborough Limestone and the Millepore are the most important of these marine beds. The limestone is not a pure limestone but contains calcareous shales and sandstones. At the top of this comes the Cornbrash, thin bands of ferruginous limestone, rubbly in character, with some calcareous shales at the bottom. The Millepore, often called a limestone, is not, however, a pure limestone, at least where it appears in coastal exposures. It is, in fact, a hard calcareous sandstone. Further inland it does actually become a true oolitic limestone.

These latter beds are separated from the Upper Oolites by the Kellaways, beds of sands and sandstones, upon which lies the Oxford Clay. This is a blue-green or grey clay, yellow and brown at the surface and decidedly shaly at the base, but showing no definite structure in its upper parts. In this district it has lost many of its characteristics and become a greyish sandy shale containing fossils.

The Corallian in this area consists chiefly of calcareous rocks, shelly
limestones and oolites, all showing much current bedding. In addition there are corals, sands and some clays consisting of three sandy series separated by limestone beds, reaching in Yorkshire its greatest thickness in this country. These rocks form the upper levels of the Tabular Hills, sloping from Helmsley Moors, where they rise to just over 1000 feet, to about 290 feet at Gristhorpe Cliffs.

Above the Corallian comes the Kimmeridge Clay, easily distinguishable from the Oxford Clay by its colour—a very dark shaly clay, brown in its upper surfaces, when exposed to weathering.

The chalk of the Wolds, although thinner than that of Southern England, has the same general characteristics, except that no gault or greensand lies beneath it. Instead, there are deposits of Red Clay, the colour being due to iron stain. In Yorkshire this reaches a considerable thickness, but at Speeton Cliff it consists largely of marls and clays, still with the same red colour, and forms the Speeton Clays. The chalk above, especially the Middle Chalk, is generally harder than its southern counterpart, but, unlike it, is quite devoid of flints.

There is only one example of volcanic activity in the area. Across the Moors, north westward from a point near the coast a few miles south of Whitby, runs a dyke of dark bluish-grey andesite, some eighteen to twenty feet wide. This forms a conspicuous ridge in some parts. It is of later date than the Teesdale volcanic, and is probably of Tertiary age.

**THE JURASSIC ROCKS.**

| Upper Oolite | Speeton Clay  |
| Corallian    | Kimmeridge Clay |
| Middle Oolite | Upper Calcareous Grit |
| Corallian    | Upper Limestone |
| Lower Oolite | Middle Calcareous Grit |
| Inferior Oolite | Lower Limestone |
|              | Passage Beds |
|              | Lower Calcareous Grit |
|              | Oxford Clay |
|              | Kellaways |
|              | Cornbrash |
|              | Speeton Clay  |
|              | Upper Estuarine |
|              | Grey Limestone |
|              | Middle Estuarine |
|              | Millepore |
|              | Lower Estuarine |
|              | Dogger |
|              | Blea Wyke Sands |
|              | Alum Shale |
| Upper Lias   | Jet Shale |
|              | Grey Shale |
| Lias         | Ironstone Series |
| Middle Lias  | Sandy Series |
| Lower Lias   | Upper with ironstone |
|              | Lower with sand and marl |
THE JURASSIC AGE.

The rocks of this district belong to the Mesozoic or Secondary era, the earliest part of which is known as the Triassic, the later as the Jurassic, so named by a French geologist after the Jura Region of France, where the same rocks were studied.

It is on these earlier, or Rhaetic, Beds that the Jurassic Rocks rest in orderly succession. They were formed under marine conditions without any intervening land period, at a time when Britain as we know it to-day did not exist. The Rhaetic Beds had been deposited in an enclosed, almost stagnant, sea which was succeeded by a fresh supply of sea water. This was the beginning of a new era of deposition and of a new phase in the geological history of Britain, the Mesozoic.

The Lower Jurassic Rocks are essentially shales, blue or blue-grey in colour, formed from muds deposited in the new sea, as is happening on the margins of the continents to-day. Yorkshire must have been situated near the shallower margin of this sea, as sands are mixed with the clays, evidence of shoreline conditions where the sea was not very deep.

The Lias began, then, with shallow water deposits, followed by deeper and quieter water conditions allowing the deposition of more muds, the present shales. Another shallow phase followed, during which the sandstones of the Middle Lias were laid down. A deepening of the sea then occurred and the Middle Lias Limestones, formed by the replacement of carbonate of lime by ferrous carbonate, subsequent oxidation converting it to ferric oxide, indicate clear and relatively deep water. These deeper-water conditions undoubtedly continued throughout the Upper Lias which is, in this area, almost always shale. In general then this area was under moderately deep water during the Lias.

A rise in the bed of the sea preceded the next stage, the Oolitic, and the area became the estuary of a great river which deposited its load of mud and silt. This marks the Estuarine Period. A further sinking of the sea bed, faster than the deposition of these deltaic deposits, allowed the sea once again to invade the area and marine conditions prevailed for a time, during which deposits such as the Scarborough Limestone, the Millepore Oolite and the Ellerbeck Beds were formed. Deposits choking the delta resulted in the formation of a peat swamp, so that seams of coal are a feature of this series of rocks.

The estuarine conditions ended with the return of marine conditions and the formation of the last of the Lower Oolites, the Cornbrash, well developed on the coast near Scarborough.

The Middle Oolites began with the Kellaways Sandstone—named after a Wiltshire village—followed in their turn by the deep water Oxford Clays. Shalwasser seas then followed and in them the calcareous sandstones and limestones of the Corallian were formed. The coral deposits such as those to be found in quarries near Seamer clearly indicate
shallower and warmer, clearer seas in the area for some time. A return of deeper seas, with the deposition of the Kimmeridge and Speeton Clays, brought the Jurassic to a close.

These sedimentary rocks, flat and horizontal when deposited, were formed, by subsequent earth movements, into a series of low anticlinal ridges and troughs running approximately east and west. The arch of the main northern anticline runs from Ravenscar westwards across Egton and Glaisdale High Moors and reaches its greatest height, just under 1500 feet, on Whorlton Moor. In the south the anticline formed the Wolds, with its axis near Market Weighton.

Between these lies the Vale of Pickering, the syncline between the two arches, faulted along its north and south sides, its strata of clays now hidden beneath more recent alluvial and glacial deposits.

Beneath the chalk, to the south, the Lower Oolites are missing, presumably removed by denudation before the Cretaceous period, so that the chalk rests on the Kimmeridge and Speeton Clays in the north and unconformably on the Lias to the south.

The Speeton Clays mark the beginning of the Cretaceous Period, representing a mud zone similar in some respects to the Lias deposits. This clay passes into the Red Chalk, the colour being due to iron stain; then to the Grey and finally to the White Chalk. Changes in the relative positions of land and sea masses opened up the seas in the area to new organisms, whose remains, carbonate of lime, now form the chalk.

It is probable that the whole Jurassic series was subjected to considerable denudation in pre-cretaceous times, before the subsidence which allowed the Cretaceous Sea to invade the area and cover it with chalk, which it undoubtedly did.

Subsequent folding uplifted the area and the chalk, relatively soft and easily eroded, was removed completely from the moors, remaining only in the south. Once the chalk had gone further erosion reduced the moors to a new base level and formed a peneplain, more resistant moorland grits and sandstones then forming larger areas to the north of the Vale of Pickering.

At a still later date action by rivers and glacial overflows cut the deep dales and isolated outliers like those around Silpho and Hackness, while rivers, cutting through the grits and on to the softer clays beneath, formed many of the moorland dales.

THE ICE AGE IN NORTH EAST.

No account of the geology of this part can omit some reference to the effect of the glaciation of the district.

The Quaternary Era saw Britain, together with the rest of north west Europe, invaded by Arctic conditions, resulting in the accumulation of ice-sheets, especially on the higher ground.
In common with the rest of northern Britain our Yorkshire area was subject to the icy conditions and they have left their mark on the geology of the area no less than on its physical appearance. The glaciation here was effected by ice coming from some distance, for example from the Lake District and Pennines, even from Scandinavia, and not as might be supposed by ice from the high ground of the Moors. These, in point of fact, were left uncovered for the greater part, even during the period of maximum glaciation. One lobe of the ice sheet moved south down the Vale of York, blocking the entire western side of the area and closing the fault gap at Coxwold, thus stopping any possible drainage to the west. Ice flowing down the eastern side of the Cleveland area was forced against the east side of the Moors by the Scandinavian ice which impinged on the coast, completely blocking any drainage to the east, and forcing its way some five miles up the Vale of Pickering as far as Brompton. The entire coastal district of our area was covered with a thick layer of boulder clays containing for example erratics, from Westmorland (Shap Granite) and even Larvikite from Scandinavia.

Not only was the eastern drainage, namely that of the Esk and Derwent, completely stopped, but their upper valleys became lakes which drained into each other over spurs, across which they cut well defined overflow channels along the edge of the ice.

The water from the Eskdale series of lakes eventually found an outflow southwards over a col and drained away through the deep overflow channels now known as Newton Dale, adding its water to the already rapidly growing lake which occupied the blocked lowland between the Moors and the Wolds, Pickering Lake.

Small lakes and streams on the Moors, near the present site of the Falcon Inn, were forced to drain to the south west and the water flowed down Jugger Beck channel to join a lake in Harwood Dale. This subsequently overflowed into Langdale and filled the valleys of Highdales and Lowdales to form Lake Hackness.

The streams which formerly occupied this complex valley system once reached the sea through the valley now known as Sea Cut, but this was blocked by ice, so a new overflow had to be cut. Thus Forge Valley came into existence at the lowest point over which Lake Hackness could drain away. This outlet was deflected at its southern end by the glacier which had forced its way up the Vale of Pickering, and the stream flowed along the base of the hills depositing its load in a long sloping bank, until it finally joined Pickering Lake. The level of this lake rose steadily especially when the melt water from the ice was added to it, and a low col at Kirkham offered an outlet. The enormous flow of water over this col cut the Kirkham Gorge.

When the lake drained, having in the meantime accumulated layers of new material over its underlying clays, the rivers found their way to the east blocked by the ridge of boulder clay along the coast so the new outlet from the vale followed Kirkham Gorge, as it does to-day.
Hence, for some distance inland from the coast of the area the rocks are overlain by boulder clays, moraines and glacial drifts, while many of the valleys owe their present form to overflows from the glacial lakes. The boulder clays may be seen capping the cliffs both north and south of Scarborough and one of the largest erratics lies at the Valley end of Royal Avenue and another at Seamer Station.

The floor of the Vale of Pickering has little difference in level throughout its entire length and in consequence the drainage is poor. One thing of interest is the deltaic deposit at the south end of Newton Dale, upon which Pickering is built.

The oldest rocks, the Lias, form the base of the uplands of the Moors and crop out on the sides of many of the dales. They are followed by the Lower Oolites in which the absence of fossil remains and the presence of thin coal seams indicate the Estuarine conditions already referred to. Larger areas of Estuarine Sandstones form the moors to the east of the area and the tops of many of the ridges separating the dales. Here they form the decided crags at the top of the slopes. The "Cheesestones" are remnants of this cap. The Ellerbeck Beds separate

MODERN TOPOGRAPHY.

So much for the remote past, but it may be of interest to conclude by indicating the relationship between some of the rocks and the present day features of the countryside.

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SALTERGATE INN AND THE CENTRAL MOORLANDS

By kind permission of the Scarborough Corporation
these from the later sandstones, which were, however, removed from a large area of the uplands, but remain to form the Riggs between the dales on the south side of the Esk Valley. The centre portion consists of grey limestone and fossiliferous grit, the latter forming prominent parts of Glaisdale Moor, while the Moor Grit, easily recognised by its compact whitish structure, forms moors between Whitby and Scarborough.

The wide moorlands of Harwood Dale and Fylingdales show the shales and sandstones of the Upper Estuarine series, these marking the close of the Estuarine Period and the encroachment of the sea, with the deposition of the Oolites.

Of these the Kellaways and Calcareous Grits can be seen in the Tabular Hills where the grit caps the moors to form features such as Allerston High Moor. It is through this that the gorge of Newton Dale is cut.

Along the north side of the Vale of Pickering the Corallian forms the hills overlooking the vale.

The Chalk lies to the south and shows many of the characteristics of such areas: rolling hills, dry valleys and intermittent streams, called "Gypsies." The coast farther south at Flamborough has the caves and stacks familiar on chalk coasts.

Nor is the connection confined to the inland areas alone as the present coastline shows the relationship no less clearly. South of Whitby, where the Esk occupies a pre-glacial valley along a fault line with a downthrow of 200 feet on the west side, the cliffs show the Inferior Oolite and the Upper and Middle Lias especially well below Hawsker.

From North Cheek, the northern point of Robin Hood's Bay, of harder Middle Lias, to the Peak at the south end of the bay, also of more resistant rock, the Lower Lias has been eroded by the action of the sea to form the long curve of the bay. The shaly reefs are clearly seen at low tide. The high cliffs from Ravenscar to Scalby Mills run roughly N.N.W. to S.S.E. and have been determined largely, if not entirely, by a series of faults which follow much the same direction. The Oolites which are the main rocks of this part of the coast, are covered with a considerable thickness of glacial drift. This drift is itself the main constituent of the low cliffs from Cloughton to Scarborough. The headland which separates the two bays at Scarborough is due to the resistance of the sandstones of which it is composed. Estuarine Sandstones and the shales and sandstones known as Scarborough Limestone, are responsible for the cliffs of the South Bay, their well-marked jointing aiding the erosive action of the sea. At Cornelian Bay the cliffs are largely of Boulder Clay, while farther south, beyond Osgodby Nab, Calcareous Grits and Oxford Clay form the greater part of the coastline. Thence to Filey, the Corallian, capped by Boulder Clay, runs out to form the Brigg, a long reef forming the north end of the bay. The clay cliffs south of the Brigg are a fine example of weathering by rain action. From Speeton southwards the chalk appears and the cliffs here show the usual characteristic features.
Those who would like to study the rocks of the area in situ may do so with very little trouble as many of the best exposures are within easy reach of Scarborough, on the coast both north and south of the town. The short list and the simple sketches which follow by no means exhaust the possibilities for inspection on the spot, and many books on this area, notably Kendall and Wroot's "Geology of Yorkshire," will provide many more examples.

The most readily accessible exposures of the Lias are at Robin Hood's Bay, where the Lower, Middle and Upper Lias can be seen from Bay Town northwards along the cliffs. Care is essential when walking along the foreshore as the tide may trap the visitor unfamiliar with its ebb and flow in this part.

Osgodby Nab, the north point of Cayton Bay; White Nab, at the south end of Scarborough; Cloughton Wyke and Blea Wyke, to the north of the town, all show the Lower Oolites, the most complete example of this series being at Blea Wyke.

The Upper Estuarine and Scarborough Limestone appear at White Nab and the Upper Estuarine, Middle Estuarine and Grey Oolite form Hundale Point at Cloughton Wyke.
For the Upper Oolites one should go to Red Cliff on the south of Cayton Bay or to Gristhorpe Cliff, where the Kellaway, Oxford Clay and Calcareous Grit are to be found in the face of the Cliff.
Speeton Cliffs, especially on the south side of the Gap, give one the chance to examine the Cretaceous Series as the Red and White Chalks are exposed in the cliff face, capped by Boulder Clay.

The Corallian, which is located in the Hackness area, is also within easy reach of the visitor to the dales which are in that district.

To those who do not wish to go far from the town the Castle Hill has much to offer, the Coralline Oolite, Calcareous Grit and Oxford Clay being well shown there; while on Oliver's Mount, the hill overlooking the town on the south side, the Grit, Oxford Clay, Kellaway, Cornbrash and Estuarine Shale may be examined.

The Scarborough Museum also contains much of great interest to the geologist, including an excellent collection of the fossils to be found in the neighbourhood.
A STRATIGRAPHICAL GUIDE TO THE FOSSIL LOCALITIES OF THE SCARBOROUGH DISTRICT
P. C. Sylvester-Bradley, B.Sc., F.G.S.

INTRODUCTION

The Scarborough district is classic ground for the fossil collector. Even before the days when William Smith lived at Hackness (1828-35), British geologists, both amateur and professional, had been richly rewarded by the local strata†. The Museums, not only of the district, but of the whole country, testify to the energy of these early collectors. In spite of the quantity and quality of the material, however, much of it fails to fulfil the exacting needs of modern geological research. Much of it is unlocalised. There is now a need for fossils with records of their exact stratigraphical horizons and geographical locations. There are many critical sections from which no fossil, however beautifully preserved, is of great scientific value unless its position relative to some easily recognised datum is measured to the nearest inch. Care should therefore be taken to note the stratal succession and lithological boundaries of such sections before recording their fossil contents. Collectors will greatly benefit the science if they are willing to loan their finds to specialists in the various groups. Officials of local or national museums can usually give advice as to whom such specimens should be sent.

The following catalogue of localities is intended as a guide to the collector. Details of the section are only listed if not already published; otherwise a bibliographic reference is given‡. It is to be regretted that space also forbids giving detailed lists of fossils. All that has been attempted is to indicate the general features. This omission is not as serious as it might be, for Fox-Strangways’ encyclopaedic list of Yorkshire Jurassic fossils, though in much need of revision, is still of practical value (Fox-Strangways, 1892b).

The arrangement of Stages and Zones is as follows:—Upper Cretaceous, after C. W. and E. V. Wright (1942); Lower Cretaceous, after Spath (1923, 1924 and 1941), as summarised by Morley Davies (1947); Upper and Middle Jurassic, after Arkell (1946); Lower Jurassic, after Spath (1942). The map references, given immediately after each locality, are to the national grid (as reproduced on all Ordnance and Geological Survey maps published since the war, and also on the folding map included in this volume). A good map for use in the field is the 1:25000 Ordnance Survey map (approx. 2½-in. to the mile). Some of the Geological Survey maps of the district are out of print, but will be re-issued in due course. The one inch maps

† As the work of Smith’s nephew, John Phillips (1829), and that of Young and Bird (1822) admirably demonstrate.
‡ Most of these references are to Fox-Strangways, 1892a. Later relevant Geological Survey publications repeat these sections. Fox-Strangways 1904 gives fine annotated photographs of the cliffs south of Scarborough.
bear two numbers, as follows: Old Series, 96NE, 95NW, 96SE, 95SW, 95SE; corresponding to the New Series numbers, 43, 44, 53, 54, and 55. The maps of the two series are identical. The $\frac{1}{4}$-in. maps of the district are numbered 4, 7 and 8.

The strata are dealt with from the younger to the older, zone by zone. The localities are numbered in succession. Under each zone the various exposures are dealt with first as shown on the coast (from south to north) and then as developed inland (from east to west). The exact limits of the district dealt with are shown on the geological sketch map.

The numbers round the margin refer to the National Grid figures.

The preparation of this catalogue has been made possible only by the kind collaboration of the following friends, who supplied records of much unpublished information: Mr. Leslie Bairstow (for the Middle and Lower Lias); Prof. T. M. Harris (for the Jurassic plants); Dr. Vernon Wilson (for the Corallian Beds); and Mr. C. W. Wright (for the Cretaceous rocks).

The compiler records his thanks for their ready co-operation. The compiler has also referred to his own field notes, and to published works. Dr. W. J. Arkell and the late Dr. R. H. Rastall have kindly checked and criticised the MS., and Mr. R. V. Melville has helped in other ways.
CATALOGUE*

The names of recorders are:


QUATERNARY

The Speeton Shell Beds

Pre-glacial shells (Tellina, Cardium, Mytilus, Littorina, etc.).

CRETACEOUS

Compiled from notes by C. W. Wright, M.A., F.G.S., and published records.

CHALK†

Upper Chalk

SENONIAN

Inoceramus lingua zone‡

Inoceramus; sponges (many species of lithistids and hexactinellids); Micraster; Scaphites, Baculites and other ammonoids.


Marsupites testudinarius zone

Marsupites plates. The only good exposures lie along the cliffs south-east of Flamborough Head, outside the Scarborough district.

Uintacrinus westfalicus zone

Uintacrinus ossicles, sponges, occasional Echinocorys and Inoceramus.


* Note. In every case where sections are given, the beds are listed from the top to the bottom, but numbered from the base upwards.
† Rowe's (1904) paper remains the classic guide to the chalk of the coast sections. The Wright Brothers' (1942) recent catalogue of the inland exposures of the Wolds is invaluable to the collector.
‡ Equivalent to the Offaster pillula and Actinocamax quadratus zones of southern England.
Sections of strata as seen in the cliffs between Filey Brigg and Peak (Ravenscar).
Hagenowia rostrata zone (= Micraster coranguinum zone). Fossils usually rare, except for Inoceramus, in the lower part of the zone, exposed in the localities given, though much commoner in the cliffs west of High Stacks (C.W.W.).


**Micraster cortestudinarium** zone

**Micraster, Echinocorys, Inoceramus**

15. North of Breil Head. 248717. Rowe, 1904, pp. 212-215, Pl. 29. (Difficult of access, as graphically described by Rowe.)

**TURONIAN**

**Holaster planus** zone

Holaster, Echinocorys, Inoceramus, brachiopods, etc.

17. Hunmanby. 090788, where lane to Pilmoor Farm crosses escarpment Wright Bros., 1942, pit 119 (C.W.W.).

**Terebratulina lata** zone

Inoceramus lamarcki, Conulus, Holaster planus and brachiopods (T. lata, “Rhynchonella” cuvieri, etc.)

19. Kit Pape’s Spot 181747. Rowe, 1904, plates 17, 18, 19 (”Zone of Terebratulina gracilis”)

**Inoceramus labiatus** zone

Inoceramus labiatus and “Rhynchonella” cuvieri.

20. Kit Pape’s Spot to Speeton Cliffs. 1774 to 1575. Rowe, 1904, plates 17, 18, 19 (“Zone of Rhynchonella cuvieri”). Fossils sparse, but to be found in well weathered sections (C.W.W.).

**CENOMANIAN**

**Holaster trecensis** zone

Holaster, Discoidea and small brachiopods.


**Holaster subglobosus** zone*

Echinoids (Holaster, Hemiaster, Discoidea, etc.), lamellibranchs (especially Inoceramus), and very rare ammonites (Schloenbachia). (C.W.W.).


* Equivalent to the Schloenbachia varians zone of southern England.
ALBIAN†

Stoliczkaia dispar zone
Belemnites (Neohibolites listeri = “Belemnites minimus”), Nautilus, lamellibranchs, terebratulids (Concinnithyris spp.), occasional crinoids, asteroids, echinoids and anthozoa (C.W.W.).

24. Speeton Cliffs. 1675, 1674. Fox-Strangways, 1904, pp. 77-78. Extensive scars and cliff foot exposures, often partly covered by cliff falls (“Grey Band” of the Red Chalk and upper part of the lower Red Chalk). In the absence of ammonites it is impossible to zone these beds accurately and it is only on an assumption that this part of the Upper Albian Red Chalk is assigned to this zone (C.W.W.).

Pervinquieria inflata zone
Ammonites (Pervinquieria, Euhoplites), belemnites, Inoceramus anglicus, I. tenuis, “Terebratula” dutempleana (=“biplicata”)

25. Speeton Cliffs. 1675, 1674. Red and grey-green marly clay with large indurated lumps is seen below the harder Red Chalk and above the “Minimus” Marls (C.W.W.).

SPEETON CLAY

The facies of the Albian, Aptian and Neocomian, known as the Speeton Clay, is unique in this country and has its nearest parallel in northern Germany. The clays are only intermittently exposed by the vagaries of landslip and sea scour but well repay the attention of the careful collector. The best guide to this difficult ground is Lamplugh, 1924, and the map reproduced as fig. 1 of that paper. For greater stratigraphical details see Lamplugh, 1889, and, for the ammonites and zonal correlation, Spath, 1924. It should be noted that, in addition to the more or less permanent cliff and cliff foot exposures mentioned below, there are occasionally very good exposures on the beach towards low tide mark.

Euhoplites laetus zone
It is to be presumed that this zone is represented by some part of the “Minimus Marls”; see the zone below.

Hoplites dentatus zone
Rare ammonites (H. dentatus) and innumerable belemnites (Neohibolites spp.).


Douvilleiceras mammillatum zone
Probably unrepresented.

† The zones from the Albian downwards to the base of the Cretaceous are founded on successions in the south of England, France, Russia, etc., and are not necessarily applicable in Yorkshire; in fact most of the zone fossils have not been found here. The scheme however must be used in the absence of a properly established one for the northern faunal province. The fossils quoted here are merely those that characterise the northern equivalents of the zones (C.W.W.).

‡ Partly Cenomanian in age. See Exposure 23.
Leymeriella tardefurcata zone
This zone is suggested by the occurrence of the Leymeriella noted below.
27. Cliff foot opposite King Rock, Speeton. 1575, 1675. Lamplugh, 1924, p. 20 and p. 15. "Bright greensand streak"—a glauconitic band with corroded nodules, lying immediately below the "Minimus Marls". A few fragments of a late species of Leymeriella have been found with lamellibranchs and fish teeth (C.W.W.).

Diadochoceras nodosocostatum zone
The belemnite Neohibolites wollemanni may be taken as indicating this zone (C.W.W.).
28. Cliff foot opposite King Rock, Speeton. 1575, 1675. Lamplugh, 1924, p. 20 and p. 15. "ewaldi" beds. N. wollemanni is not uncommon though often only found in rolled fragments (C.W.W.).

APTIAN

Acanthoplites subnodosocostatum and Cheloniceras martini zones
Missing.

Deshayesites deshayesi zone
Belemnites (Parahibolites) and ammonites (Deshayesites spp. and Aconeceras). Probably only the two lower subzones are represented (weissi and bodei).

Costidiscus recticostatus zone
Parancyloceras, Toxoceratoïdes in the upper subzones and the lamellibranch Grammatodon securis are common; belemnites are rather rare (C.W.W.).

NEOCOMIAN

Heteroceras astieranum zone
Large ammonoids (Hoplocriceras, etc) are fairly common in the cement nodules; belemnites (Oxyteuthis and Aulacoteuthis) are common and many species of gastropods and lamellibranchs occur occasionally (C.W.W.).
31. Black Cliff and Speeton Beck Ridge. 1575. Lamplugh, 1924, p. 15 and fig. 1; 1889, fig. 7. Middle 'B' or Cement Beds, about 50 feet (C.W.W.).

Paracrioceras emerici and Pseudothurmannia augulicostata zones
Ammonoids, belemnites, gastropods and lamellibranchs are rather common in bands (C.W.W.).
Subsaynella sayni zone
Ammonites (Simbirskites spp., Spitzdiscus, criocerates, etc.) ; belemnites (Hibolites jaculoides, etc.), gastropods, lamellibranchs, brachiopods (Terebratulina martiniana), Cidaris spines and plates, large foraminifera, etc., common in different bands. All four subzones well developed (C.W.W.).


Crioceras duvali zone
Uncoiled ammonoids (Crioceras, Aegocrioceras) and belemnites (Hibolites) are common ; several other species of ammonites, gastropods and lamellibranchs are fairly common (C.W.W.).

34. Middle Cliff and Black Cliff Ridge, Speeton. 148758 to 15057575. Lamplugh, 1889, fig. 5, bed C7. Clay and hard bands, 8-ft. 6-in.

Acanthodiscus radiatus zone
This is the most fossiliferous zone of the Speeton Clay. The Subastiera sulcosa subzone (Bed C 8) yields a variety of ammonites, and the Lyticoceras regale subzone (Bed C 9) the subzonal ammonite, belemnites (Hibolites), the lamellibranch Buchia keyserlingiana and the “Speeton Shrimp” (Meyeria ornata) commonly. In the Acanthodiscus ebergensis subzone (C 10-11) the belemnite genera Hibolites and Acroteuthis are both common. Beds D 1 (the “Compound Nodular Bed”) and upper D 2 (Lyticoceras noricum subzone) yield abundant belemnites (Acroteuthis spp.), ammonites (especially Lyticoceras spp. and Distoloceras) and other fossils (C.W.W.).

35. New Closes Cliff to foot of Middle Cliff, Speeton. 146759 to 150758. Lamplugh, 1889, fig. 4 and 5, beds C 8—11 and D 1, 2.

Polyptychites polyptychus zone*
Belemnites (Acroteuthis spp.) are abundant, ammonites rather rare (C.W.W.).

36. West end of Middle Cliff, Speeton. 147759 to 149758. Lamplugh, 1889, fig. 4, beds D 3—6. D 5 is full of Lingula, and D 4 of Astarte senecta (C.W.W.).

Platylenticeras heteropleurum zone
Missing.

Subthurmannia boissieri zone
Missing according to Spath. Represented by Beds D 6-8 according to Swinnerton (C.W.W.).

37. Beach opposite Middle Cliff Ridge, Speeton. 148759. Lamplugh, 1889, fig. 4, beds D 6—8. D 6, the “Pale Beds”, contain many belemnites and lamellibranchs of a few species; D 7 and D 8 yield the large belemnite Acroteuthis lateralis (C.W.W.).

Parodontoceras callistoides zone
Missing.

*The Olcostephanus schenki and Kilianella roubaudiana “zones” are here regarded as equivalent to the upper part of the polyptychus zone.
KIMERIDGIAN

Aulacostephanus pseudomutabilis and higher zones
Ammonites (sometimes crushed, but uncrushed in nodules), belemnites, Discina, Lucina, etc. The zonal arrangement is very ill known.
If a good exposure is ever found careful collecting from a measured section will produce valuable results (P.C.S.B.).

KIMERIDGE CLAY

Rasenia mutabilis, R. cymodoce and Pictonia baylei zones
41. Mile Haven, Speeton Bay. 122791. Recorded by Judd (1868) but by nobody since. He lists ammonites, Exogyra nana, Ractorhynchia inconstans, etc.

OXFORDIAN

Compiled from notes by V. Wilson, M.Sc., Ph.D. F.G.S., and published records.
The Yorkshire Corallian comprises a sequence of gritstones and oolitic limestones. The Upper Calcareous Grit is exposed only at Pickering, while the lower subdivisions are well seen in the coastal areas (V.W.).
A detailed account of the eastern region of our district, invaluable to the collector, is given in Wilson, 1949.

Ringsteadia pseudocordata zone
No evidence has yet been obtained for this zone in Yorkshire. In the south of England it is represented by the Upper Calcareous Grit, which facies was therefore later in appearance there than in Yorkshire (Arkell, 1945).

Decipia decipiens and Perisphinctes cautisnigrae zones
The Upper Calcareous Grit of Yorkshire is probably mostly of D. decipiens age, but the further discovery of ammonites may show that it extends down into the P. cautisnigrae zone (Arkell, 1945).

Upper Calcareous Grit
Abundant Amoeboceras alternoides and Decipia decipiens have been recorded (Arkell, 1935-48); lamellibranchs are abundant, of which Chlamys midas can be used as an index fossil (P.C.S.B.).
42. Binkleys, Silpho. 964918. No exposure, but scattered pebbles in the fields are full of fossils, including ammonites (P.C.S.B.).
FOSSILS

43. Howldale. 816837. Fox-Strangways, 1892a, p. 348. A fine exposure, 6-ft. of very fossiliferous Upper Calcareous Grit with large ammonites is separated from the underlying Osmington Oolite Series by 2-ft. of argillaceous marl known as the "Throstler Clay" (P.C.S.B.).

44. Pickering Quarries, east side of Newtondale, north of the town. 798845 to 804852. Fox-Strangways, 1892a, pp. 349, 365. Fine-grained sandstones and sandy shales with Lucina fulva, Pleuromya uniformis, Ostrea sp. and ammonite casts, about 20-ft. (V.W.).

Perisphinctes plicatilis zone

Embracing both the Osmington Oolite Series and Middle Calcareous Grit.

Osmington Oolite Series*

The Osmington Oolite is very fossiliferous and in its upper part has coral reef facies—a true reef and an inter-reef channel facies; these occur in the Seamer-Brompton-Ayton district (V.W.).

45. Filey Brigg. 129816. Wilson, 1949, Beds 32 to 34.

46. Crossess Quarries, Seamer. 024842 to 029842.

2. Coral Rag with compound corals Thannmasteria and Isastrea, simple corals Thecosmilia and Rhabdophyllia and many lamellibranchs, gastropods, etc. 5½-ft.

1. Oolites and pisolites with Pseudomelania heddingtonensis, Bourguetia and other gastropods, Chlamys fibrosa, Exogyra nana and many other lamellibranchs. For detailed section see Fox-Strangways, 1892a, p. 344. Ammonites (Perisphinctes, Cardioceras, Aspidoceras, etc., including some giants) have been found in the "Snake Bed" (6-ft. below base of Coral Rag). 28-ft.

47. Betton Farm Quarries. 001855, 002857. Two quarries N. and S. of main road, about ⅓ mile N.E. of East Ayton. Some 15-ft. of soft mudstones and inter-reef channel debris with occasional stacks of coral reef in position of growth. Large numbers of Bourguetia saemanni and other gastropods, with "Terebratula" kingsdownensis, echinoid teeth and many lamellibranchs (V.W.).

This facies of the Coral Rag extends westward as far as Brompton and there are many small quarries opened in it in this area, some of which are listed below:


49. Bell Heads Upper Quarry, Silpho. 968911. Fox-Strangways, 1892a, p. 347.


51. Ebberston. 897832 and 898833. (There is some doubt as to the age of this coral rag. It is usually regarded as Osmington Oolite, separated from the Lower Calcareous Grit to the north by a fault. It might be a westerly development of the Hambleton Oolite coral reef) (P.C.S.B.).

52. Howl Dale. 816837. Fox-Strangways, 1892a, p. 348. See exp. 43.

53. Pickering Quarries. 798845 to 804852. Fox-Strangways, 1892a, p. 349.

Middle Calcareous Grit

A gritstone with fossils at Filey, but in Forge Valley and westward to Pickering has more the characters of an impure limestone with, at the latter locality, the well-known Trigonia shell beds (V.W.).

* The "Upper Limestone" and "Coral Rag" of Fox-Strangways.
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54. Filey, on the north and south sides of the Carr Naze and Brigg. 129816. Wilson, 1949, Beds 25 to 31. Good sections in brown calcareous sandstones, including the Filey Brigg Grit, with occasional thin shelly seams and lenticles containing Gervillella aviculoides, Trigonia densicostata, Chlamys fibrosa and many other shells (V.W.).

55. Pickering, 803882 (east side of Newtondale, about ¼ mile N. of Pickering). 40-ft. of gritty limestones with the well-known Trigonia hudlestoni shell beds. Also present are Perisphinctes maximus and other perisphinctids, Pseudomelania heddingtonensis, Trigonia reticulata, Chlamys fibrosa and many other lamellibranches (V.W.).

Cardioceras cordatum zone

Hambleton Oolite Series

The Hambleton Oolite Series in the Hackness district consists of:

3. Oolites (= “Lower Limestone” of Fox-Strangways), 30-50-ft.
2. Coral-sponge Reef, c. 11-ft.
1. Greystone, Wall Stone or Passage Beds, 30-40-ft.

At Scarborough the lower gritty beds, corresponding to the Greystone, are usually referred to as the Passage Beds. At Filey all the beds are gritty, the oolites not being developed; they are profusely fossiliferous. Ammonites (Cardioceras, Peltoceras, etc.) occur in the lower beds at Filey, and, rarely, in the Greystone inland. No ammonites are certainly known to have come from the Oolites which cannot therefore be dated with certainty. They are well exposed in the Hackness district and at Scarborough (exposures 57, 59 and 60) and energetic search might well reward the collector (P.C.S.B.).


2. Impure oolitic limestones. 26-ft.
1. Variable series of gritstones and detrital limestones, 28-ft. These lower beds contain many of the fossils found in similar beds in the Filey Carr Naze section (V.W.).

58. Hackness, quarry near the east end of Hackness Head, west of Hackness village. 965905.
2. Coral-sponge Rag, 11-ft.

The Hambleton Oolite Coral Rag is unique in the British Corallian sequence; it contains a rich fauna of corals (Isastrea and Thanmasteria), calcispongiae (Holcospongia and Peronidella spp.), many terebratulids, cidarid spines, gastropods and lamellibranches. The above section is typical of many similar sections in the Hackness Hills, from all of which this coral-sponge fauna can be collected in abundance. A few yards west of this quarry and at a slightly higher level is another shallow quarry in which are seen a few feet of the normal oolite which overlies the coral-sponge rag (V.W.).

59. Silpho, immediate west of the village. 957917. Oolite with thin clay and brashy partings 20-ft. Fossils include “Nerinea” spp., Pseudomelania, and other gastropods with many lamellibranches (Camptonectes, Chlamys, Exogyra, etc.) and occasional belemnites (V.W.). Arkell (1945) has recorded the find of an ammonite from the Passage Beds of Lowdales. Perhaps this came from the beds exposed beside the track on the hillside below Silpho quarry.
FOSSILS

60. Suffield Quarries. 979902, large quarry in active work in oolites; 977901, old quarry in similar beds. 983902 and 984904 show coral rag (P.C.S.B.).

South and west of Hackness there is an extensive spread of shelly oolite occurring at the base of the Hambleton Oolite Series (the "Wallstone" of William Smith and "Greystone" of Fox-Strangways). Quarries are very numerous. A few only need be mentioned:—

62. Ayton Weir Quarry. 989857.
63. Beedale Quarries. 962848, 961852. Cardioceras quadrarium and Goliathiceras sidericum have been recorded. (Arkell, 1945, p. 347).
64. Ruston Quarry. 952850.
65. Wydale Quarry. 930825. About 40-ft. of Oolites and Greystone. Ammonites (Cardioceras costicardia, large peltoceratids, etc.) have been recorded from this locality (Arkell, 1945, p. 347), as also a "very rich shell-bed" (Fox-Strangways 1892a, p. 320; Hudleston, 1878, p. 415, fig. 14) (P.C.S.B.).
66. Well Dale Quarries. 914838, 911837, 910834.
67. Sandsprunt Quarry. 906835.
68. Oxdale Quarry, Allerston. 882837.
70. Caulklands Quarries, 843836 and 843838, Fox-Strangways, 1892a, p. 328.
72. Thornton Dale. 834834.
73. Mount Pleasant, Lockton 851908.

Lower Calcareous Grit

(Extending down into the Quenstedtoceras mariae zone, Arkell 1945)

The thick Lower Calcareous Grit forms magnificent cliffs on the coast, though often inaccessible without ropes.

74. Filey, cliff section in north side of Carr Naze. 129816. Wilson, 1949, Beds A, B & C. The uppermost part of the Lower Calcareous Grit—the Ball Beds—is well exposed and has yielded Cardioceras cf. reesidei, C. bukowski, spp. of Goliathiceras, Peltoceras, Aspidoceras and Perispinctes and lamellibranchs, belemnites and serpulids (V.W.).
75. High Red Cliff, Cayton Bay. 077841. The Lower Calcareous Grit occurs in the top of the section but fossils are rare (V.W.).
76. Scarborough, cliff sections on north and east sides of the Castle Hill 051894. Wilson, 1949, Beds A, B & C.
3. The "Ball Beds", 14-ft.
2. Hard cherty sandstone, 3-ft. 6-in.
1. Thickly bedded buff gritstones, 49-ft.

Spicles of Rhaxella perforata are abundant in the main mass of the gritstones while the "Ball Beds" yield the same fossils as are found in these beds at Filey (V.W.).

Both natural and artificial sections of the Lower Calcareous Grit are very frequent inland. Only a few can be listed here. The beds have not been searched with the care their interest deserves. Careful measurements should be made of any section before commencing operations (P.C.S.B.).
78. Suffield Moor. 937935. Small quarry in fossiliferous beds.
80. Whetstone Quarry. 986873.
81. Beedale. 950870. Interesting ammonites of the Q.mariae zone have been found in Beedale "presumably from the lowest layers of the Lower Calcareous Grit" (Arkell, 1935-48, pp. 348-9). The exact locality is not known, and needs rediscovery. No more picturesque district for such a quest could be desired, though a vegetation almost tropical in its luxuriance renders the task more difficult (P.C.S.B.).

Quenstedtoceras mariae zone

Embracing all the Oxford Clay of the coast and also the lower part of the Lower Calcareous Grit (see above, especially exposure 81).

Oxford Clay

The Oxford Clay of our district undergoes many bewildering changes of facies which cannot be properly worked out until adequate fossil evidence is forthcoming. It is known to be much thinner in the Hackness district than on the coast, apparently on account of sandy facies encroaching both from above and from below. In the Malton district and further south-west on the other hand, the clay facies extends well down into the Callovian (see Fox-Strangways, 1892 a, Plate 5) (P.C.S.B.).

86. High Red Cliff, Cayton Bay. 077842. Fox-Strangways, 1904, p. 39 and Pl. 4. Crushed Quenstedtoceras, etc. (P.C.S.B.).
87. Castle Hill, Scarborough. 053890. Fox-Strangways, 1904, p. 38 (see long list of fossils). Ammonites (Cardioceras scarburgense, Quenstedtoceras spp., Creniceras rengeri, Aspidoceras, Taramelliceras, etc. See Arkell, 1945) have been found in some abundance, but only near the base of the clay (P.C.S.B.).

Callovian

by P. C. Sylvester-Bradley.

Although by etymology "Callovian" is named after the village of Kellaways in Wiltshire, the type locality of the Stage is specifically stated by d'Orbigny to be the "Kelloway Rock" of Phillips (1823), i.e., as developed in the Scarborough District of Yorkshire (see Arkell, 1946).

Hackness Rock

Quenstedtoceras lamberti and Peltoceras athleta zones

The village of Hackness, and the country around, together present one of the most lovely landscapes of rural England. To geologists
Hackness is especially precious in that it was the home of William Smith during his latter years. Copies of his maps of the district still hang in Hackness Hall. Unfortunately the quarries and mines which in Smith’s time yielded the freestone which he christened "Hackness Rock" have (with the exception noted below) disappeared (Sheppard, 1939). The Hackness Rock is very fossiliferous, and is well known for its abundant and varied ammonites (Hecticoceras, Quenstedtoceras, Peltoceras, Kosmoceras, etc.) but has also a long list of lamellibranchs and gastropods. The name "Hackness Rock" was first used as a synonym of "Kellaways Rock", but it is now taken (after Spath, 1926) to represent only the upper part of the Kellaways Rock of the Survey Memoirs. It possesses quite a different fauna from the rock below. There is usually a varying thickness of sandstone, somewhat barren of fossils, between the Hackness Rock and the Kellaways Rock proper. Until diagnostic fossils have been found in this sandstone it would seem best to restrict the term "Hackness Rock" to the sandy limestone, sometimes oolitic, often packed with cephalopods, which lies on top of the sandstone, and increases from 3-ins. at Cunstone Nab to 2-ft., at Scarborough and Hackness. The two zones of the Hackness Rock occur in close juxtaposition, and fossils should be collected with care for accuracy.

88. Cunstone Nab. 099832. This is probably the most fossiliferous locality.
13. OXFORD CLAY, seen to many feet.
12. Impersistent nodular oolite, 2-in.
11. Grey shale full of crushed Quenstedtoceras, 3-in.
9. HACKNESS ROCK. Oolite full of ammonites and belemnites, 3-in.
8. KELLAWAYS ROCK. Yellow mottled sandstone; belemnites, 8-ft.
7. Grey shale, 8-ft. 6-in.
6. CORNBRASH, 10-in.
5. Shelly black shale, 3-in.
4—1. SCALBY BEDS (Upper Estuarine Series).

89. Grisborpe Cliff. 097833 to 085837. There are many temporary exposures below the Oxford Clay displayed by the constant cliff falls.
90. High Red Cliff. 077842. Leckenby, 1859, p. 5; Fox-Strangways, 1904, p. 33 and Pl. 4. The 1-ft. 6-in. band of oolite at the top of the "Kellaways Rock".
91. Castle Hill, south side. 052888. The best section on Castle Hill that remains since the construction of the Marine Drive. The upper 2-ft. of the "Kellaways Rock".
92. North Cliff, Scarborough. 044893. Fox-Strangways, 1904, p. 35 and Pl. 10. The upper two feet of the "Kellaways Rock".
93. Hackness Quarry. 966907. Off the Lowdales Road. 2-ft. of hard sandy limestone overlying the main sandstone of the "Kellaways Rock".
94. Newtondale. Presumably the Hackness Rock is to be found capping the great scars between Levisham and North Dale, but the diagnostic fossils have not yet been recorded from this locality.
Erymnoceras coronatum, Kosmoceras jason and Sigaloceras calloviense zones

Perhaps absent from the district, there being a great non-sequence between the Hackness and Kellaways Rocks, though Arkell (1945, p. 344) has recorded certain ammonites suggestive of the top part of the E. coronatum zone. West of Malton (outside our area) these zones are partly developed in Oxford Clay facies (Arkell, 1945). At South Cave, in East Yorkshire (44/93), the S. calloviense zone is well represented and very fossiliferous, abounding in ammonites and other fossils. According to Brinkmann, 1926, these zones may be partly represented by sandstones and ferruginous oolites between the Hackness Rock and the Kellaways Rock, but no fossil evidence supporting his theories has yet been published. Any ammonite found in these beds of doubtful age may be of great scientific importance if its exact locality is recorded. Dr. Arkell asks that special watch should be kept for the occurrence of Erymnoceras in Yorkshire.

KELLAWAYS BEDS

Proplanulites koenigi zone

Ammonites (Kepplerites, etc.) are sometimes abundant, with Gryphaea, Lopha, Ostrea, Pleuromya, etc., and belemnites are abundant at several horizons. The sandstones of the Kellaways Rock are usually ferruginous in the coast sections; inland they become massive and decalcified and contribute to much of the moorland scenery. The building stone of Hackness may well belong to the koenigi zone. In addition to the sandstones, the shales below, classed as "Shales of the Cornbrash" by early authors, are now usually regarded as part of the Kellaways Beds, though no ammonites have yet been recorded from them.

95. Newbiggin Wyke. 100828. Fox-Strangways, 1892a, p. 278.
96. Cunstone Nab. 099832. Beds 7 and 8 of loc 88 above. Abundant belemnites.
97. Grisborough Cliff. 097833 to 085837. Fox-Strangways, 1892a, p. 278.
98. High Red Cliff. 077842. Leckenby, 1859, p. 5; Fox-Strangways, 1904, p. 33 and Pl. 4. This is perhaps the best and most fossiliferous exposure now available. Ammonites and oysters are often abundant. Nodules in the clays below yield interesting decapod crustacea (Wright, 1860, p. 26).
99. Osgodby Nab. 065854. Poorly exposed beneath slipped boulder clay but very fossiliferous blocks can sometimes be found. See Fox-Strangways, 1892a, p. 281.
100. North Cliff, Scarborough. 044893. Fox-Strangways, 1904, pp. 34, 35 and Pl. 10.
101. Row Brow Wood Quarry. 006885.
   2. Soft yellow muddy sand seen to about 10-ft.; occasional ammonites.
   1. Massive sandstone, coarse at the top, finer and softer below, seen to nearly 20-ft.
102. Hackness Quarry. 966907. Over 20-ft. of fine building stone still exposed, but not very fossiliferous. The discovery of ammonites would settle the question as to whether or no this sandstone should be grouped with the Hackness or Kellaways Rock. (See exp. 93).
103. Langdale Rigg. 931927. Opposite Birch Hall Camp on the west side of Langdale Rigg. An important quarry exposing the fossiliferous lower part of the Kellaways Rock.

104. Saltergate. 846947. Stream leading into Newtondale, Douglas and Arkell, 1932, p. 140. A good exposure of the shales at the base of the Kellaways Beds immediately above the main (lower) waterfall.

105. Huggitt’s and Yew Tree Scars, Newtondale. 831940 to 843949. Fox-Strangways, 1892a, p. 283. Perhaps the finest inland section but the fossiliferous beds are often quite decalcified, even the belemnites and oysters remaining but as hollow casts.

**UPPER CORNBRASH**

**Macrocephalites macrocephalus** zone

The Cornbrash of our district is extremely fossiliferous. Most museums of the country boast a collection from the Scarborough Cornbrash. The fossils have recently been revised by Cox and Arkell, 1948-49. *Ornithella lagenalis* and other brachiopods, lamellibranchs (*Lopha marshii*, *Ostrea undosa*, *Trigonia cassiope*, *T. scarburgensis*, etc.) and gastropods are particularly abundant; ammonites rare but interesting (see Arkell, 1945, p. 340).

106. Newbiggin Wyke. 100830. Fox-Strangways, 1892a, p. 266.


108. Gristhorpe Cliff. 097833 to 085837. Fox-Strangways, 1892a, p. 268. Exposed in many places along the cliff often easily accessible and very fossiliferous. The best locality in the district.


111. Saltergate, Newtondale. 846947. Douglas and Arkell, 1932, p. 140. The thickest developments of Cornbrash in the district. The lower 7-ft. of sandstone (Bed 2) were included in the Upper Estuarine Series (Scalby Beds) by Douglas and Arkell, but immediately underneath there is a layer of lenticular clay-ironstone nodules full of marine lamellibranchs, which must either still be Cornbrash or some lower (Bathonian) marine horizon previously undiscovered. No lower Cornbrash (the *Clydoniceras discus* zone, so well represented in the south of England) has yet been discovered in Yorkshire.

**MIDDLE JURASSIC**

**THE DELTAIC SERIES**

(= The Estuarine Series of Fox-Strangways)

(Compiled from notes by T. M. Harris, M.A., F.R.S., P. C. Sylvester-Bradley and published records.)

Recent proposals as to a revision of the nomenclature of the Middle Jurassic Rocks of Yorkshire (Hemingway, 1949, and Sylvester-Bradley, 1949) have been incorporated in the following account.

The fossil plants from the Deltaic Series of the Scarborough district are famous all over the world. In addition to plant beds yielding numerous and good specimens listed below there are many root beds
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(even though in the Grinsthorpe Beds of Cloughton Wyke), rocks containing microflora (leaves and spores) wood, and fallen blocks of shale from undiscovered localities in the cliff which yield good plants. A walk along the beach anywhere below the Deltaic cliffs between Grinsthorpe and Robin Hood’s Bay is almost certain to yield half a dozen such blocks (T.M.H.).

BATHONIAN

There are no marine bands in the Scalby Beds and therefore nothing can be said of their age other than it is either Bathonian or late Bajocian. The base of the Scalby Beds contains massive grits, and has been called the "MOOR GRIT" by Fox-Strangways (P.C.S.B.).

112. Low Red Cliff. 083842. Black, 1929, pp. 404 and 409, and fig. 1. Red Cliff Plant Bed; Ginkgoites, etc. For section in Grinsthorpe Bay see Wright, 1860, pp. 28, 29.


114. Between White Nab and the Spa 059864 to 047873. Casts of Unio are found "depending from the roof of some of the caves" Fox Strangways, 1904, p. 19.


122. River Derwent. 935946, 934957, 931964. Sandstone with Ginkgoites leaves and a few other species. In several other inland localities, notably Upper Kirk Moor, Fylingdales (9103), the Moor Grit has layers packed with cuticles of conifers, ginkgos and other tough leaved plants (T.M.H.).

BAJOCIAN

Parkinsonia parkinsoni and Stephanoceras humphriesianum zones

Scarborough Beds†

Large ammonites (Teloceras blagdeniforme, Stephanoceras triptolemus, etc.) and large belemnites, with some beds crowded with lamellibranchs (Gervillella scarburgensis, Meleagrinella lyckettii, Pleuromya uniformis, etc.). The fossils have been revised by Cox and Arkell, 1948-49. Parkinsonia parkinsoni has been recorded (Wright, 1860) from the upper beds at White Nab. The record needs confirmation (P.C.S.B.).

* The Upper Estuarine Series of Fox-Strangways.

† Or "Grey Limestone Series".
123. Yons Nab. Reef extends seaward along Knotty Bink for about \(1\frac{1}{2}\) miles. 087839. Fox-Strangways, 1892a, p. 230. Full of Meleagrinella and Ostrea (P.C.S.B.).


125. White Nab and Black Rocks. 059865. Fox-Strangways, 1892a, p. 231. The best exposure for ammonites (Teloceras, etc.) and belemnites, which cover a bed not far above low water mark (P.C.S.B.).


127. Hayburn Wyke to Ravenscar. The Moor Grit caps the upper cliff most of the way, and the Scarborough Beds outcrop immediately below. They are easily accessible where paths from Ravenscar lead down the cliffs, e.g., 991009, 988012, 986014. Fox-Strangways, 1892a, p. 233 (P.C.S.B.).


129. Helwath Beck. 949985. Recent slipping has made good exposures (P.C.S.B.).


?Otoites sauzei zone

**Gristhorpe Beds**

The great majority of the 2000 old coal pits in the moors appear to be in this series, and the interiors of the spoil heaps still yield determinable plants (T.M.H.). No marine fossils are present, so no exact correlation is possible.

130. Gristhorpe Bay. 085841. For section see Wright, 1860, pp. 30, 31. The Gristhorpe Plant Bed. Available in the beach at mid and low tide. The best preserved and most varied Estuarine plants come from this and the succeeding locality (T.M.H.). Wright records Unio in his beds 15 and 18, not in the Scalby Beds, as suggested by Jackson. 1911a, p. 107 (P.C.S.B.).

131. Red Cliff Rocks. 081843. Remarks as for 130.


133. Cloughton Wyke (2). 021955. Plant bed in cliff foot associated with coal seam (T.M.H.).

**Soninia sowerbyi zone**

**Yons Nab Beds**

Above the true Millepore Bed there occurs at Yons Nab about 25-ft. of shales and sandstones with abundant *Trigonia* and other lamellibranchs in some beds, together with marine ostracods, plant fragments, etc. Dr. Hemingway suggests the apt name "Yons Nab Marine Series" for these beds. They are separated from the Millepore Bed by a few feet of shales from which only ostracods and plants have been recorded. The Yons Nab Beds are known only from this one locality (P.C.S.B.).

134. Horseshoe Rocks, Yons Nab. 085843. For section see Fox-Strangways, 1892a, pp. 207, 208.

* Or "Middle Estuarine Series."
Millepore Beds

Bryozoa (*Haploeca straminea*), crinoid ossicles, lamellibranchs and gastropods (P.C.S.B.).


136. Osgodby Nab. 066855. The finest exposure (Richardson, 1912, Pl. 23).

137. Cloughton Wyke. 021955. Fox-Strangways, 1892a, p. 208.


?Ludwigia murchisonae zone

Some 280 feet of deltaic sandstone, shales and thin coals with a marine intercalation (the Eller Beck Beds) about the middle. No exact correlation has yet been made (P.C.S.B.).

Sycarham Beds*

The flora of the Sycarham Beds agrees with that from the Grishthorpe Beds rather than with that from the Hayburn Beds (T.M.H.).


Eller Beck Beds

Nearly 20-ft. of marine sandstones and shales with one or two ironstone bands crowded with lamellibranchs (*Nucula, Astarte*, etc.) (P.C.S.B.).


142. Above Little Beck Alum Works. 883049. Fox-Strangways, 1892a, p. 196. This section still presents some good exposures in a most romantic setting (P.C.S.B.).

143. Walk Mill Force, Eller Beck. 833023. Fox-Strangways, 1892a, p. 197. The type locality, and still the most fossiliferous exposure. Dr. Rastall points out that the Geological Survey 1-inch map of the area is printed on a topographical base so out of date that it still shows the railway line about 4-mile further west than it is now, although the change was made in 1865. The locality is in the bank immediately below the present railway, unmarked on the geological map (P.C.S.B.).

Hayburn Beds†

The most fossiliferous locality is at Whitby (908 113), outside our area.

144. Hayburn Wyke. Classical locality was on beach Not found by T.M.H. between 1944 and 1947.

145. Hayburn Beck. A plant bed outcrop at the foot of the cliff just south of the waterfall (010970) and also above the waterfall (T.M.H.).

146. Beast Cliff (1). 010980. Shaly sandstone with *Equisetites* in position of growth, exposed for a quarter of a mile (T.M.H.).

147. Beast Cliff (2). 008985. Plant-bearing rocks (*Bennetitalean* leaves, ferns, etc.) at foot of cliff north of Hayburn. Very local slight changes from year to year cover some and expose others (T.M.H.).


* = Upper part of Lower Estuarine Series.
† = Lower part of Lower Estuarine Series.
Leioceras opalinum zone

It was formerly supposed that the Dogger of Blea Wyke was of murchisonae date (Richardson, 1912). Macmillan (1932) and Black (1934) have shown that the Dogger of the north-west region (outside the Scarborough district) is certainly of murchisonae age, but that that of Glaisdale and further east belongs to the opalinum zone (costosum subzone). In the lack of positive evidence, such as would be provided by the discovery of ammonites in situ, it seems wisest to regard the whole of the Dogger of Blea Wyke as of opalinum age (P.C.S.B.).

LOWER JURASSIC

UPPER TOARCIAN (YEOVILIAN)

Lytoceras jurensense zone†

One of the most interesting series of beds in the Jurassic of Yorkshire. Ammonites of all the sub-zones of the jurensense zone except the top one (aalensis) probably occur, but need more patient collecting and accurate recording than they have yet received. Brachiopods, (including Lingula beani), lamellibranchs and serpulae are also abundant at certain horizons (P.C.S.B.).

UPPER LIAS

Blea Wyke Series, Striatus Shales and Peak Shales

Abundant ammonites (Hildoceras spp., Dactylioceras commune, etc.), Nuculana ovum, belemnites, fish, saurians, etc.

LOWER TOARCIAN (WHITBIAN)

Hildoceras bifrons zone

Abundant ammonites (Hildoceras spp., Dactylioceras commune, etc.), Nuculana ovum, belemnites, fish, saurians, etc.

† Cut out by a non-sequence west of the Peak Fault, where the Dogger rests directly on the Alum Shales. Further to the west, the so-called "Dogger" is of jurensense date (see Macmillan, 1932).
159. Howedale Beck. 955017. The most complete section. About 100-ft. of soft alum shales, the upper 20-ft. with cementstone nodules and a basal band of pyritic doggers with masses of ammonites and belemnites. Fox-Strangways and Barrow, 1915, p. 18

160. Falling Foss. 887036.

161. Little Beck Alum Works. 883048.

**Hildoceras serpentinum** zone* Jet Rock Series

Harpoceras spp., Phylloceras, *Inoceramus dubius*, belemnites, fish, saurian remains, etc.

162. Old Peak. 980024 (at the foot of the cliff, east of the fault). Fox-Strangways, 1892a, p. 129. Jet rock and bituminous shales with bands of large doggers and pyritic concretions, c. 100-ft.

163. Peak Alun Works. 970017.

164. Howedale. 952018.

**Dactylioceras tenuicostatum** zone Grey Shale Series

*D. tenuicostatum* and other ammonites and belemnites, in nodules.


**UPPER PLEISBACHIAN (DOMERIAN) MIDDLE LIAS**

(Compiled from notes by L. Bairstow and published records).

The Geological Survey grouped as Middle Lias in this district the *Ironstone Series* (which further north includes the Cleveland Ironstone) and the underlying *Sandy Series*; but, when the Middle Lias is limited palaeontologically, the lower part of the Sandy Series is excluded.

**Pleuroceras spinatum** zone

Upper part (above the Pecten Seam) of the Ironstone Series of Fox-Strangways and Barrow, 1915, pp. 13, 61.

167. Peak Arm. 981026. A small exposure at low water on the east side of the Peak fault. **Pleuroceras** spp.

On the west side of the Peak fault the outcrop passes from Peak round Stoupe Brow, where it disappears under the boulder clay. No accessible exposure has been recorded, though according to Tate and Blake, p. 127, the beds are visible but relatively inaccessible in Howedale Beck (see locality 171). The nearest complete section accessible is on the coast (about 952076) at Normanby Stye Batts and the adjoining High Scar, a little north of our district.

**Amaltheus margaritatus** zone

Lower part (Pecten Seam and below) of Ironstone Series, and upper part of Sandy Series, of Fox-Strangways and Barrow, 1915, pp. 11, 13, 61. Casts of *Amaltheus* spp., with *Dentalium giganteum* and lamellibranchs (notably *Pseudopecten aequivalvis* and *Protocardia truncata*).

168. Peak Steel. 979026. Reef between the two main branches of the Peak fault; accessible only when the sea is below about half-tide. Ferruginous sandstones of the upper part of the Sandy Series.

169. Peak Cliff. 978022. Fox-Strangways and Barrow, 1915, p. 11. Upper part of the Sandy Series with *Amaltheus, Dentalium giganteum* and lamellibranchs.

* = Harpoceras falcifer zone.
171. Howedale Beck. 949025. Fox-Strangways and Barrow, 1915, p. 13. About 80-ft. of shales with ironstone nodules belong to the Ironstone Series and at least in part to the *margaritatus* zone.
172. Castle Chamber. 960066. Margaritatus and Algovenianum Zones of Fox-Strangways, Barrow and Buckman, 1915, pp. 73-4. The lower part of the zone (lower part of upper portion of Sandy Series) is accessible in the cliff. *Amaltheus stokesi*, *Dentalium giganteum*, *Isocrinus* sp. and lamellibranchs. The whole thickness of the zone is visible here, and its higher beds become accessible in turn in the cliffs and on the foreshore to the north, just outside our district (L.B.).

LOWEST LIAS

By L. Bairstow, M.A., F.G.S.

[Within our district the Lower Liassic outcrops only in the Robin Hood’s Bay area. Surprising as it may seem, there is no adequate published guide to the Lower Liassic of Robin Hood’s Bay. Mr. L. Bairstow has been studying these beds in detail since 1928 and his work is still in progress, though a provisional summary of the succession has appeared (Bairstow, 1948). In the following catalogue of localities, reference is made to the bed numbers of his MS. detailed section; some of these bed numbers were quoted by Spath, 1938. Until such time as Mr. Bairstow’s work is published, the most useful geological map available is that of Tate and Blake (1876). Most of the exposures are accessible only when the sea is lower than about half-tide. On parts of this coast the collector should beware of danger from tides and cliff-falls. P.C.S.B.]

LOWEST PLIENSBACHIAN (CARIXIAN)

*Proactylaiceras davoei* zone

Lower part of Sandy Series of Middle Liassic, and upper part of Ironstone Shales of Lower Liassic, of Fox-Strangways, Barrow and Buckman, 1915, pp. 11, 61, 66. The zone is about 100 feet thick and includes about seventy lithological subdivisions grouped as approximately beds 600 to 581 in L. Bairstow’s MS. detailed section. The base of the zone is estimated to be about 870 feet above the base of the Liassic. Of the whole succession within the zone on the north side of Robin Hood’s Bay, the best single rendering hitherto published is that of Tate and Blake, from about bed 32 of their *margaritatus*-beds (p. 110) down to about bed 27 of their *capricornus*-beds (p. 91). Specimens of *Gryphaea cymbium*, *Oxytoma inaequivalvis*, *Dentalium giganteum*, and capricorn ammonites including *Oistoceras* spp. and *Androgynoceras* *maculatum*, are abundant in certain beds.

173. Robin Hood’s Bay: foreshore and base of adjacent cliff, between Ness Point and Castle Chamber. (Between 960062 and 960067.)
Tragophylloceras ibex zone
Middle part of Ironstone Shales of Buckman, 1915, p. 61. The zone is about 65 feet thick and includes about thirty lithological subdivisions grouped as approximately beds 580 to 564 in L. Bairstow’s MS. detailed section. The base of the zone is estimated to be about 650 feet above the base of the Lias. Of the succession within this zone on the north side of Robin Hood’s Bay, the best rendering hitherto published is that of Tate and Blake; from about bed 28 of their capricornus-beds (pp. 91-2) down to about bed 19 of their Jamesoni-beds (p. 79). The group of beds 28 to 33 of their capricornus-beds is repeated as the group of beds 1 to 7 of their Jamesoni-beds. Lytoceras sp., “Passaloteuthis” sp., Hastites fustelous, H. trunculus and Gryphaea obliquata are fairly abundant in certain beds; Beaniceras sp., Liparoceras heptangularis, Tragophylloceras sp. and Tropidoceras sp. occur.

SINEMURIAN

Echioceras raricostatum zone
Lower part of Pyritous Shales and upper part of Siliceous Shales, of Buckman, 1915, p. 61. At Robin Hood’s Bay the zone is about 60 feet thick and includes about forty-five lithological subdivisions grouped as approximately beds 500 to 486 in L. Bairstow’s MS. detailed section. The base of the zone is estimated to be about 450 feet above the base of the Lias. Of the upper fifteen or twenty feet of the zone at Robin Hood’s Bay, the best original version hitherto published is that of Tate and Blake, from about bed 56 of their Jamesoni-beds (p. 81) down to bed 1 of their oxynotus-beds (p. 73).
This version relates primarily to the northern exposure only, but the same beds can be recognised also in the southern exposure. Below bed 1 of their oxynotus-beds Tate and Blake’s rendering is difficult to follow with certainty in any part of the bay; but approximately equivalent to their bed 1 is the top bed of Barrow’s composite section of the upper part of his Ammonites oxynotus Beds (1882, pp. 4-5), and the upper part (nominally about 34 feet) of this section provides the least-unsatisfactory published rendering of the remainder of the succession Specimens of Eoderoceras spp., Gleviceras guibalianum, Metechioceras spp., Leptechioceras spp., Echioceras sp., Nannobelus spp. and Isocrinus sp. are fairly abundant in certain beds.

176. Robin Hood’s Bay, southern exposure: most of the foreshore between Peak Steel and the Dock, Wind Haven; and base of part of the adjacent cliff. (Between 979025, 976023 and 973024.)

177. Robin Hood’s Bay, northern exposure: much of the foreshore south and east of Bay Town. (Between 955045 and 954050.)

Oxynoticeras oxynotum zone

Middle part of Siliceous Shales of Buckman, 1915, p. 61. At Robin Hood’s Bay the zone is about 50 feet thick and includes about sixty lithological subdivisions grouped as approximately beds 485 to 462 in L. Bairstow’s detailed section. The base of the zone is estimated to be about 400 feet above the base of the Lias. Of the succession within the zone as a whole, none of the published versions is markedly preferable to all others. All versions of its upper part are unsatisfactory. The best version of the middle part is that of Tate and Blake, from about bed 20 down to bed 28 of their oxynotus-beds (p. 74). Below this, the best version of the lithological succession is that of Simpson (1868, p. 55; repeated with slight alterations in a more accessible publication, 1942, p. xxii) comprising his Indurated Bands from division 16, lower part (which immediately underlies bed 28 of Tate and Blake), down to about division 20. Specimens of Oxynoticeras spp., including O. simpsoni; also of Gagaticeras gagateum, Nannobelus sp., Protocardia oxynoti, Cardinia sp. and Isocrinus sp. are abundant in certain beds.

178. Robin Hood’s Bay, southern exposure: most of the foreshore and base of most of the adjacent cliff, from Peak Dock to near Miller’s Nab. (Between 972024 and 971025.)

179. Robin Hood’s Bay, northern exposure: base of cliff from Stoupe Peak to Mill Beck Nab (between 958035 and 955041), and foreshore adjoining the mouth of Mill Beck (between 958038 and 955045).

Asteroceras obtusum zone

Lower part of Siliceous Shales, and upper part of Calcareous Shales of Buckman, 1915, p. 61. At Robin Hood’s Bay the zone is about 40 feet thick and includes about forty lithological subdivisions grouped as approximately beds 461 to 446 in L. Bairstow’s MS. detailed section. The base of the zone is estimated to be about 360 feet above the base of the Lias. The best rendering of the succession hitherto
published is that of Tate and Blake, from about bed 31 down to about bed 45 of their oxynotus-beds (pp. 74-5). Specimens of Aegasteroceras sagittarium, Promicroceras planicosta, Eparietites spp., Asteroceras spp., Nannobelus sp., Gryphaea obliquata and Isocrinus sp. are abundant in certain beds.

180. Robin Hood’s Bay foreshore, southern exposure: foreshore adjoining Miller’s Nab. (Between 971026 and 970027.)
181. Robin Hood’s Bay cliff exposure: between Miller’s Nab and a point N.W. of Peter White Cliff. (Between 969027 and 961032.) The upper part of the zone rises slightly above the base of the cliff, which for a long distance almost follows the curving strike.
182. Robin Hood’s Bay foreshore, northern exposure: central and eastern parts of the fan of reefs between Stoupe Beck, Mill Beck and a little seaward of Low Scar. (Between 959037 and 957042.)

Caenisites turneri zone
Middle part of “Calcareous Shales” of Buckman, 1915, p. 61. At Robin Hood’s Bay the zone is about 35-ft. thick and includes about fifty lithological subdivisions grouped as approximately beds 445 to 427 in L. Bairstow’s MS. detailed section. The base of the zone is estimated to be about 320 feet above the base of the Lias. The least unsatisfactory version of the succession hitherto published is that of Tate and Blake: from about bed 46 of their oxynotus-beds (p. 75), which is the same as bed 1 of their Bucklandi-beds (p. 63), down to about bed 19 of their Bucklandi-beds (p. 64). Their rendering is difficult to follow in detail. Promicroceras capricornoides, Microderoceras sp., Caenisites spp., Nannobelus sp. and Isocrinus sp. occur. Lamellibranchs are fairly abundant; Gryphaea obliquata, Modiolus laevis and Lucina limbata are among the species present.

183. Robin Hood's Bay: northern part of foreshore off Miller's Nab; and most of Flat Scars. (Between 971027 and 963034.) Best studied at spring tides; during ordinary tides the zone is adequately accessible only for a short time near low water; during neap tides the full width of its outcrop never emerges.

Arnioceras semicostatum zone
Lower part of Calcareous Shales of Buckman, 1915, p. 61. At Robin Hood's Bay the top of the zone is estimated with the aid of Messrs. Fison's No. 1 borehole, to be about 320 feet above the base of the Lias. In the bay at low tide more than 20 feet of the zone have been seen, including about twenty lithological subdivisions grouped as approximately beds 426 to 418 in L. Bairstow's MS. detailed section. No satisfactory rendering of the succession has hitherto been published. Specimens of Arnioceras spp., are abundant in certain beds; Euagassiceras spp., Nannobelus sp. and lamellibranchs including Gryphaea obliquata occur also.

184. Robin Hood’s Bay: seaward part of Flat Scars; and Low Balk and beyond. (Between 966032 and 965034.) Even the upper beds of the zone can scarcely be reached except at low water of spring tides.
This bibliography is not intended to be exhaustive, but lists those works likely to be of most value to the collector. Although many are out of print, most can be consulted in the Scarborough Public Library. Monographs, describing groups of fossils only some of which come from Yorkshire, are only here indexed if stratigraphical details are included.

ARKELL, W. J. 1929-1937.
Monograph of British Corallian Lamellibranchia.
_Palaeeont. Soc._
1933.
The Jurassic System in Great Britain.
_Oxford._
1935-1948.
Monograph of Ammonites of English Corallian Beds.
_Palaeeont. Soc._
1945.
The zones of the Upper Jurassic of Yorkshire.
1946.
Standard of the European Jurassic.
_Bull Geol. Soc. Amer., 57._

BAIRSTOW, L. 1948.
In Versey and Hemingway, q.v.

BLACK, M. 1929.
Drifted Plant-beds of the Upper Estuarine Series of Yorkshire.
_Quart. Journ. Geol. Soc., 85._
1934.
Sedimentation of the Aalenian rocks of Yorkshire.

BLAKE, J. F. 1891.
The Geology of the Country between Redcar and Bridlington.
_Proc. Geol. Assoc., 12._

_Quart. Journ. Geol. Soc., 33._
(Many of the sections in this work are reprinted in Fox-Strangways, 1892a.)

BOSWELL, P. G. H. 1929.
_Murby._

BRINKMANN, R. 1926.
Uber die sedimentäre Abbildung epirogenener Bewegungen sowie über das Schichtungsproblem
_Nachrichten Gesellsch. Wiss. Göttingen, M-P Klasse, 1925._

BUCKMAN, S. S. 1913.
The 'Kelloway Rock' of Scarborough.
1915.
A palaeontological classification of the Jurassic rocks of the Whitby district ; with a zonal table of _Lias_ ammonites.
In : Fox-Strangways and Barrow, 1915.

COOKE, J. H. 1896.
A section in the Lower Oolites of Scarborough.
_Naturalist, 1896._

A Survey of the Mollusca of the British Great Oolite Series
_Palaeeont. Soc._


FOSSILS

On the subdivisions of the Speeton Clay.

Quart. Journ. Geol. Soc., 45

A review of the Speeton clays.


LECKENBY, J. 1859.
On the Kelloway Rock of the Yorkshire Coast.


Notes on Dogger horizons in north-east Yorkshire.


PHILLIPS, J. 1829.
Illustrations of the Geology of Yorkshire; part 1: The Yorkshire Coast.


RASTALL, R. H. 1905.
The Blea Wyke Beds and the Dogger in north-east Yorkshire.


RASTALL, R. H., and J. E. HEMINGWAY. 1939.
The Blea Wyke Beds and the Dogger at Peak, Yorkshire

Geol. Mag., 76.

RICHARDSON, L. 1912.
The Lower Oolitic Rocks of Yorkshire.


ROWE, A. W. 1904.
The White Chalk of the Yorkshire coast.


SHEPPARD, T. 1939.
William Smith and the Hackness Quarries.


SIMPSON, M. 1868.
A Guide to the Geology of the Yorkshire Coast. Illustrated with Sections, 4th (3rd) edit.

Whitby and London.

SPATH, L. F. 1923

Geol. Surv.

1924.
On the Ammonites of the Speeton Clay and the Subdivisions of the Neocomian.

Geol. Mag., 61

1926.


1938.
A Catalogue of the Ammonites of the Liassic Family Liparoceratidae in the British Museum (Natural History).

Brit. Mus.

1941.

Palaeont Soc.
The ammonite zones of the Lias.
Geol. Mag., 79.

Palaeont. Soc.

U-shaped markings on Estuarine sandstone near Blea Wyke.

Revised Nomenclature for Yorkshire Estuarine Series.
Geol. Mag., 86, p. 263.

The Yorkshire Lias.
London.

The Speeton preglacial shell bed.
Naturalist, 1938.

North-East Yorkshire.

The Corallian rocks of the Howardian Hills (Yorkshire).

British Regional Geology—East Yorkshire and Lincolnshire.
Geol. Surv.

The Lower Corallian Rocks of the Yorkshire Coast and Hackness Hills.

Wright, C. W. and E. V. Wright. 1937.
The Speeton Clays of East Yorkshire.

The Chalk of the Yorkshire Wolds.

On the Subdivisions of the Inferior Oolite in the South of England, compared with the Equivalent Beds of that Formation on the Yorkshire Coast.

A Geological Survey of the Yorkshire coast.
Whitby.
FRESH WATER ALGAE

Compiled by G. B. Walsh.

The following list has been compiled chiefly from W. West and G. S. West, "Alga Flora of Yorkshire", Botanical Transaction of the Yorkshire Naturalists' Union, Vol. 5, 1901, and from various reports in the "Naturalist." We are deeply indebted to Mr. A. Malins Smith, M.A., who has brought it completely up-to-date in the light of Fritsch's revision of West's "British Fresh-Water Algae", and has added some of his own unpublished local records.

The following abbreviations are used:—

CLASS I ISOKONTAE
GROUP 1 VOLVOCALES
CHLAMYDOMONADACEAE

GONIUM Mueller
pectorela Muell.—Scarborough Mere (W.).
PANDORINA Bory em. Pringsheim
morum (Muell.) Bory—Scarborough Mere (W.).

SPHAERELLACEAE

SPHAERELLA Sommerfeldt
lacustris (Girod.) Wittr.—Seamer, Scarborough Mere (W.).

VOLVOX (Linnaeus) Ehrenberg
globator Ehr.—Pool on Seamer Moor (D.W.B.).

PHACOTACEAE

PHACOTUS Perty
lenticularis (Ehr.) Stein—Pond in Valley Gardens, Scarborough, 1943 (A.M.S.).

Palmellaceae

SPHAEROCYSTIS Chodat
schoeteri Chod.—Peaty pools on moor near Cross Cliff, 1929 (A.M.S.).

GLOEOCYSTIS Naegeli
gigas (Kuetz.) Lag. (= G. ampla Kuetz.)—Scarborough Mere (W.).
vesiculosa Naeg.—On moist ground, White Nab, Scarborough (W.).

TETRASPORACEAE

TETRASPORA Link
gelatinosa (Vauch.) Desv.—Levisham (W.).

APIOCYSTIS Naegeli
brauniana Naeg.—Scarborough Mere (W.).
GROUP 2 CHLOROCOECALES

CHLOROCOCCACEAE

CHARACIUM Braun, A.

heteromorphum Reinsch—Scarborough Mere (W.).

HYDRODICTYACEAE

PEDIASTRUM Meyen

angulosum (Ehr.) Men.—Scarborough Mere (W.).
boryanum (Turp.) Men.—Scarborough Mere (W.); pond in Valley Gardens, Scarborough, 1943 (A.M.S.).
duplex Mey.—Scarborough Mere (W.).
biradiatum Mey.—Scarborough Mere (G.M.).
tetras (Ehr.) Ralfs

forma a. Dispositio cellularum 4—Scarborough Mere (W.).
forma b. Dispositio cellularum 1 + 7—Scarborough Mere (W.).

HYDRODICTYON Roth

reticulatum (L.) Lag.—Scarborough (G.M.).

SELENASTRACEAE

ANKISTRODESMUS Corda em. Ralfs

falcatus (Corda) Ralfs—Scarborough Mere (W.).

var. acicularis (Br., A.) West, G.S.—Scalby Beck, Scarborough Mere (W.).

DACTYLOCOCCUS Naegeli

infusionum Naeg.—Near Scarborough (W.).

DICTYOSPHAERIACEAE

DICTYOSPHAERIUM Naegeli
ehrenbergianum Naeg.—Scarborough Mere (W.).

COELASTRACEAE

COELASTRUM Naegeli

microporum Naeg.—Scarborough Mere (W.).

SCENEDESmus Meyen

antennatus Bréb.—Scarborough Mere (W.).
obliquus (Turp.) Kuetz.—Scalby Beck, Scarborough Mere (W.).
bijugatus (Turp.) Kuetz.—Scarborough Mere. Hayburn Wyke (W.).
quadricauda (Turp.) Bréb.—Scarborough Mere (W.); pond in Valley Gardens, Scarborough, 1943 (A.M.S.).

var. abundans Kirchn.—Scalby Beck (W.).
denticulatus Lag., var. linearis Hansg.—River Derwent, Forge Valley (W.).

GROUP 3 ULOTRICHALES

ULOTRICHACEAE

ULOThRIX Kuetzing

subtilis Kuetz., var. variabilis (Kuetz.) Kirchn.—Near Scarborough (W.).

ULVACEAE

ENTEROMORPHA Link

intestinalis (L.) Link—Not uncommon, Scarborough district (G.B.W.).
FRESH WATER ALGAE

MICROSPORACEAE

MICROSPORA Thuret
floccosa (Vauch.) Thur.—Peaty pools on moors, Cross Cliff, 1929 (A.M.S.).
tumidula Haz.—Peaty pools on moors, Cross Cliff, 1929 (A.M.S.).
stagnum (Kuetz.) Lag.—Newton Dale, peaty pools on moors, Cross Cliff, 1929 (A.M.S.).

PRASIOLACEAE

PRASIOLA Agardh
crispa (Lightf.) Men.—Scarborough (W.).

CLADOPHORACEAE

RHIZOCLONIUM Kuetzing
hieroglyphicum Kuetz., var. kochianum (Kuetz.) Stockm.—Cliffs near Scarborough (W.).

CLADOPHORA Kuetzing
crispata (Roth) Kuetz.—Near Scarborough (W.).
glomerata (L.) Kuetz.—Hayburn Wyke, Scarborough Mere (W.).

GROUP 4 CHAETOPHORALES

CHAETOPHORACEAE

CHAETOPHORA Schrank
incrassata (Huds.) Haz.—Scarborough Mere, 1881, very fine, 1890 (G.M.).

STIGEOCLONIUM Kuetzing
tenue Kuetz.—Scarborough Mere (W.).

MICROTHAMNION (Naegeli) Kirchner
strictissimum Rab.—Seamer, Scarborough Mere (W.).

COLEOCHAETACEAE

COLEOCHAETE Brébisson
scutata Bréb.—Scarborough Mere (W.).

PLEUROCOCCACEAE

PLEUROCOCCUS Meneghini
naegelii Chod.—Abundant.

GROUP 5 OEDOGONIALES

OEDOGONIAE

OEDOGONIUM Link
macrandum Wittr.—Newton Dale, 1929, abundance of dwarf males (A.M.S.).

BULBOCHAETE Agardh
varians Wittr.—Newton Dale, 1929, abundance of dwarf males (A.M.S.).
GROUP 6 CONJUGATAE
MESOTAENIACEAE

CYLINDROCYSTIS Meneghini
brebissonii Men.—Near Scarborough, peat deposit, Filey (W.); peaty pools on moors near Cross Cliff, 1929 (A.M.S.).

ZYGNEMACEAE

SPIROGYRA Link
tenuissima (Hass.) Kuetz.—Scarborough Mere (W.).
inflata (Vauch.) Rab.—Newton Dale, 1929 (A.M.S.).
calospora Cleve—Sleights (A.M.S.).
gracilis (Hass.) Kuetz., var. flavescens (Hass.) Rab.—Scarborough Mere (W.).
catenaeformis (Hass.) Kuetz.—Newton Dale, 1929 (A.M.S.).
longata (Vauch.) Kuetz.—Seamer, Scarborough Mere (W.).
porticalis (Vauch.) Cleve—Scarborough Mere (W.).
condensata (Vauch.) Kuetz.—Scarborough Mere (W.).
nitida (Dillw.) Link—Scarborough Mere (W.).
crassa Kuetz.—Scarborough Mere (W.).

MOUGEOTIACEAE

MOUGEOTIA Agardh
genuflexa (Dillw.) Ag.—Seamer (W.).
pavaria Hass.—Scarborough Mere (W.).
depressa (Hass.) Wittr.—Scarborough Mere (W.).
viridis (Kuetz.) Wittr.—Newton Dale, 1929 (A.M.S.).
gracillima (Hass.) Wittr.—Seamer (W.).

ZYGOGONIUM Kuetzing em. de Bary
ericetorum Kuetz.—On damp ground, White Nab, Scarborough (W.); forming dark purple patches on damp soil on moors near Cross Cliff, and the submerged form in peaty pools in the same area, 1929 (A.M.S.).

DESMIDIACEAE

PENIUM Brébisson em. Luetkemueller
mooreanum Arch.—Moorland stream near Scarborough (W.).
truncatum Bréb.—Peat deposit, Filey (W.).

CLOSTERIUM Nitzsch
libellula Focke—Seamer (W.).
parvulum Naeg.—Near Scarborough, Levisham, Hayburn Wyke (W.).

venus Kuetz.—Scarborough Mere (W.); Flamborough (R.H.P.).
leibleinii Kuetz.—Scarborough Mere, River Derwent, Forge Valley (W.).
moniliferum (Bory) Ehr.—Hayburn Wyke, Staindale (W.); Newton Dale, 1929 (A.M.S.).
ehrenbergii Men.—Near Scarborough (W.); Flamborough (R.H.P.).
striolatum Ehr.—Seamer (W.); Newton Dale, 1929 (A.M.S.).
acerosum (Schrank) Ehr.—Scarborough Mere, River Derwent, Forge Valley (W.).
lanceolatum Kuetz.—Near Scarborough, Hayburn Wyke (W.);
Flamborough (R.H.P.).
lunula (Muell.) Nitzsch—Scarborough Mere (W.); Newton Dale, 1929 (A.M.S.).
acutum Bréb.—Seamer, Scarborough Mere (W.).

PLEUROTAEI NIA Naegeli
truncatum (Bréb.) Naeg.—Newton Dale, 1929 (A.M.S.).

EUASTRUM Ehrenberg
didelta (Turp.) Ralfs—Scarborough Mere (W.).
oblungum (Grev.) Ralfs—Newton Dale, 1929 (A.M.S.).

MICRASTERIAS Agardh
denticulata Bréb.—Seamer (W.).

COSMARIUM Corda
cucumis Corda—Scarborough Mere (W.).
bioculatum Bréb.—Scarborough Mere (W.).
hammeri Reinsch—Scarborough Mere, peat deposit, Filey (W.).
praemorsum Bréb.—Scarborough Mere (W.).
punctulatum Bréb.—Scarborough Mere (W.).
nitidulum de Not.—Beast Cliff (W.).
eboracense West—Staindale (W.).
ochthodes Nordst.—Scarborough Mere (W.).
subspeciesum Nordst.—Scarborough Mere (W.).
globosum Buln.—Peat deposit, Filey (W.).
crenatum Ralfs—Peat deposit, Filey (W.); Flamborough (R.H.P.).
debaryi Arch.—Peat deposit, Filey (W.).
obliquum Nordst.—Peat deposit, Filey (W.).
laeve Rab., var. septentrionale Will.—Scarborough Mere (W.).
cucurbita Bréb.—Scarborough Mere (W.).
palangula Bréb.—Peat deposit, Filey (W.).

STAURASTRUM Meyen
dejunctum Bréb.—Scarborough Mere (W.).
lunatum Ralfs—Scarborough Mere (W.).
hirsutum (Ehr.) Bréb.—Scarborough Mere (W.).
punctulatum Bréb.—Near Scarborough (W.).
muricatum Bréb.—Near Scarborough (W.).
cyrtocerum Bréb.—Scarborough Mere (W.).

ARTHRODESMUS Ehrenberg
incus (Bréb.) Hass.—Moorland stream near Scarborough (W.).

HYALOTHECA Ehrenberg
dissiliens (Smith) Bréb.—Newton Dale, 1929 (A.M.S.).

GROUP 7 SIPHONALES
VAUCHERIACEAE

VAUCHERIA de Candolle
geminata (Vauch.) DC.—Newton Dale, 1929 (A.M.S.).
CLASS II HETEROKONTAE

GROUP 1 HETEROCHLORIDALES
BOTRYOCOCCEAE

BOTRYOCOCUS Kuetzing
braunii Kuetz.—Near Scarborough (W.).

GROUP 2 HETEROCOCCALES
OPHIICYTIACEAE

OPHIICYTIUM Naegeli
majus Naeg.—Newton Dale, 1929 (W.).

GROUP 3 HETEROTRICHALES
TRIBONEMACEAE

TRIBONEMA Derbes et Solier
bombycinum (Ag.) Berb. et Sol.—Near Scarborough (W.).
tenerrimum Heer.—Peat Deposit, Filey (W.).

CLASS CHRYSOPHYCEAE

EUCHROMULINACEAE

CHRYSOXYXIS Stein
globosa Rich—Throxenby Mere, 1943 (A.M.S.).

CLASS RHODOPHYCEAE

GROUP FLORIDEAE
HELMINTHOCLADIACEAE

BATRACHOSPERMUM Roth
moniliforme Roth—Pickering water-cress beds (E.M.L.).
vagum (Roth) Ag.—Scarborough Mere (W.); Pickering (E.M.L.).

CLASS MYXOPHYCEAE (CYANOPHYCEAE)

GROUP CHROOCOCCALES
CHROOCOCCACEAE

MERISMOPEDEA Meyen
glauca (Ehr.) Naeg.—Scalby Beck, Scarborough Mere, peat deposit, Filey (W.).

CHROOCOCUS Naegeli
macrococcus Rab.—Cornelian Bay (W.).

APHANOCAPS A Naegeli
rivularis (Carm.) Rab.—Scarborough Mere (W.).
GROUP HORMOGONEALES
OSCILLATORIACEAE

OSCILLATORIA Vaucher
limosa Ag.—Scarborough Mere, Hayburn Wyke (W.).
tenuis Ag.—Seamer (W.).
formosa Bory—Scarborough (W.).

SPIRULINA Turpin
major Kuetz.—Scarborough (W.).

PHORMIDIUM Kützing
autumnale (Ag.) Gom.—Scarborough (G.N.).

SCYTONEMATACEAE

TOLYPOTHRIX Kützing
tenuis Kuetz.—Near Scarborough (W.).

RIVULARIACEAE

RIVULARIA (Roth) Agardh
haematites (DC.) Ag.—Moorland rill near Scarborough (W.).

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The following list has been compiled from:

2. Transactions of the Hull Scientific and Field Naturalists' Society, very kindly compiled and communicated by Mr. H. M. Foster.

The classification of the genera arranged in ten sub-orders is according to Hendey, 1937, and the nomenclature is according to Hustedt, "Die Süßwasser-flora Mitteleuropas", 1930.

We are deeply indebted to the Rev. R. Fraser Bastow, F.R.M.S., who has helped and advised us in many ways, especially in classification and nomenclature.

Mr. Ward states that though the Hole of Horcum, from which there are many records, is plentifully supplied with water, there is a comparative dearth of species and individuals. He attributes this partly to lack of dissolved silica in the water and partly to the fact that the locality is a deep steep-sided depression which is deprived of the full intensity of the morning and evening sunlight.

In the neighbourhood of Thornton-le-Dale the best results have been obtained in the ponds and sluggish streams south of the Pickering-Scarborough highroad.

The following abbreviations have been used:

G.N.—G. Norman. West—W. & G. S. West as above.

ALGAE
Class BACILLARIOPHYCEAE—DIATOMEAE
Sub-order DISCINEAE
COSCINODISCACEAE
MELOSIRA Agardh
varians Ag., C.A.—Frequent; Scalby Beck (West); Thornton-le-Dale (W.W.).
distans (Ehr.) Kuetz., var. nivalis (Smith, W.) van Heurck—Lockton (West).

arenaria Moore—Near Scarborough (West); Thornton-le-Dale, Hole of Horcum (W.W.).

sulcata (Ehr.) Kuetz.—Filey Brigg (R.H.P.).

HYALODISCUS Ehrenberg

stelliger Bail.—Flamborough (G.N.).

CYCLOTELLA Kuetzing

kuetzingiana Thwaites—Abundant near Scarborough, 6/96 (West).

COSCINODISCUS Ehrenberg

radiatus Ehr.—Filey Brigg, Flamborough, in the stream at Little Thornwick Bay (G.N.).

excentricus Ehr.—Filey Brigg (G.N.).

culus-iridis Ehr.—Filey Brigg, Flamborough (F.W.M.).

centralis Ehr.—Flamborough (F.W.M.).

normanii Greg.—Flamborough (F.W.M.).

THALASSIONEMA Grunow ex Hustedt

nitzschioides Hust.—Rock pools, Filey (R.H.P.).

ACTINODISCACEAE

ACTINOPTYCHUS Ehrenberg

undulatus (Bail.) Ralfs—Abundant at Filey Brigg (R.H.P.).

Sub-order AULACODISCINEAE

EUPODISCACEAE

EUPODISCUS Ehrenberg

argus (Ehr.) Smith, W.—Flamborough, from an ascidian (G.N.).

Sub-order AULISCINEAE

AULISCACEAE

AULISCUS Ehrenberg

sculptus (Smith, W.) Ralfs—Flamborough (G.N.).

Sub-order BIDDULPHINEAE

BIDDULPHIACEAE

BIDDULPHIA Gray

rhombus (Ehr.) Smith, W.—Flamborough (F.W.M.).

Sub-order ARAPHIDINEAE

FRAGILARIACEAE

FRAGILARIA Lyngbye

capucina Desm.—Lockton, Scarborough Mere (West); Thornton-le-Dale (W.W.).

var. mesolepta Ehr.—Lockton (West); Thornton-le-Dale (W.W.).

var. lanceolata Grun.—Thornton-le-Dale (W.W.).

harrisonii Smith, W.—Thornton-le-Dale (W.W.).

var. dubia Grun.—Thornton-le-Dale (W.W.).

construens (Ehr.) Grun.—Thornton-le-Dale (W.W.).

var. venter (Ehr.) Grun.—Thornton-le-Dale (W.W.).
pinnata Ehr.—Thornton-le-Dale (W.W.).
mutabilis (Smith, W.) Grun.—Scarborough (West).
virescens Ralfs—Hole of Horcum, Thornton-le-Dale (W.W.).
var. capitata Kr.—Thornton-le-Dale (W.W.).
var. mesolepta Rab.—Thornton-le-Dale (W.W.). First British record.
striatula Lyngb.—Rock pools, Filey (G.N.).
brevi striata Grun.—Thornton-le-Dale (W.W.).
hyalina Kuetz.—Scarborough (G.N.).

SYNEDRA Ehrenberg
pulchella (Ralfs) Kuetz.—Hayburn Wyke (West).
var. lanceolata O’Meara (= minutissima Smith, W.)—Scarborough Mere, Hayburn Wyke, Scalby Beck, R. Derwent in Forge Valley (West).
ulna (Nitzsch) Ehr.—Peat deposit, Filey; Scalby Beck, R. Derwent in Forge Valley, Staindale (West); Thornton-le-Dale, Hole of Horcum (W.W.).
var. oxyrynchus (Kuetz.) Hust.—Thornton-le-Dale (W.W.).
forma contracta Hust.—Thornton-le-Dale (W.W.). First British record.
var. ramesi (Her. et Per.) Hust.—Thornton-le-Dale (W.W.).
First British record.
var. danica (Kuetz.) Grun.—Thornton-le-Dale (W.W.).
acus Kuetz., var. radians (Kuetz.) Hust.—Thornton-le-Dale (W.W.).
var. delicatissima (Smith, W.) Grun.—Scarborough (R.H.P.).
gaillonii (Bory) Ehr.—Flamborough, in dredgings (R.H.P.).
affinis (Kuetz.)—Filey, Flamborough (R.H.P.).
var. fasciculata (Kuetz.) Grun.—Filey (R.H.P.).

MERIDION Agardh
circulare Ag.—Thornton-le-Dale (W.W.).
var. constrictum (Ralfs) van Heurck—Thornton-le-Dale (W.W.).

DIATOMA de Candolle
vulgare Bory—Lockton, Hayburn Wyke, Scalby Beck (West); Thornton-le-Dale (W.W.).
var. producta Grun.—Thornton-le-Dale (W.W.).
var. capitulata Grun.—Thornton-le-Dale (W.W.).
var. grandis (Smith, W.) Grun.—Thornton-le-Dale (W.W.).
hiemale (Lyngb.) Heib.—Lockton, Scarborough (West).
elongatum Ag.—Thornton-le-Dale (W.W.).

TABELLARIA Ehrenberg
flocculosa (Roth) Kuetz.—Saltergate (G.N.); Scarborough (West); Thornton-le-Dale (W.W.).

GRAMMATOPHORA Ehrenberg
marina (Lyngb.) Kuetz.—Filey (G.N.).
var. macilenta (Smith, W.) Grun.—Filey, Flamborough (G.N.).

RHABDOMENA Kuetzing
arcuatum Kuetz.—Filey (G.N.).
minutum Kuetz.—Filey (G.N.).
LICHMOPHORA Agardh

paradoxa (Lyngb.) Ag.—Flamborough (G.N.).
communis (Heib.) Grun.—Filey Brigg, Flamborough (R.H.P.).
dalmatica (Kuetz.) Grun.—Flamborough (G.N.).
gracilis (Ehr.) Grun.—Rock pools, Filey (R.H.P.).
  var. anglica Kuetz.—Filey Brigg, abundant (R.H.P.).

Sub-order RAPHIDIOIDINEAE

EUNOTIACEAE

EUNOTA Ehrenberg

arcus Ehr.—Goathland (West); Thornton-le-Dale (W.W.).
  var. fallax Hust.—Thornton-le-Dale (W.W.). First British record.
monodon Ehr.—Thornton-le-Dale (W.W.).
major (Smith, W.) Hust.—Seamer (West).
tenella (Grun.) Hust.—Thornton-le-Dale (W.W.).
gracilis (Ehr.) Rab.—Hole of Horcum (W.W.).
exigua (Bréb.) Grun.—Thornton-le-Dale (W.W.).
pectinalis (Kuetz.) Rab.—Beast Cliff, Staindale, Scarborough (West);
  Saltergate (G.N.); Thornton-le-Dale (W.W.).
  var. minor (Kuetz.) Rab.—Thornton-le-Dale (W.W.).
  var. undulata (Ralfs) Rab.—Near Scarborough, Goathland (West);
  Saltergate (G.N.).
lunaris (Ehr.) Grun.—Staindale (West); Thornton-le-Dale (W.W.).

Sub-order MONORAPHIDINEAE

ACHNANTHACEAE

ACHNANTHES Bory

affinis Grun.—Thornton-le-Dale (W.W.).
microcephala Kuetz.—Scarborough Mere (West); Flamborough
  (R.H.P.).
exilis Kuetz.—Hayburn Wyke, R. Derwent in Forge Valley, Beast
  Cliff (West).
lanceolata Bréb.—Thornton-le-Dale (W.W.).

EUCOCCONEIS Cleve

flexella (Kuetz.) Cleve—Thornton-le-Dale (W.W.); Staindale (West).

RHOICOSPHENIA Grunow

curvata (Kuetz.) Grun.—Hayburn Wyke, Scalby Beck (West);
  Thornton-le-Dale (W.W.).
  var. marina (Smith, W.) Schult.—Flamborough (R.H.P.).

COCCONEIS Ehrenberg

pediculus Ehr.—Frequent, Hayburn Wyke, Scalby Beck (West);
  Thornton-le-Dale (W.W.).
placentula Ehr.—Seamer, R. Derwent in Forge Valley (West);
  Thornton-le-Dale (W.W.).
  var. euglypta (Ehr.) C.eve—Thornton-le-Dale (W.W.).
scutellum Ehr.—Flamborough (G.N.); Filey (R.H.P.).
  var. stauroneiformis Smith, W.—Flamborough (R.H.P.).
  var. parva Grun.—Flamborough (F.W.M.).
MASTOGLOIA Thwaites

grevillei Smith, W.—Thornton-le-Dale (W.W.).

DIPLONEIS Ehrenberg

ovalis (Hilse) Cleve—Thornton-le-Dale (W.W.).

var. oblongella (Naeg.) Cleve—Thornton-le-Dale (W.W.).

elliptica (Kuetz.) Cleve—Thornton-le-Dale, Hole of Horcum (W.W.); Seamer, moist ground, White Nab, Beast Cliff, Staindale (West).

didyma (Ehr.) Cleve—Filey Brigg (R.H.P.).

AMPHIPLEURA Kuetzing

pellucida Kuetz.—Scarborough Mere (West); Hole of Horcum (W.W.).

FRUSTULIA Agardh

rhomboides (Ehr.) de Toni—Thornton-le-Dale (W.W.).

var. saxonica (Rab.) de Toni—Saltergate (G.N.); Thornton-le-Dale, Hole of Horcum (W.W.).

vulgaris Thwaites—Thornton-le-Dale (W.W.).

var. capitata Kr.—Thornton-le-Dale (W.W.). First British record.

PLEUROSIGMA Smith W.

strigosum Smith, W.—Flamborough (G.N.).

rigidum Smith, W.—Flamborough (G.N.).

decorum Smith, W.—Flamborough (G.N.).

affine Grun., var. normanii Ralfs—Filey Brigg (R.H.P.).

GYROSIGMA Hassall

acuminatum (Kuetz.) Rab.—Seamer, Scarborough, Cornelian Bay (West); Thornton-le-Dale (W.W.).

attenuatum (Kuetz.) Rab.—Thornton-le-Dale (W.W.).

kuetzingii (Grun.) Cleve—Thornton-le-Dale (W.W.).

spencerii (Smith, W.) Cleve—Seamer, Hayburn Wyke, R. Derwent in Forge Valley (West).

scalproides (Rab.) Cleve—Thornton-le-Dale (W.W.).

STAURONEIS Ehrenberg

phoenicenteron Ehr.—Near Scarborough, Seamer (West); Saltergate (G.N.); Thornton-le-Dale, Hole of Horcum (W.W.); Little Thornwick Bay (R.H.P.).

anceps Ehr.—R. Derwent in Forge Valley (West); Little Thornwick Bay (R.H.P.); Thornton-le-Dale (W.W.).

forma gracilis (Ehr.) Cleve—Thornton-le-Dale (W.W.).

forma linearis (Ehr.) Cleve—Thornton-le-Dale (W.W.).

var. sibirica Grun.—Hole of Horcum (W.W.).

acuta Smith, W.—Thornton-le-Dale (W.W.); Little Thornwick Bay (R.H.P.).

legumen Ehr.—Little Thornwick Bay (R.H.P.); Thornton-le-Dale (W.W.).

smithii Grun.—Little Thornwick Bay (R.H.P.); Thornton-le-Dale (W.W.).

var. incisa Pant.—Thornton-le-Dale (W.W.). First British record.
DIATOMS

CALONEIS Cleve

*alpestris* (Grun.) Cleve—Thornton-le-Dale (W.W.).

*amphisbaena* (Bory) Cleve—Scarborough Mere, Seamer (West); Thornton-le-Dale (W.W.).

*latuscula* (Kuetz.) Cleve—Thornton-le-Dale (W.W.).


*silicula* (Ehr.) Cleve—Hole of Horcum, Thornton-le-Dale (W.W.).

var. *trunculata* Grun.—Thornton-le-Dale (W.W.).

var. *gibberula* (Kuetz.) Grun.—Staindale, Hayburn Wyke (West); Thornton-le-Dale, Hole of Horcum (W.W.).


*schumanniana* (Grun.) Cleve—Thornton-le-Dale (W.W.).


*liber* (Smith, W.) Cleve—Filey Brigg (R.H.P.).

*exilis* (Kuetz.) Cleve—Cornelian Bay (West).

ANOMOEONEIS Pfitzer

*sphaerophora* (Kuetz.) Pfitz.—Thornton-le-Dale (W.W.).

*serians* (Bréb.) Cleve—Thornton-le-Dale (W.W.).

forma *thermalis* (Grun.) Hust.—Thornton-le-Dale (W.W.).

*exilis* (Kuetz.) Cleve—Cornelian Bay (West).

NEIDIUM Pfitzer

*bisulcatum* (Lag.) Cleve—Thornton-le-Dale (W.W.).


*affine* (Ehr.) Cleve—Common; Cornelian Bay (West); Thornton-le-Dale (W.W.).

var. *amphirhynchus* (Ehr.) Cleve—Seamer (West); Hole of Horcum, Thornton-le-Dale (W.W.).

*iridis* (Ehr.) Cleve—Hole of Horcum, Thornton-le-Dale (W.W.).

forma *vernale* Reich.—Thornton-le-Dale (W.W.).

var. *amphigomphus* (Ehr.) van Heurck—Near Scarborough (West); Hole of Horcum, Thornton-le-Dale (W.W.).

var. *ampliatum* (Ehr.) Cleve—Thornton-le-Dale (W.W.).

*productum* (Smith, W.) Cleve—Thornton-le-Dale (W.W.).

*longiceps* (Greg.) Ross (= *affine* var. *longiceps* (Greg.) Cleve)—Thornton-le-Dale (W.W.). First British record.

NAVICULA Bory

*cuspidata* Kuetz.—Seamer, Scarborough Mere (West); Thornton-le-Dale (W.W.).

var. *ambigua* (Ehr.) Cleve—Thornton-le-Dale (W.W.).

*hustedtii* Kr.—Thornton-le-Dale (W.W.). First British record.

*binodis* Ehr.—Thornton-le-Dale (W.W.).

*bacillum* Ehr.—Thornton-le-Dale (W.W.).
pupula Kuetz.—Thornton-le-Dale (W.W.).
  var. rectangularis (Greg.) Grun.—Thornton-le-Dale (W.W.).
  var. capitata Hust.—Thornton-le-Dale (W.W.).
  var. rostrata Hust.—Thornton-le-Dale (W.W.). First British record.
protracta Grun.—Thornton-le-Dale (W.W.).
placenta Ehr.—Thornton-le-Dale (W.W.).
cryptocephala Kuetz.—Thornton-le-Dale (W.W.).
rhynchocephala Kuetz.—Hole of Horcum, Thornton-le-Dale (W.W.).
viridula Kuetz.—Hole of Horcum, Thornton-le-Dale (W.W.).
radioa Kuetz.—Hole of Horcum, Thornton-le-Dale (W.W.); Scalby Beck, Scarborough, Hayburn Wyke, Staindale, R. Derwent in Forge Valley (West).
rehnhardtii Grun.—Hole of Horcum, Thornton-le-Dale (W.W.).
  forma gracilior Grun.—Thornton-le-Dale (W.W.). First British record.
dicephala (Ehr.) Smith, W.—Goathland (West); Thornton-le-Dale (W.W.).
placentula (Ehr.) Grun.—Thornton-le-Dale (W.W.).
  forma latiuscula (Grun.) Meist.—Thornton-le-Dale (W.W.). First British record.
exigua (Greg.) Muell., O.—Thornton-le-Dale (W.W.).
lanceolata (Ag.) Kuetz.—Thornton-le-Dale (W.W.).
oblonga Kuetz.—Seamer (West); Thornton-le-Dale (W.W.).
tuscula (Ehr.) Grun.—Thornton-le-Dale (W.W.).
pygmaea Kuetz.—Thornton-le-Dale (W.W.).
distans (Smith, W.) van Heurck—Flamborough, Filey Brigg (R.H.P.).
smithii Bréb.—Flamborough, Filey Brigg (R.H.P.); Hole of Horcum (W.W.).
lyra Ehr.—Flamborough, dredgings (R.H.P.).
gracilis Ehr.—Saltergate (G.N.); Hole of Horcum (W.W.).
tumida (Bréb.) Cleve—Seamer (West).
laevissima Kuetz.—Saltergate (West).
grevillei Ag.—Flamborough (R.H.P.).
directa Ralfs—Filey Brigg (R.H.P.).
inflexa Ralfs—Filey Brigg (R.H.P.).
palpebralis Bréb.—Filey Brigg (R.H.P.).
copulorum Bréb.—Filey Brigg (R.H.P.).
ramosissimum (Ag.) Cleve—Filey Brigg (R.H.P.).
PINNULARIA Ehrenberg
nobilis Ehr.—Seamer (West).
hemiptera (Kuetz.) Cleve—Rocky stream, Saltergate (G.N.).
appendiculata (Ag.) Cleve—Near Scarborough (West); Thornton-le-Dale (W.W.).
subcapitata Greg.—Thornton-le-Dale (W.W.);
var. hilseana (Jan.) Muell., O.—Thornton-le-Dale (W.W.).
interrupta Smith, W.—Levisham (West); Thornton-le-Dale (W.W.);
forma minutissima Hust.—Thornton-le-Dale (W.W.). First British record.
mesolepta (Ehr.) Smith, W.—Near Scarborough (West); Saltergate (G.N.); Thornton-le-Dale (W.W.);
globiceps Greg.—Thornton-le-Dale (W.W.).
microstauron (Ehr.) Cleve—Thornton-le-Dale (W.W.);
var. brebissonii (Kuetz.) Hust.—Lockton, Cleava Cliffs north of Scalby (West); Thornton-le-Dale (W.W.).
divergens Smith, W.—Seamer (West); Thornton-le-Dale (W.W.).
var. elliptica Grun.—Thornton-le-Dale (W.W.).
lata (Bréb.) Smith, W.—Moorland stream near Scarborough (West); Thornton-le-Dale (W.W.).
borealis Ehr.—Thornton-le-Dale (W.W.).
gibba Ehr.—Lockton (West); Saltergate (G.N.); Thornton-le-Dale (W.W.).
stomatophora Grun.—Thornton-le-Dale (W.W.).
acrosphaeria Bréb.—Peat deposit, Filey (West); Thornton-le-Dale (W.W.).
major (Kuetz.) Cleve—Seamer, Levisham (West); Hole of Horcum, Thornton-le-Dale (W.W.).
viridis (Nitzsch) Ehr.—Saltergate (G.N.); Hole of Horcum, Thornton-le-Dale (W.W.).
var. sudetica (Hilse) Hust.—Hole of Horcum, Thornton-le-Dale (W.W.).
nobilis Ehr.—Seamer (West); Thornton-le-Dale (W.W.).
tabellaria (Ehr.) Kuetz.—Lockton (West); Saltergate (G.N.).
TRACHYNEIS
aspera (Ehr.) Cleve—Filey Brigg (R.H.P.).
AMPHIPRORA (Ehrenberg) Cleve
paludosa Smith, W.—Filey Brigg (R.H.P.).

GOMPHONEMACEAE

GOMPHONEMA Agardh
acuminatum Ehr.—Seamer, Scarborough Mere, Staindale (West):
Hole of Horcum, Thornton-le-Dale (W.W.).
var. coronatum (Ehr.) Smith, W.—Thornton-le-Dale (W.W.).
angustatum (Kuetz.) Rab.—Thornton-le-Dale (W.W.).
var. productum Grun.—Thornton-le-Dale (W.W.).
intricatum Kuetz.—Thornton-le-Dale (W.W.).
var. vibrio (Ehr.) Cleve—Thornton-le-Dale (W.W.).
lanceolatum Ehr.—Thornton-le-Dale (W.W.).
**NATURAL HISTORY OF THE SCARBOROUGH DISTRICT**

longiceps Ehr.—Thornton-le-Dale (W.W.). First British record.

var. subclavatum Grun.—Thornton-le-Dale (W.W.).

forma gracile Hust.—Thornton-le-Dale (W.W.). First British record.

constrictum Ehr.—Scarborough Mere, Scalby Beck (West).

var. capitatum (Ehr.) van Heurck—Seamer (West).

olivaceum (Lyngh.) Kuetz.—Scarborough Mere (West); Flamborough (R.H.P.); Thornton-le-Dale (W.W.).

parvulum Kuetz. var. micropus (Kuetz.) Cleve—Scarborough Mere, Cornelian Bay, Staindale (West).

gracile Ehr.—Hole of Horcum (W.W.).

**CYMBELLACEAE**

**CYMBELLA** Agardh

austriaca Grun.—Thornton-le-Dale (W.W.). First British record.

naviculiformis Auersw.—Thornton-le-Dale (W.W.).

amplexifera Naeg.—Thornton-le-Dale (W.W.).

ehrenbergii Kuetz.—Seamer, Scarborough Mere (West); Thornton-le-Dale (W.W.).

prostrata (Berkl.) Cleve—Thornton-le-Dale (W.W.).

gracilis (Rab.) Cleve—Thornton-le-Dale (W.W.).

affinis Kuetz.—Thornton-le-Dale (W.W.).

parva (Smith, W.) Cleve—Common; Staindale, Hayburn Wyke, (West), Thornton-le-Dale (W.W.).

cymbiformis (Kuetz.) van Heurck—Thornton-le-Dale (W.W.).

lanceolata (Ehr.) van Heurck—Staindale, Hayburn Wyke, Cleava Cliffs north of Scalby (West); Thornton-le-Dale (W.W.).

helvetica Kuetz.—Saltergate (G.N); Thornton-le-Dale (W.W.).

cistula (Hempr.) Grun.—Common; Staindale (West); Thornton-le-Dale (W.W.).

var. maculata (Kuetz.) van Heurck—Flamborough (R.H.P.);

Hole of Horcum (W.W.).

aspera (Ehr.) Cleve—Thornton-le-Dale (W.W.).

cuspidata Kuetz.—Levisham (West); Saltergate (G.N.); Hole of Horcum (W.W.).

microcephala Grun.—Flamborough (G.N.); Hole of Horcum (W.W.).

gastroides Kuetz.—Hole of Horcum (W.W.).

**AMPHORA** Ehrenberg

ovalis Kuetz.—Seamer, Scarborough Mere, Staindale (West); Hole of Horcum, Thornton-le-Dale (W.W.).

forma gracilis (Ehr.) Cleve—Thornton-le-Dale (W.W.).

**EPITHEMIACEAE**

**EPITHEMIA** Brébisson

argus Kuetz.—Moist ground, White Nab (West); Thornton-le-Dale (W.W.).

var. alpestris (Grun.) Rab.—Staindale, Beast Cliff (West).

muelleri Fricke—Thornton-le-Dale (W.W.).
**DIATOMS**

**zebra** (Ehr.) Kuetz.—Thornton-le-Dale (W.W.).

**turgida** (Ehr.) Kuetz.—Common; Levisham, Hayburn Wyke, Cleava Cliffs north of Scalby, on moist ground at White Nab (West); Hole of Horcum, Thornton-le-Dale (W.W.).

var. **granulata** (Ehr.) Kuetz.—Thornton-le-Dale (W.W.).

**sorex** Kuetz.—Thornton-le-Dale (W.W.).

**westernmanni** Kuetz.—Staindale, Levisham (West).

**RHOPALODIA** Mueller, O.

**gibba** Kuetz.—Scarborough Mere, Staindale, Levisham, on moist ground at White Nab (with sporangial forms) (West).

var. **ventricosa** (Ehr.) Grun.—Lockton (West); Thornton-le-Dale (W.W.).

**BACILLARIACEAE**

**HANTZSCHIA** Grunow

**amphioxys** (Ehr.) Grun.—Scarborough Mere (West); Hole of Horcum, Thornton-le-Dale (W.W.).

var. **major** Grun.—Thornton-le-Dale (W.W.).

forma **capitata** Muell., O.—Thornton-le-Dale (W.W.).

**virgata** (Rop.) Grun.—Flamborough (G.N.).

**NITZSCHIA** Hassall

**tryblionella** Hantzsch—Thornton-le-Dale (W.W.).

var. **victoriae** Grun.—Thornton-le-Dale (W.W.).


**constricta** (Greg.) Grun.—Filey Brigg (R.H.P.).

**apiculata** (Greg.) Grun.—Thornton-le-Dale (W.W.).

**hungarica** Grun.—Thornton-le-Dale (W.W.).

**angustata** (Smith, W.) Grun.—Thornton-le-Dale (W.W.).

var. **acuta** Grun.—Thornton-le-Dale (W.W.).

**dubia** Smith, W.—Hole of Horcum, Thornton-le-Dale (W.W.).

**thermalis** Kuetz.—Thornton-le-Dale (W.W.). First British record.


**sinuata** (Smith, W.) Grun.—Thornton-le-Dale (W.W.).

**linearis** Smith, W.—Hayburn Wyke (West); Thornton-le-Dale (W.W.).

**recta** Hantzsch—Thornton-le-Dale (W.W.).

**dissipata** (Kuetz.) Grun.—Seamer (West); Thornton-le-Dale (W.W.).

**acuta** Hantzsch—Thornton-le-Dale (W.W.).

**gracilis** Hantzsch—Thornton-le-Dale (W.W.).

**palea** (Kuetz.) Smith, W.—Thornton-le-Dale (W.W.).

**sigmoidea** (Ehr.) Smith, W.—Near Scarborough, Seamer (West); Hole of Horcum, Thornton-le-Dale (W.W.).

**sigma** (Kuetz.) Smith, W. var. **rigidula** Grun.—Filey Brigg (R.H.P.).

**acicularis** Smith, W.—Seamer, Scalby Beck (West); Thornton-le-Dale (W.W.).

**denticula** Grun.—Near Scarborough, Beast Cliff (West); Flamborough (R.H.P.).

**insignis** Greg.—Dredgings, Flamborough (G.N.).
angularis Smith, W.—Filey Brigg (R.H.P.).

Sub-order SURIRELLINEAE
SURIRELLACEAE

SURIRELLA Turpin
biseriata Bréb.—Scarborough Mere, Staindale (West); Hole of Horcum, Thornton-le-Dale (W.W.).
var. bifrons (Ehr.) Hust.—Thornton-le-Dale (W.W.).
var. rostrata Schulz.—Thornton-le-Dale. First British record.
linearis Smith, W.—Staindale (West); Thornton-le-Dale (W.W.).
var. constricta (Ehr.) Grun.—Thornton-le-Dale (W.W.).
var. helvetica (Brun.) Meist.—Thornton-le-Dale (W.W.).
birostrata Hust.—Thornton-le-Dale (W.W.).
angustata Kuetz.—Hole of Horcum, Thornton-le-Dale (W.W.); Flamborough (R.H.P.).
delicatissima Lew.—Thornton-le-Dale (W.W.).
robusta Ehr.—Thornton-le-Dale (W.W.).
var. splendida (Ehr.) van Heurck—Scarborough Mere (West).
ovata Kuetz.—Staindale (West); Thornton-le-Dale (W.W.).
var. pinnata (Smith, W.) van Heurck—Seamer, Scalby Beck (West).
var. crumena (Bréb.) van Heurck—Saltergate (G.N.); Hole of Horcum, Thornton-le-Dale (W.W.).
spiralis Kuetz.—Staindale (West); Hole of Horcum, Thornton-le-Dale (W.W.).
ovalis Bréb.—Seamer, Beast Cliff (West); Flamborough (R.H.P.).
angustata Kuetz.—Little Thornwick Bay (R.H.P.).

STENOPTEROBIA Brébisson
intermedia Lew.—Thornton-le-Dale (W.W.).

CYMATOPLEURA Smith, W.
elliptica (Bréb.) Smith, W.—Levisham (West).
solea (Bréb.) Smith, W.—Levisham (West); Thornton-le-Dale (W.W.).
var. regula (Ehr.) Grun.—Thornton-le-Dale (W.W.).
var. apiculata (Smith, W.) Ralfs—Thornton-le-Dale (W.W.).

CAMPYLODISCUS Ehrenberg
hodgsonii Smith, W.—Flamborough (R.H.P.).
noricus Ehr. var. hibernicus (Ehr.) Grun.—Little Thornwick Bay

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MARINE ALGAE — SEAWEEDS
Dorothy Perkins

Introduction

Between Robin Hood’s Bay and Flamborough Head are stretches of coast where seaweeds grow in abundance. Most seaweeds must have a firm substratum on which to anchor themselves; they cannot grow on sand which blows before the wind and is churned up by the sea, nor on pebbles, for these roll with the ebb and flow of the tide. They favour a rocky shore, whether it be the shale of Robin Hood’s Bay, the limestone and grits of Scarborough and Filey Brigg, or the chalk of Flamborough.

In this district the rocks have a gentle southward dip. Appearing each in turn with a steep northward slope and a gradual southward dip, successive strata have determined the contour of the coastline with its bays and headlands, and have determined too, to some extent, the distribution of its seaweeds.

At Robin Hood’s Bay the shales run out from the shore in a series of rocky ledges or scars which slope gently inland. These, for the most part, are rough and uneven due to weathering, and so provide suitable anchorage for species like Chondrus and Gigartina which can withstand exposure. In the lower half of the intertidal zone the sea runs up between the scars forming shallow pools open to the sea. Here an abundance of algae—Furcellaria, Halidrys, Rhodomela and others—find shelter.

South of Ravenscar there are steep cliffs as far as Hayburn Wyke; both here and at Cloughton Wyke one can get down to the shore, but the rocks at Scalby Ness provide a better hunting-ground for seaweeds. Scarborough North Bay is sandy, but there is a good stretch of rocky coast below the Spa, extending round White Nab and Cornelian Bay as far as Osgodby Nab. Not only does one see some fine rock-pools here but a walk from cliffs to sea at low water gives a good idea of algal zonation. From Red Nab to Filey Brigg, apart from Gristhorpe Bay (rocky), the shore is inaccessible.

Filey Brigg is a line of remarkable rocky ledges extending about half a mile seaward from Carr Nase and bounding Filey Bay on its north side. The top reef is skirted on its south side by masses of huge weathered boulders, and on its north side by a lower outer reef which is always submerged at its eastern end. The Brigg is one of the best collecting grounds along the coast.

South of Filey Bay the chalky ledges and boulders below Speeton cliffs provide anchorage for a few algae (e.g., Porphyra, Enteromorpha, Fucus vesiculosus), but beyond Speeton the sea washes the foot of the steep chalk cliffs as far as Thornwick Bay. There is not such variety of algae at Thornwick and the Landings as on other rocky parts of the coast, partly because the chalky surface is smoother and does not give such efficient anchorage, though Alaria esculenta has been found in deep water off Flamborough Head.
Filey Brigg will serve as an example of the way in which various factors affect algal growth. Below Carr Nase to the south (1 and 3 on the map), the Brigg is sheltered from the tidal wave which sweeps down the coast from the north; nor is it much affected by the north-going tidal streams which here set eastward at a rate of only half a knot (though tidal streams are stronger in Scarborough Bay). The rocks are rough and support a dense algal growth. Channelled wrack grows on steep ledges and boulders near high water mark, knotted wrack and bladder wrack lower down and serrated wrack nearer low water mark. Cladophora, Enteromorpha compressa, Porphyra and Ulva are also common on the rocks. Ulva lactuca, Enteromorpha intestinalis, Chondrus and Ceramium occur in shallow pools.

Beyond Carr Nase both the upper reef and the northern outer reef are much pitted by wave action (2). Their vegetation is comparatively sparse, for with tremendous force breakers dash against the steep faces of these rocks, and in winter when strong N.W. gales are blowing and the tide is rising, the seas are still heavier. On the south side (3) however, the rocks are not so subject to surf action and northerly currents, and are well covered with Fuci, Chondrus and Gigartina, Rhodymenia and Laurencia. Towards the eastern end of the outer reef (4), where the rocks are lower and surf action much less strong, Chondrus crispus and Gigartina clothe the rocks, together with Laurencia and hundreds of tiny brown buttons like young mushrooms—developing Himanthalia. The Dumontia incrassata which grows here is curled and twisted by tidal currents, unlike that growing in sheltered pools.

Seaweeds found on exposed rocks are those which can withstand the effects of wind, rain, sunshine or frost when exposed at low water, or which are sheltered from drying winds and strong sunlight by overhanging Fuci, etc. Rock-pools, not subject to such desiccation, have their own distinctive flora. There are two types of rock-pool on Filey Brigg. On the gently-sloping rocky ledges between the two reefs are shallow, beautiful pools (5). Near high water mark these pools, though extremely cold on a winter’s night, become very warm on a sunny day, and only those algae which can withstand such extremes of temperature can survive throughout the year; nor must they be averse to strong light conditions. Here we find Polysiphonia spp., Ceramium, Ulva and Enteromorpha, Halidrys siliquosa and Dumontia, and the beautiful pink Corallina. Towards low water mark the pools form deep rocky basins and lie in the shade of almost perpendicular rock-faces, and here the growth is more varied and abundant (6). The rocky bottom is luxuriant with the growth of thong weed, tangles, rosy Rhodymenia and emerald-green Ulva, together with Halidrys and Polysiphonia spp. On the sides, sheltered by other weeds, one may sometimes find the beautiful Delesseria sanguinea. Occasionally Bryopsis plumosa or Griffithsia flosculosa may be found; and Membranoptera alata, Polysiphonia spp. and Ceramium spp. are common. The narrow ledges of the steep rock-faces carry only small species such as Laurencia, Lomentaria, Ceramium and stunted specimens of Rhodymenia palmata.
Map of Carr Nase and Filey Brigg
It is only beyond the Brigg, among the tangles of the rocky bottom, that we can obtain those beautiful red weeds of the sea by dredging from a boat.

For general arrangement I have followed Newton’s “Handbook of British Seaweeds” (British Museum, 1928), the nomenclature having been brought up to date by Miss Dickinson of Kew.

Recorders’ initials are in brackets following ecological notes:—

J.R.H.—J. R. Hulme
G.M.—G. Massee
D.P.—Miss D. Perkins
S.L.P.—S. L. Petty
L.S.—Miss L. Scott
T.T.—T. Talbot
A.G.T.—A. G. Theakston
Nat.—The Naturalist
H.W.M.—High Water Mark
L.W.M.—Low Water Mark

It is a great pleasure to acknowledge the help and advice received from Miss Dickinson of the Royal Botanic Gardens, Kew, and from Miss Lorna Scott of the University of Leeds.

MYXOPHYCEAE
COCCOgonales
GLAEOCAPSA Kuetzing
crepidinum Thur.—Rocks near H.W.M., Scarborough (G.M.).

DERMOCARPA Crouan
prasina (Reinsch) Born et Thur.—Epiphytic on Laurencia pinnatifida on Filey Brigg (D.P.); Scarborough (G.M.).
schousboei Thur.—With D. prasina on Filey Brigg (D.P.); Scarborough (G.M.).

HORMOGONALES
SPIRULINA Turner
subsalsa Oer.—Mixed with other algae on Spa wall, Scarborough (G.M.).

OSCILLATORIA Gomont
subuliformis (Thwaites )Gom.—Rare; Scalby Beck, in brackish pools (G.M.).

MICROCOLEUS Desmazières
chthonoplastes (Mert.) Thur.—Rocks of upper intertidal zone, Scarborough, Filey Brigg (G.M., D.P.).

CALOTHRIX Agardh, C.A.
confervicola (Roth) Ag.—Not uncommon on species of Ceramium (G.M.).
scopulorum (Web. et Mohr) Ag.—Forming slimy patches on rocks near H.W.M., Scarborough (G.M.).
ISACTIS Thuret
planar Thur.—On Himanthalia lorea, Scarborough (G.M.).
RIVULARIA Agardh, C. A.
atra Roth—Common on rocks of S. Bay, Scarborough (G.M.).

CHLOROPHYCEAE

CHLOROCHYTRIUM Cohn
immersum Mass.—Scarborough (G.M.).

ULOTRICALES
flacca (Dillw.) Thur.—Epiphytic on other algae in shallow pools, Filey Brigg (D.P.); Robin Hood’s Bay (L.S.).

ULVALES

ENTEROMORPHA Link
compressa (L.) Grev.—Common along coast on intertidal rocks.
intestinalis (L.) Link—Common in rock-pools and on rocks all along the coast.
minima Naeg.—On rocks and concrete tank-traps near H.W.M., Filey Bay (D.P.).
prolifera (Muell.) Ag., J.—Scarborough (J.R.H.).

ULVA Linnaeus
lactuca L. var. latissima (L.) DC.—SEA LETTUCE. Abundant on intertidal rocks and in rock-pools all along the coast.

SIPHONOCladiales

CLADOPHORA Kuetzing
arcta (Dillw.) Kuetz.—On rocks in S. Bay (G.M.); Robin Hood’s Bay (L.S.); Flamborough (Nat., 1923).
fracta (Muell.) Kuetz. var. flexuosa Batt.—Rare; Scarborough (A.G.T.).
var. marina Hauck.—Scalby Beck where it flows into the sea (G.M.).
glaucenscens (Griff. ex Harv.) Harv.—Filey Brigg (D.P.).
gracilis (Griff. ex Harv.) Kuetz.—Robin Hood’s Bay (L.S.).
lanosa (Roth) Kuetz. Scarborough (G.M.).
var. uncialis Thur.—Scarborough (G.M.).
rupeslris (L.) Kuetz.—Common on intertidal rocks and in pools all along the coast (D.P.).
triculosa Kuetz.—Scarborough (G.M.).

CHAETOMORPHA Kuetzing
aerea (Dillw.) Kuetz.—Sandy pools near H.W.M. on northern outer reef of Filey Brigg, but not in quantity (D.P.); Scarborough (G.M.).
melagonium (Web. et Mohr) Kuetz.—HOG’S BRISTLE. Occasionally in pools on northern side of outer reef of Filey Brigg (D.P.); Flamborough (D.P.); and Scarborough (G.M.).
RHIZOCLONIUM Kuetzing
implexum (Dillw.) Batt.—On sandy mud near H.W.M., Filey Bay (D.P.): Robin Hood’s Bay (L.S.).

riparium (Roth) Harv.—Robin Hood’s Bay (Marine Station record).

SIPHONALES

BRYOPSIS Lamour
plumosa (Huds.) Ag.—Rare. On sub-littoral rocks, Cornelian Bay (G.M.): on Spittal Rocks (1949) and on sides of deep rock-pools on Northern side of Filey Brigg (D.P.).

CODIUM Stackhouse
dichotomum (Huds.) Setch.—Sub-littoral rocks, Scarborough (G.M.); rocks at L.W.M., Filey Brigg (D.P.).

PHAEOPHYCEAE

ECTOCARPALES

ECTOCARPUS Lyngbye
confervoides (Roth) Le Jol.—Round Castle Foot (G.M.); Robin Hood’s Bay (Marine Station record).

fasciculatus Harv.—Scarborough (G.M.); Flamborough (Nat., 1932).

tomentosus (Huds.) Lyngb.—North Bay (G.M.); Filey Brigg (D.P.).

PYLAIELLA Bory de Saint Vincent
littoralis (Lyngb.) Kjell. var opposita Kjell.—Common on intertidal rocks all along the coast.

ELACHISTEA Duby
flaccida (Dillw.) Ar.—Relatively common on Halidrys at Robin Hood’s Bay (L.S.).

fucicola (Velley) Ar.—Robin Hood’s Bay (L.S.); Scarborough (G.M.).

scutulata (Smith) Duby—Scarborough (G.M.).

LEATHESIA Gray, S. F.
difformis (L.) Ar.—Summer on Corallina at Robin Hood’s Bay (L.S.); on rocks near L.W.M. fairly common on Filey Brigg but less common at Scarborough (G.M., D.P.).

MYRIACTULA Kuntze
pulvinata (Kuetz.) Kuntze—Epiphytic on fruiting branches of Halidrys siliquosa, Scarborough (G.M.).

CHORDARIA Agardh, C. A.
flagelliformis (Muell.) Ag.—Robin Hood’s Bay (L.S.): Scarborough (G.M.).

EUDESME Agardh, J. G.
virescens (Carm.) Ag., J.—Sand-covered rocks, Cornelian Bay (G.M.).

MESOGLOIA Agardh, C. A.
vermiculata (Smith) Le Jol.—In sheltered pools near L.W.M., on south side of Filey Brigg and at Thornwick Bay (D.P.); Scarborough (A.G.T., G.M.).
MYRIONEMA Greville
strangulans Grev.—Not uncommon on small algae on south side of Filey Brigg below Carr Nase (D.P.); Scarborough (G.M.).
var. punctiforme Holm. et Batt.—Filey Brigg, 1895 (E.M.H).

DESMARESTIA Lamour
aculeata (L.) Lam.—Scarborough (G.M.); Robin Hood’s Bay, but not attached (L.S.).
viridis (Muell.) Lam.—On the scars just below the Spa, in pools near L.W.M., but not abundant (J.R.H.).
Both species were recorded from Filey Brigg in 1895.

DICTYOSIPHON Greville
foeniculaceus (Huds.) Grev.—South Bay (G.M.); Robin Hood’s Bay (L.S.).

ASPEROCCUS Lamour
fistulosus Hook.—On south side of Filey Brigg in shallow pools about half-tide level (D.P.); South Bay (G.M.).

MYRIOTRICHIA Harvey
filiformis Harv.—On small algae in pools of South Bay and Cornelian Bay (G.M.).

ILEA Fries
fascia (Muell.) Fr.—Winter, on rocks at L.W.M., Thornwick Bay (D.P.).

SCYTOSIPHON Agardh, C. A.
lorentaria (Lyngb.) Ag., J.—On shale around Stoupe Beck, Robin Hood’s Bay (L.S.); Scarborough (G.M.); in pools of northern outer reef, Filey Brigg (D.P.).

PUNCTARIA Greville
plantaginea (Roth) Grev.—On shale around Stoupe Beck, Robin Hood’s Bay (L.S.); on rocks between the Spa and the Nab, and on sub-littoral rocks (G.M.).

SPHACELARIALES

SPHACELARIA Lyngbye
cirrhosa (Roth) Ag.—On small algae in tide-pools, Cornelian Bay and Filey Brigg (G.M., D.P.).
radicans (Dillw.) Ag.—On sand-covered rocks between the tide-marks, often with Rhodochorton rothii, Robin Hood’s Bay (L.S.); Scarborough (G.M.).

CLADOSTEPHUS Agardh, J. G.
spongiosus (Lightf.) Ag.—Flamborough (Nat., 1923).
verticillatus (Lightf.) Ag.—Robin Hood’s Bay (L.S.); top of outer reef, North Bay (G.M.); boulders at eastern end of Filey Brigg (D.P.).

LAMINARIALES

CHORDA Stackhouse
filum (L.) Lam.—BOOTLACE WEED.—Summer, on rocks at L.W.M., Filey Brigg and Scarborough (G.M.).
var. subtomentosa Ar.—Filey Brigg (D.P.).
LAMINARIA Lamour
cloustoni Edm.—Thornwick Bay, in pools at L.W.M. (D.P.); Robin Hood’s Bay (Marine Station record).
digitata (L.) Lam.—OARWEED or TANGLES. Common all along the coast at L.W.M. and in the sea.
var. stenophylla Harv.—Distribution similar to L. digitata, common in this district.
saccharina (L.) Lam.—Common at L.W.M. in South Bay, but less common at Filey Brigg and Flamborough (D.P.); Robin Hood’s Bay (L.S.).
var. phyllitis Le Jol.—More common than the type in this district (G.M., D.P.).

SACCORHIZA De la Pylaie
bulbosa (Huds.) De la Pyl.—Found washed up in North Bay (G.M.).

ALARIA Greville
esculenta (L.) Grev.—Ravenscar (L.S.); uncommon in deep pools on north side of Filey Brigg, and in deep water at Flamborough Head (D.P.).

DICTYOTALE DICTYOTA Lamour
dichotoma (Huds.) Lam.—Scarborough (G.M.); at L.W.M. on northern side of Filey Brigg (D.P.).

FUCUS Decaisne et Thuret
serratus L.—TOOTHED or SERRATED WRACK. Abundant all along the coast on rocks between half-tide level and L.W.M.
spiralis L.—TWISTED WRACK. On rocks near H.W.M., forming a distinct belt below Pelvetia.
vesiculosus L.—BLADDER WRACK. Abundant all along the coast; forms a wide belt which extends across the middle shore.

ASCOPHYLLUM Stackhouse
nodosum (L.) Le Jol.—KNOTTED WRACK. Abundant on sheltered rocks all along the coast, especially if large boulders are present. Usually intermixed with F. vesiculosus.

PELVETIA Decaisne et Thuret
canaliculata (L.) Dcne. et Thur.—CHANNELLED WRACK. Common on rocks and boulders at H.W.M.; prefers exposed beaches, where it extends into the splash zone.

HIMANTHALIA Lyngbye
lorea (L.) Lyngb.—THONGWEED. Common along the coast on rocks near L.W.M.; also occurs in deep pools below half-tide level (D.P.)

HALIDRYS Lyngbye
siliquosa (L.) Lyngb.—Fairly common along the coast in pools below half-tide level (D.P.).
var. siliculosus Stackh.—In rocky basins left by the tide, abundant at the Nab at L.W.M. (J.R.H.).
SEaweeds

Rhodophyceae

Bangiales

Bangia Lyngbye

fusco-purpurea (Dillw.) Lyngb.—Ravenscar (L.S.) ; stones and woodwork of South Pier (G.M.).

Porphyra Agardh, C. A.

leucosticta Thur.—Not common. North Bay, Scarborough (G.M.).

umbilicalis (L.) Kuetz.—Red Laver. Abundant everywhere on intertidal rocks, stonework and woodwork.

var. vulgaris Ag.—Scarborough (J.R.H.).

Erythrotrichia Areschoug

carnea (Dillw.) Ag., J.—On small algae in tide-pools, Scarborough (G.M.) ; Filey Brigg (D.P.).

Gelidiales

Gelidium Lamour

corneum (Huds.) Lam.—Scarborough (J.R.H.).

Pterocladia Agardh, J. G.

capillacea (Gmel.) Born. et Thur.—Scarborough (Hudson).

Cryptonemiales

Gloiosiphonia Carmichael

capillaris (Huds.) Carm.—Rare in North Bay, not found attached (G.M.).

Dumontia Lamour

incrassata (Muell.) Lam.—Common at half-tide level in pools and long inlets open to the sea ; very common at Robin Hood’s Bay (L.S.) ; and locally abundant on Filey Brigg (D.P.).

var. crispa Batt.—Common on outer reef of Filey Brigg and at Thornwick Bay where exposed to tidal currents (D.P.).

Dilsea Stackhouse

edulis Stackh.—Robin Hood’s Bay, but not attached (L.S.) ; rock-pools south of Spa (J.R.H., 1896) ; Spittal Rocks, Filey Brigg (D.P.).

Schizymenia Agardh, J. G.

dubyi (Chauv.) Ag., J.—Scarborough (G.M.).

Furcellaria Lamour

fastigiata (L.) Lam.—Common at Robin Hood’s Bay in inlets between the scars (L.S.) ; abundant in South Bay (G.M.) ; Filey Brigg and Thornwick Bay (D.P.).

Polyides Agardh, C. A.

rotundus (Gmel.) Grev.—Scarborough, Filey Brigg, Thornwick Bay (J.R.H., D.P.) ; Robin Hood’s Bay (Marine Station Record).

Petrocelis Agardh, J. G.

cruenta Ag., J.—On rocks in North Bay (G.M.).

Peyssonnelia Decaisne

rubra (Grev.) Ag., J.—Liver-coloured film on rocks, Scarborough (G.M.).
**LITHOPHYLLUM** Foslie
  
  *pustulatum* (Lam.) Fosl.—Scarborough (G.M.).

*incrustans* Phil.—Filey Brigg and Robin Hood’s Bay, common in pools (D.P., L.S.).

**LITHOTHAMNION** Foslie
  
  *lichenoides* (Ellis et Soland) Fosl.—Flamborough (Nat.) ; Robin Hood’s Bay (L.S.).

*polymorphum* (L.) Aresch.—Scarborough (G.M.) ; Robin Hood’s Bay (L.S.).

**CORALLINA** Lamour
  
  *officinalis* L.—Abundant everywhere in rock-pools.

*squamata* Ell.—Scarborough (S.L.P., 1901).

**CERAMIALES**

**DELESSERIA** Lamour
  
  *sanguinea* (L.) Lam.—All along the coast in deep pools near L.W.M., sheltered by overhanging weeds ; never in quantity (D.P.) ; common on Laminaria stipes washed up from Robin Hood’s Bay and Ravenscar (L.S.).

**MEMBRANOPTERA** Stackhouse
  
  *alata* (Huds.) Stackh. ex Kyl.—Rocks and pools at L.W.M. and in the sea ; at the Nab (abundant), Filey Brigg (common on north side) and Thornwick Bay ; commonly washed up on Laminaria stipes (L.S., D.P.).

**PANTONEURA** Kylin
  
  *angustissima* (Turn.) Kyl.—Common on stipes of Laminaria at Scarborough, Filey Brigg and Flamborough (G.M., D.P.).

**HYPOGLOSSUM** Kuetzing
  
  *woodwardii* Kuetz.—North Bay and Nab, Scarborough (G.M.).

**NITOPHYLLUM** Greville
  
  *punctatum* (Stackh.) Grev.—Robin Hood’s Bay (Marine Station record).

**PHYCODRYS** Kuetzing
  
  *rubens* (Huds.) Batt.—On rocks and Laminaria stipes in deep water, Robin Hood’s Bay (L.S.) ; South Bay (G.M.) ; Flamborough (J.R.H.).

**RHODOMELA** Agardh, C. A.
  
  *lycopodioides* (L.) Ag.—At L.W.M., often on Laminaria stipes, Filey Brigg (D.P.) ; and Scarborough (J.R.H.) ; Robin Hood’s Bay (Marine Station record).

*subfusca* (Woodw.) Ag.—With Halidrys in inlets between scars at Robin Hood’s Bay (L.S.) ; at L.W.M. on north side of Filey Brigg (D.P.).

**ODONTHALIA** Lyngbye
  
  *dentata* (L.) Lyngb.—Robin Hood’s Bay to Ravenscar, but not attached (L.S.) ; Scarborough (J.R.H.) ; extreme L.W.M. on north side of Filey Brigg (D.P.).

**LAURENCIA** Lamour
  
  *hybrida* (DC.) Lenorm.—Common at Robin Hood’s Bay (L.S.).
obtusa (Huds.) Lam.—Summer. Outer reef of Filey Brigg, north of Carr Nase (D.P.); Scarborough (G.M.).

pinnatifida (Gmel.) Lam.—Common all along the coast on intertidal rocks, especially steep rocky ledges near L.W.M. (D.P.).

var. litoralis Harv.—Flamborough (Nat., 1923).

var. osmundae Harv.—Gristhorpe (J.R.H.).

POLYSIPHONIA Greville

elongata (Huds.) Harv.—Common all along the coast on intertidal rocks, especially steep rocky ledges near L.W.M. (D.P.).

fibrata (Dillw.) Harv.—Scarborough (G.M.).

lanosa (L.) Tand. — Common on Ascophyllum nodosum (D.P.).

macrocarpa Harv.—On rocks, south side of Filey Brigg (D.P.); Robin Hood’s Bay (Marine Station record).

nigra (Huds.) Batt.—Eastern end of Filey Brigg at L.W.M. and below it, not common (D.P.); Scarborough (A.G.T.).

nigrescens (Smith) Grev.—Fairly common in shallow pools and inlets all along the coast (D.P.).

urceolata (Dillw.) Grev.—All along the coast, on rocks and Laminaria near L.W.M., though never in quantity (D.P.).

var. formosa Ag., J.—Scarborough (G.M.).

var. patens Ag., J.—South side of Filey Brigg at L.W.M. (D.P.).

violacea (Roth) Grev.—Common on Laminaria stipes at Robin Hood’s Bay (L.S.) ; less common in pools on Filey Brigg (D.P.).

PTEROSIPHONIA Falkenberg

parasitica (Huds.) Falk.—Scarborough (A.G.T.).

BRONGNIARTELLA Bory

byssoides (Good et Woodw.) Schmitz.—Rare in South Bay (G.M.).

DASYA Agardh, C. A. arbuscula (Dillw.) Ag.—Rare in South Bay and Cornelian Bay (J.R.H.).

HETEROSIPHONIA Montagne

plumosa (Ellis) Batt.—Rare in North Bay (G.M.); exposed on outer reef of Filey Brigg at very low tides (D.P.).

SPONDYLOTHAMNION Naegeli

multifidum (Huds.) Naeg.—Filey Brigg (Talbot, 1895).

PTILOTHAMNION Thuret

pluma (Dillw.) Thur.—On Laminaria and Furcellaria, Scarborough (G.M.).

GRIFFITHSIA Agardh, C. A.

flosculosa (Ellis) Batt.—Rare. Lining deep rock-pools near L.W.M. overhung by shading algae; Scarborough, Filey Brigg (G.M., D.P.).

HALURUS Kuetzing

equisetifolius (Lightf.) Kuetz.—Scarborough (J.R.H.); north side of Filey Brigg (D.P.).

RHODOCHORTON Naegeli

floridulum (Dillw.) Naeg.—On sand-covered rocks on south side of Filey Brigg, below Carr Nase (D.P.); Scarborough (G.M.).

rothii (Turt.) Naeg.—Fairly common on sand-covered rocks near half-tide level, Robin Hood’s Bay and Filey Brigg (L.S., D.P.).
CALLITHAMNION Lyngbye
arbustula (Dillw.) Lyngb.—On mussel beds round North Cheek, Robin Hood’s Bay (L.S.).
byssoides Arn.—Scarborough (G.M.).
dudresnayi Crouan—Washed up in Filey Bay, but not found attached (D.P.).
polyspermum Ag.—Scarborough (G.M.).
roseum (Roth) Harv.—Scarborough (G.M.); common at Robin Hood’s Bay (L.S.).
tetragonum (With.) Ag.—Fairly common on Filey Brigg on Laminaria fronds (D.P.); Scarborough (G.M.).
var. brachiatum Ag.—Flamborough (Nat., 1923).

PLUMARIA Stackhouse

elegans (Bonnem) Schmitz—On steep rock faces on north side of Filey Brigg, near L.W.M. (D.P.); South Bay (J.R.H.); and Robin Hood’s Bay (L.S.).

PTILOTA Agardh, C. A.
plumosa (L.) Ag.—Common on Laminaria stipes all along the coast (D.P.).

ANTITHAMNION Naegeli

cruciatum (Ag.) Naeg.—Robin Hood’s Bay (L.S.).
plumula (Ellis) Thur—Rare in North Bay (A.G.T., G.M.).

CERAMIUM Lyngbye

acanthonotum Carm.—Not uncommon along the coast on steep, rough rocks near L.W.M. (D.P.).
arborescens Ag., J.—Thornwick Bay (D.P.).
botyrocarpum Griff. ex Harv.—Scarborough (G.M.).
ciliatum (Ellis) Ducl.—Rare at Scarborough (G.M.); and in pools on Filey Brigg (D.P.).
deslongchampsii Chauv.—Scarborough (G.M.).
diaphanum (Lightf.) Roth—Scarborough (G.M., A.G.T.); Flamborough (Nat., 1923).
echionotum Ag., J.—Scarborough (G.M.).
fastigiatum Harv.—Scarborough (G.M.).
rubrum (Huds.) Ag. var. pedicellatum Ag., J.—Common in rock-pools all along the coast.
var. corymbiferum Ag., J.—On Corallina officinalis in rock-pools, Filey Brigg and Thornwick Bay (D.P.).
tenuissimum (Lyngb.) Ag., J.—Scarborough (G.M., A.G.T.).

GIGARTINALES

CHONDROSIS Stackhouse
crispus (L.) Stackh.—CARRAGHEEN or IRISH MOSS. Common all along the coast on rocks from half-tide level to L.W.M.

GIGARTINA Stackhouse

stellata (Stackh.) Batt.—Common all along the coast on exposed rocks near L.W.M.

PHYLLOPHORA Greville
epiphylla (Muell.) Batt.—On rocks at the Nab (J.R.H., A.G.T.).
membranifolia (Good. et Woodw.) Ag., J.—Rare in North Bay (J.R.H.).

GYMNØGONGRUS Martius
norvegicus (Gunn.) Ag., J.—Scarborough (G.M.).

AHNFELTIA Fries
plicata (Huds.) Fries—Robin Hood’s Bay (L.S.); Scarborough (G.M.); Filey Brigg, north side (D.P.).

CALLOPHYLLIS Kuetzing
laciniata (Huds.) Kuetz.—In North and South Bays, but not in quantity (G.M., J.R.H.); Robin Hood’s Bay (Marine Station record).

CYSTOCLONIUM Kuetzing
purpureum (Huds.) Batt.—Scarborough (G.M., J.R.H.); north side of Filey Brigg (D.P.).

CATENELLA Greville
repens (Lightf.) Batt.—Common on rocks at Ravenscar (L.S.).

RHODYMPELLIS Kuetzing
bifida (Good. et Woodw.) Kuetz.—Scarborough (J.R.H.).

RHODYMENIALES

SPHAEROOCOCCUS Stackhouse
coronopfolius (Good. et Woodw.) Ag.—Filey, 1895 (T.T.).

GRACILARIA Greville
confervoides (L.) Grev.—On rocks near L.W.M., Scarborough (J.R.H.).

CALLIBLEPHARIS Kuetzing
ciliata Kuetz.—Scarborough (J.R.H., G.M.).
lanceolata Batt.—Scarborough (G.M.).

RHODYMENIA Agardh, J. G.
palmata (L.) Grev.—DULSE. Common all along the coast near L.W.M., on rocks and attached to Laminaria stipes.
var. marginifera Harv.—Common in South Bay (J.R.H.).

LOMENTARIA Lyngbye
articulata Lyngb.—All along the coast on rocks and algae between half-tide level and L.W.M., usually with Laurencia (D.P.).
clavelllosa (Turn.) Gaill.—Scarborough (Kew record); north side of Filey Brigg (D.P.).
rosea (Harv.) Thur.—Scarborough (Kew record).

CHAMPIA Lamour
parvula (Ag.) Harv.—On small algae in pools near L.W.M., Filey Brigg (D.P.).

CHYLOCLADIA Greville
kaliformis (Good. et Woodw.) Grev.—Scarborough (A.G.T.).
ovata Batt.—Scarborough (G.M.).

PLOCAMIIUM Lyngbye
coccineum (Huds.) Lyngb.—Robin Hood’s Bay (L.S.), and Scarborough (G.M.); frequently washed up in Filey Bay (D.P.).
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<td>Schizymenia</td>
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<td>Ulva</td>
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</table>
Fungi

Corrigenda

The fungus nomenclature used in this book is that approved when the list was compiled in 1950; since then various adjustments have been made and the following emendations bring the nomenclature up-to-date (Dec. 1952).


p. 154  Menispora tortuosa (Corda) Peyr., should read M. tortuosa Corda.

p. 154  Sarcopodium Ehrenberg ex Wallroth should read Sarcopodium Ehrenberg ex Link

p. 154  Sporocybe flexuosa - On Quercus; Howldale, 1947 (I.M.L. 13318)

p. 154  Stachylidium cyclosporum Grove is now Verticillium cyclosporum

p. 155  Stilbum tomentosum var. ovalisporum A. L. Sm. should read (Grove) Mason et Hughes

Tilachlidium in “Mason & Grainger”.

p. 155  Verticillium apicale Berk. et Br. is now included under V. tenuissimum Corda

p. 156  Chaetopsis wauchii Grev. is now included under C. grisea (Ehrenb. ex Fr.) Sacc.

p. 157  Isaria umbrina Pers. ex Wallr. - On Hypoxylon coccineum on Fagus

p. 157  Periconia byssoides Pers. ex Fr. should read P. byssoides pers. ex Schwein.

p. 158  The genus Xylohypha should read as follows:—

XYLOHYPHA (Fries) Mason, gen.nov. (Hyphelia Fries, sub-gen. Xylohypha Fries)

nigrescens (Pers. ex Fr.) Mason, comb.nov. (Trichoderma nigrescens Pers., Torula ovalispora Berk., Torula pulveracea Corda)

p. 159  Phragmocephala cookei Mason et Hughes, published in Nat., 1951, p. 98, for specimens recently referred to Arthrobotryum atrum Berk. et Br.

p. 160  Helminthosporium apiculatum Link ex Fr. - On re-examination the specimens recorded on Quercus were found to be on unidentified wood

p. 161  Septocylindrum pallidum Grove is now Septonema pallidum (Grove) Hughes
Fungi
F. C. Rimington

Foreword
A. A. Pearson, F.L.S.

Those of us who study the fungi and find ourselves made responsible for naming them, know only too well the many pitfalls we are liable to meet and which we do our best to avoid—not always with success.

Our predecessors had the same problems and were faced with even greater uncertainties because the microscope had not come into general use; the descriptions indeed were so incomplete that often it was impossible to determine a critical fungus with more than a vague hope that it represented the species originally named by its author.

The inevitable result was that the same fungus was given many different names by many different authors. A mycologist in America recently had to describe a tropical species of Tricholoma and found that it had been named and renamed in 30 different ways. We could doubtless find many such examples among European fungi.

The literature of the fungi is so vast that we can rarely be certain that we have traced a critical species down to the author who first described it. Some changes are therefore called for from time to time.

The Yorkshire records of fungi were put together by Mason and Grainger in a very useful volume published by the Yorkshire Naturalists' Union in 1937. Since then a good deal of sifting has been done. This has been taken into account in the present list which is designed to give an up-to-date picture of the fungi in a restricted area of Yorkshire.

Such lists are to be welcomed for various reasons. They are interesting in themselves, they are an incentive to the local naturalists and an opportunity to correct previous errors.

The Yorkshire mycologists of the last century found the north-east area very fruitful ground for collecting. It is not so good to-day, many of the woodlands having been denuded during the two wars when timber was badly needed. Fortunately there are still many spots to which the mycologist returns with pleasure, knowing that there is every chance of finding rare or unusual species. Doubtless there are some common species which have eluded the collectors and many uncommon ones which will be added to the list in future years.

This collecting business is fascinating but we must try to get to know our species thoroughly, acquire a microscopic eye, seeing each fungus inside and out. The technique is simple and we need not be frightened by the more elaborate taxonomic methods which some of the specialists adopt. The amateur has a large field open for research and we still have much to learn.
INTRODUCTION.

The Scarborough district is mycologically classic ground, for it includes Forge Valley and Raincliffe Wood. Here George Massee collected for many years, and the records published in Massee and Crossland's "Fungus-Flora of Yorkshire" (Trans. Y.N.U., 1905), were largely his work. These records include many species found for the first time in Britain, on some of which new species were founded. A considerable number of the illustrations in Cooke's "Illustrations of British Fungi" were drawn from these Scarborough specimens. It is unfortunate that Massee's records give no precise details of the collecting place and often no date.

George Edward Massee, born at Scampston in 1850, first collected at Castle Howard. He then moved to Scarborough, where he remained for 15 years, and for a time was honorary secretary of the Scarborough Field Naturalists' Society. At the Doncaster meeting of the Y.N.U. in 1891, Massee played a leading part in establishing the annual Y.N.U. Fungus Forays, and at the Selby foray in 1896, the British Mycological Society was formed with Massee as its first president.

Many other distinguished mycologists have collected in the Scarborough district—Charles Crossland, Carleton Rea, H. T. Soppitt, Alfred Clark, F. A. Mason, and more recently, A. A. Pearson, E. W. Mason, Prof. C. G. C. Chesters and others.

The Scarborough Field Naturalists' Society has been fortunate in its mycologists—G. Massee, T. B. Roe, A. E. Peck, Miss A. Hibbert-Ware, etc., and the resulting records are extensive. The present lists have been brought into line with modern nomenclature, and doubtful records and varieties of uncertain status have been omitted. The task would have been easier if a herbarium had been kept and the original specimens thus made available. This omission is now being rectified and it is hoped that in future specimens of all published records will be preserved. Where specimens are available, the herbarium concerned is indicated together with the accession number.

Much work remains to be done in the southern part of our area, particularly on the Wolds, where the only worker has been W. W. Strickland, who collected the fungi round Boynton between 1874 and 1882. His collection was presented to the British Museum.

In recent years the development of fungicides and the improvement in the means of applying them have resulted in certain fungoid plant diseases becoming far less prevalent. In particular the introduction of the organo-mercuric seed-dressings has decreased the incidence of such seed-borne diseases as Bunt or Stinking Smut of wheat (Tilletia), Leaf-Stripe of barley (Helminthosporium), and certain Foot-Rot diseases of oats and barley, to negligible proportions. A considerable amount of control of Rust (Puccinia) has been achieved through the breeding of resistant varieties of cereals, particularly wheat.

A profound change is being brought about in the fungi of our moorlands by the extensive afforestation. The fungus-flora of the original moorland, meagre almost to the point of non-existence,
does not obviously change when the ground is ploughed, despite the resulting aeration and the breaking of the moor-pan. For several years there is no general evidence of fungal growth, but after three or four years, when there is a tendency for the heather to re-invade the ploughed land, several pioneer species occur freely; Laccaria laccata, Paxillus involutus and Thelephora terrestris. These retain a footing until the trees kill out the heather by suppression. At this time there is a general infux of fungi, usually species of such genera as Lactarius, Russula, Clitocybe, Tricholoma, Mycena, Boletus, etc. It is significant that there are no signs of such proved mycorrhiza-formers as Boletus luteus, B. elegans, B. badius, B. bovinus, Amanita muscaria, Lactarius deliciosus, etc., until the trees are well established and the cover complete.

It is a duty and pleasure to acknowledge the help and advice from Mr. W. G. Bramley, Mr. E. W. Mason, Mr. A. A. Pearson, and in particular from Dr. R. W. G. Dennis, of the Kew Herbarium, without whose constant and generous help these lists would never have reached their final form.

The arrangement and nomenclature of the various sections are adapted from the following authorities, but the species within each genus have been re-arranged alphabetically for easy reference.


3. DISCOMYCETES: J. Ramsbottom; "List of British Species of Discomycetes, arranged according to Boudier's System: with key to Genera". Trans. B.M.S., IV, pp. 343-381, 1914.


8. OTHER BASIDIOMYCETES: C. Rea; "British Basidiomycetes", 1922.

9. COELOMYCETES: W. B. Grove; "British Stem and Leaf Fungi (Coelomycetes)". 1935-38.

10. HYPHOMYCETES: E. M. Wakefield and G. R. Bisby; "List of Hyphomycetes recorded for Britain". Trans. B.M.S., XXV, pp. 49-126, 1941; but with the nomenclature adjusted to that in current use in the herbarium of the Commonwealth Mycological Institute, Kew.
The sections have been arranged in a pseudo-evolutionary manner, commencing with the primitive Myxomycetes and Phycomycetes, and progressing to the higher Agarics and Gasteromycetes; with the Fungi Imperfecti as an appendix.

Hosts and substrates have been included where available in the records and where of interest.

W.G.B. W. G. Bramley T.P. T. Petch
A.C. A. Clark C.R. Carleton Rea
C.C. C. Crossland F.C.R. F. C. Rimington
R.W.G.D. R. W. G. Dennis T.B.R. T. B. Roe
A.H.W. Alice Hibbert-Ware H.T.S. H. T. Soppitt
E.W.M. E. W. Mason W.W.S. W. W. Strickland
F.A.M. F. A. Mason P.H.B.T. P. H. B. Talbot
G.M. George Massee H.W. H. Wager
A.A.P. A. A. Pearson E.M.W. E. M. Wakefield
A.E.P. A. E. Peck J.W. J. Webster

B.M.S. British Mycological Sociey.
F.F. Fungus Foray of the Y.N.U.
Grev. "Grevillea".
Hull Herbarium of the University College, Hull.
I.M.I. Herbarium of the Commonwealth Mycological Institute, Kew (formerly the Imperial M.I.).
Nat. "The Naturalist".
Nottm. Herbarium of Nottingham University.
T.B.M.S. Transactions of the B.M.S.
Y.N.U. Yorkshire Naturalists' Union.
York Herbarium of the Yorkshire Museum, York.

MYXOMYCETES

CERATIOMYXACEAE

CERATIOMYXA Schroeter

fruticulosa Macbr.—Forge Valley and Robin Hood's Bay (W.G.B., 1945-6).

PHYSARACEAE

BADHAMIA Berkeley

foliicola List.—Oliver's Mount (A.H.W., 1905-10).

macrocarpa Rost.—Scarborough on decaying fungi (G.M.).

panicea Rost.—Hackness on felled logs (A.H.W., 1905).

utricularis Berk.—Scarborough on moss, etc. (G.M.).
PHYTOSPERMUM Persoon
biectum List.—Scarborough (A.H.W., 1908).
cinereum Pers.—Scarborough on leaves, etc. (G.M.).
didermoides Rost.—Scarborough (M. & C.).
leucopus Link.—Scarborough on wood and moss (G.M.).
nutans Pers.—Forge Valley (W.G.B., 1945); Thornton-le-Dale (F.F., 1945).
var. leucophaeum List.—Not uncommon, especially the limeless, iridescent form (A.H.W., 1905).
sinuosum Weim.—Scarborough (A.H.W., 1905).
viridum Somm.—Scarborough, “frequently found in November” (A.H.W.).
virescens Ditm.—Scarborough (M. & C.).
viride Pers.—Scarborough (G.M.).

FULIGO Haller
septica Gmel.—Frequent on sawdust, etc.

CRATERIUM Trentepoh1
aureum Rost.—Oliver’s Mount, frequent (A.H.W., 1905).
leucocephalum Ditm.—Scarborough on dead leaves (G.M., A.H.W., 1905).

LEOCARPUS Link
fragilis Rost.—Scarborough (G.M.); Thornton-le-Dale (F.F., 1945).

DIDERMA Persoon
radiatum List.—Locally common.
var. umbilicatum Meyl.—Boynton (W.W.S., Nat., July, 1889).
spumarioides Fr.—Scarborough on leaves, etc. (M. & C.).

DIACHAEA Fries
leucopoda Rost.—Locally common.

DIDYMIACEAE

DIDYMIUM Schrader
complanatum Rost.—Scarborough on leaves (M. & C.).
difforme Duby—Scarborough (M. & C.).
nigripes Fr.—Scarborough (M. & C.).
var. xanthopus List.—Scarborough (M. & C.).
squamulosum Fr.—Not uncommon.

MUCILAGO Adanson
spongiosa Morg.—Locally common (M. & C., A.H.W.).

STEMONITACEAE

STEMONITIS Gleditsch
ferruginea Ehrenb.—Scarborough (M. & C.).
fusca Roth—Wykeham (F.F., 1945).
splendens Rost.—Scarborough (A.H.W., Nat., 1910, p. 147).
COMATRICHA Preuss  
  nigra Schroet.—Forge Valley, etc. (W.G.B. & F.F., 1945).  
  pulchella Rost.—Oliver’s Mount (A.H.W., 1906).  
  typhoides Rost.—Scarborough (G.M., A.H.W., 1910).

ENERTHENEMA Bowman  
  papillatum Rost.—Oliver’s Mount (A.H.W., 1906).

LAMPRODERMA Rostafinski  
  arcyronema Rost.—Forge Valley (A.H.W., 1907).  
  scintillans Morg.—Scarborough (A.H.W., 1905).  
  violaceum Rost.—Scarborough (M. & C., A.H.W., 1909).

AMAUROCHAETACEAE

BREFELDIA Rostafinski  
  maxima (Fr.) Rost.—Boynton (W.W.S., Nat., July, 1889).

LINDBLADIA Fries  
  effusa Rost.—Scarborough on the ground (M. & C.).

HETERODERMACEAE

CRIBRARIA Persoon  
  microcarpa Pers.—Scarborough on pine-wood (G.M.).  
  piriformis Schrad.—Scarborough on pine-wood (G.M.).  
  tenella Schrad.—Scarborough (A.H.W., 1905).  
  vulgaris Schrad., var. aurantiaca Pers.—Scarborough (M. & C.).

DICTYDIUM Schrader  
  cancellatum Macbr.—Scarborough (M. & C.).

TUBULINACEAE

TUBIFERA Gmelin  
  ferruginosa Gmel.—Locally common (G.M., A.H.W.).

RETICULARIACEAE

DICTYDIAETHALIUM Rostafinski  
  plumbeum Rost.—Scarborough (M. & C.).

ENTERIDIUM Ehrenberg  
  olivaceum Ehrenb.—Scarborough (M. & C.).  
  rozeanum Wing.—Scarborough (M. & C.).

RETICULARIA Bulliard  
  lycoperdon Bull.—Common and generally distributed.

LYCOGALACEAE

LYCOGALA Adanson  
  epidendrum Fr.—Very common and widely distributed.

TRICHIACEAE

TRICHIA Haller  
  botrytis Pers.—Scarborough (M. & C.); Howldale (F.F., 1946).  
  var. munda List.—Harwood Dale (A.H.W., 1910).
contorta Rost.—Scarborough (M. & C.), Kingthorpe (W.G.B., 1938).

decipiens Macbr.—Scarborough (M. & C.); Forge Valley (W.G.B., 1945).

favoginea Pers.—Scarborough (M. & C.).

persimilis Karst.—Common.

scabra Rost.—Scarborough (G.M.); Kingthorpe (F.F., 1946).

varia Pers.—Numerous records.

OLIGONEMA Rostafinski

nitens Rost.—Scarborough (G.M.).

HEMITRICHIA Rostafinski

clavata Rost.—Scarborough (M. & C.); Howldale (F.F., 1946).

vesparium Macbr.—Scarborough (G.M.); Forge Valley, abundant after severe frosts (A.H.W., 1910).

ARCYRIACEAE

ARCYRIA Wiggers

cinerea Pers.—Scarborough (M. & C.).

denudata Wettst.—Forge Valley (W.G.B., 1945 & 1948).
	ferruginea Saut.—Oliver’s Mount, common (A.H.W.).
	incarnata Pers.—Scarborough (G.M.); Kingthorpe (W.G.B., 1938).

nutans Grev.—Scarborough (M. & C.).

pomiformis (Leers) Rost.—Boynton (W.W.S., 1880).

PERICHAENA Fries

chrysosperma List.—Scarborough (M. & C.).

corticalis Rost.—Kingthorpe (F.F., 1946).

depressa Lib.—Filey (C.C., Nat., 1903, p. 248).

MARGARITACEAE

PROTOTRICHIA Rostafinski

metallica Mass.—Scarborough (G.M.).
NATURAL HISTORY OF THE SCARBOROUGH DISTRICT

PHYCOMYCETES

CHYTRIDIALES

PLASMODIOPHORACEAE

PLASMODIOPHORA Woronin
brassicae Woron.—Abundant.

SPONGOSPORA Brunchorst
subterranea (Wallr.) Lagarh.—Occasional at Scarborough.

SYNCHYTRIACEAE

SYNCHYTRIUM de Bary et Woronin
anemones de Bary et Woron.—Scarborough on living leaves of
Anemone nemorosa (G.M.).
stellariae Fückel—Scarborough on Stellaria media (G.M.).
taraxaci de Bary et Woron.—Scarborough on leaves and involucres
of Taraxacum (G.M.).

RHIZIDIACEAE

POLYPHAGUS Nowakowski
euglenae Nowak.—Seamer Moor on Euglena viridis (M. & C.).

CLADOCHYTRIACEAE

PHYSODERMA Wallroth
menyanthis de Bary—Seamer on living leaves of Comarum palustre
(G.M.); Thro xenby on Menyanthes trifoliata (T.B.R., 1911).

SAPROLEGNIALES

SAPROLEGNIA Nees von Esenbeck
ferax Nees.—Scarborough on dead flies, etc. in water (M. & C.). A
secondary invader in the destructive “Salmon Disease”.

PERONOSPORALES

ALBUGINACEAE

CYSTOPUS (Léveillé) de Bary
candidus (Pers.) de Bary—Common, particularly on Capsella.

PYTHIACEAE

PYTHIUM Pringsheim
de baryanum Hesse—Scarborough on seedling balsams (G.M.).

PHYTOPHTHORA de Bary
infestans (Mont.) de Bary—Abundant in most years.

PERONOSPORACEAE

PLASMOPARA Schroeter
nivea (Ung.) Schroet.—Scarborough (G.M.); Ellerburn (F.F., 1922);
both on Anthriscus sylvestris.
pusilla (de Bary) Schroet.—Thornton-le-Dale on Geranium sylvaticum
(F.F., 1945).
pygmaea (Ung.) Schroet.—Kingthorpe on Anemone (F.F., 1946).
BREMIA Regel
lactucae Reg.—Numerous records on Lapsana, Lactuca muralis and L. sativa.

PERONOSPORA Corda emend. Schroeter
alsinearum Casp.—Thornton-le-Dale on Stellaria media and Spargula (F.F., 1945).
alta Fuckel—Ellerburn on Plantago major (F.A.M., 1922).
effusa (Grev.) Rabenh.—Ayton (G.M.); Thornton-le-Dale (F.F., 1945); both on Chenopodium.
ficariae Tul.—Scarborough (G.M.); Kingthorpe (F.F., 1945); both on Ranunculus spp.
grisea Ung.—Scarborough (G.M.); Ellerburn (F.F., 1945); both on Veronica beccabunga.
parasitica (Pers.) Tul.—Scarborough on Cheiranthus (G.M.); Thornton-le-Dale on Capsella (F.F., 1945).
schleideni Ung.—Scarborough (F.C.R.); Kingthorpe (W.G.B.); both on Allium cepa.
trifoliorum de Bary—Scarborough on Ononis (G.M.).
viciae (Berk.) de Bary—Ellerburn (F.A.M., 1922).
violeae de Bary—Ellerburn on V. riviniana (F.A.M., 1922).

MUCORALES

MUCORACEAE

MUCOR Micheli emend Link
mucedo (L.) Bref.—Common.

PHYCOMYCETES Kunze et Schmidt
nitens (Agardh) Kunze—Scarborough on fat (G.M.).

SPINELLUS van Tieghem
fusiger (Link) van Tiegh.—Raincliffe Wood on Mycena (H.T.S., 1891); Kingthorpe (T.B.M.S., 1931).

SYZYGITES Ehrenberg
megalocarpus Ehrenb.—Scarborough on Boletus luridus and Hygrophorus pratensis (G.M.); Cloughton on agarics (H.T.S., 1891); Kingthorpe (T.B.M.S., 1931).

RHIZOPUS Ehrenberg
nigricans (Ehrenb.) Lind.—Scarborough on rotten leaves (G.M.).

PILOBOLACEAE

PILAIRA van Tieghem
anomala (Ces.) Schroet.—Scarborough on goose dung (G.M.).
PILOBOLUS Tode
crystallinus (Wigg.) Tode—Common on horse and cow dung.
oridus (Bolt.) Pers.—Scarborough on cow dung (G.M.).

THAMNIDIACEAE

THAMNIDIUM Link ex Wallroth
amoenum (Preuss.) Schroet.—Scarborough on rotten leaves (G.M.).

CHAETOCLADIACEAE

CHAETOCLADIUM Fresenius
jonesii (Berk. et Br.) Fres.—Scarborough on pig dung (G.M.).

ENTOMOPHTHORALES

EMPUSA Cohn
muscae Cohn—Common in August and September on Musca domestica and other Diptera (M. & C.).

ENTOMOPHTHORA Fresenius

PROTOMYCETALES

PROTOMYCIES Unger
macrosorus Ung.—Scarborough on living petioles of Aegopodium podagraria (G.M.).
pachydermus Thuem.—Scarborough on living petioles of Taraxacum officinale (G.M.).

PROTOMYCOPSIS Magnus
purpureo-tingens (Mass.) Ramsb.—Scarborough on cotyledons of Helianthus (G.M.).
THE MOREL (Morchella vulgaris (Pers.) Boud.)

Photograph: A. E. Peck
DISCOMYCETES

MORCHELLA Dillenius
conica Pers.—Scarborough (G.M.).
crassipes Krombh.—Scarborough Mere tip (A.E.P. & A.C., 1915).
vulgaris (Pers.) Boud.—Occasional in Yedmandale and Forge Valley.

MITROPHORA Léveillé
hybrida (Sow.) Boud.—Forge Valley (G.M.).

HELVELLACEAE

VERPA Swartz

PHYSOMITRA Boudier
insula (Schaeff.) Boud.—Scarborough (G.M.).

HELVELLA Linnaeus
crispa (Scop.) Fr.—Although now locally not uncommon, apparently Massee never observed this species in the Scarborough district.
lacunosa Afz.—Harwood Dale (T.B.R., 1913); Raincliffe Wood (A.E.P., 1915-17).

LEPTOPODIA Boudier
elastica (Bull.) Boud.—Raincliffe Wood (G.M.).

PEZIZACEAE

CYATHIPODIA Boudier
corium (Web.) Boud.—Scarborough (G.M.).

ACETABULA Fuckel
leucomelas (Pers.) Boud.—Forge Valley (A.E.P., 1920).

MACROPODIA Fuckel
macropus (Pers.) Fuckel—Staintondale (M. & C.); Kingthorpe (T.B.M.S., 1931).

RHIZINA Fries
inflata (Schaeff.) Karst.—Locally common in coniferous woods.

DISCIOTIS Boudier
venosa (Pers.) Boud.—Occasional in Forge Valley, etc.

ALEURIA Fries
ampliata (Pers.) Gill.—Scarborough (G.M.).
repanda (Pers.) Gill.—Hackness (F.C.R., 1945); Forge Valley (Hull, 19, 1946).
sepiatra (Cooke) Boud.—Forge Valley (C.C., 1914).
tectoria (Cooke) Boud.—Scarborough and Spiker's Hill on damp plaster (A.E.P., 1923).
vesiculosa (Bull.) Boud.—Common.

GALACTINIA Cooke
badia (Pers.) Boud.—Scarborough (G.M.).
lividula (Phill.) Boud.—Givendale (T.B.R., 1914).

saniosa (Schrad.) Sacc.—Scarborough (M. & C.); Thornton-le-Dale (F.F., 1945).

succosa (Berk.) Sacc.—Scarborough (G.M.); Raincliffe Wood (C.R. & A.E.P., 1918).

SARCOSPHAERA Auerswald
coronaria (Jacq.) Boud.—Scarborough under Fagus (G.M.).

PLICARIA Fuckel
persoonii (Crouan) Boud.—Scarborough (G.M.); Forge Valley (C.C. 1914).

radula (Berk. et Br.) Boud.—Scarborough (G.M.).

PACHYELLA Boudier
babingtonii (Berk.) Boud.—Scarborough (G.M.).

WYNNELLA Boudier
auricula (Schaeff.) Boud.—Scarborough (G.M.).

OTIDEA Persoon
alutacea (Pers.) Mass.—Scarborough (G.M.).

cochleata (L.) Fuckel—Scarborough (G.M.).

leporina (Batsch) Fuckel—Scarborough (G.M., A.E.P., 1912); Yedmandale (T.B.R., 1911).

onotica (Pers.) Fuckel—Scarborough (G.M.); Broxa, the colour variant, O. cantharella (F.C.R., 1949).

PUSTULARIA Fuckel
cupularis (L.) Fuckel—Kingthorpe (T.B.M.S., 1931).

ochracea Boud.—Scarborough under Fagus (G.M.).

PEZIZA Dillenius
aurantiaca Pers.—Not uncommon.
luteo-nitens Berk. et Br.—Scarborough (G.M.); Thornton-le-Dale (F.F., 1945).

polytrichi Schum.—Scarborough among moss (G.M.).
rutilans Fr.—Scarborough (G.M.).

SARCOSCYPHA Fries
coccinea (Jacq.) Fr.—Locally common around Scarborough, where it is collected and sold, mixed with moss, for decorative purposes.

PSEUDOPLECTANIA Fuckel
nigrella (Pers.) Fuckel—Scarborough (G.M.); Givendale (A.E.P., 1913.).

LACHNEA Fries
erinacea (Schwein.) Sacc.—Scarborough (G.M.).

hemisphaerica (Wigg.) Gill.—Raincliffe Wood (G.M.); Forge Valley (A.E.P., 1914).

SEPULTARIA Fries
sepulta (Fr.) Mass.—Scarborough (G.M.).
FUNGI — DISCOMYCETES

HUMARIACEAE

TRICHOPHAEA Boudier

albo-spadicea (Grev.) Boud.—Forge Valley on fern rhizomes (Hull, 25, 1946).

CILIARIA Quélét

crucipila (Cooke & Phill.) Boud.—Scarborough on cow dung (G.M.).

hirta (Schum.) Boud.—Thornton-le-Dale (F.F., 1945).

scutellata (L.) Quél.—Raincliffe Wood (T.B.R.); Hackness, found year after year in abundance on old saw-dust heap (F.C.R.).

setosa (Nees) Boud.—Scarborough (G.M.); Flotmanby Carr (A.E.P. & T.B.R., 1911).

trechispora (Berk. & Br.) Boud.—Scarborough (G.M., T.B.R., 1913).

umbrorum (Fr.) Boud.—Forge Valley (Hull, 22, 1946).

vitellina (Pers.) Boud.—Scarborough (G.M.).

CHEILYMENIA Boudier

coprinaria (Cooke) Boud.—Scarborough on cow dung (G.M., F.A.M.); Ellerburn on horse dung (Hull, 132, 1947).

dalmeniensis (Cooke) Boud.—H ackness on sawdust (F.C.R., 1945-48).

stercoria (Pers.) Boud.—Scarborough (G.M.).

subhiruta (Schum.) Boud.—Scarborough (G.M.).

theleboloides (A. et S.) Boud.—Scarborough on spent hops (G.M.).

MELASTIZA Boudier

chateria (W.G.Sm.) Boud.—Scarborough on road sweepings (G.M., A.E.P., 1913, 1925).

miniata (Fuckel) Boud.—Thornton-le-Dale (F.F., 1945).

ANTHRACOBIA Boudier

melaloma (A. et S.) Boud.—Scarborough (G.M.).

PSEUDOMBROPHILA Boudier

tenuispora (Cooke & Mass.) Boud.—Scarborough (G.M.).

HUMARIA Fries

carbonigena (Phill.) Sacc.—Raincliffe Wood on charcoal bed (G.M.).

listed by Boudier among the "Doubtful Humariaceae".

leucoloma (Hedw.) Sacc.—Scarborough among moss (G.M.).

pilifera (Cooke) Sacc.—Forge Valley (H.W., 1915).

semiimmersa (Karst.) Sacc.—Seamer Moor under firs (G.M.).

LAMPROSPORA de Notaris

miniata (Crouan) de Not.—Scarborough among moss (G.M.).

modesta (Karst.) Boud.—Raincliffe Wood on marshy soil (A.E.P., 1918).

COPROBIA Boudier

granulata (Bull.) Boud.—Very common on cow dung.

PULVINULA Boudier

constellatio (Cooke) Boud.—Scarborough (G.M.).
ASCOBOLUS Persoon
   glaber Pers.—Scarborough on horse dung (M. & C.).
   stercorarius (Bull.) Schroet.—Common on cow dung, less so on horse dung.
   viridis Curr.—Scarborough on damp clay (M. & C.).

DASYOBOLUS Saccardo
   brunneus (Cooke) Sacc.—Scarborough on cow dung (M. & C.).
   immersus (Pers.) Sacc.—Scarborough on horse, cow and sheep dung (M. & C.).

SACCOBOLUS Boudier
   kerverni (Crouan) Boud.—Scarborough on cow dung (M. & C.).
   violascens Boud.—Scarborough on rabbit dung (M. & C.).

THECOTHEUS Boudier
   pelletieri (Crouan) Boud.—Scarborough on horse dung (M. & C.).

ASCOPHANUS Boudier
   argenteus (Curr.) Boud.—Scarborough on cow dung (M. & C.).
   carneus (Pers.) Boud.—Common on cow, sheep, horse and rabbit dung (M. & C.).
   microsporus (Berk. et Br.) Phill.—Scarborough on cow dung (M. & C.).
   misturae (Phill.) Boud.—Scarborough on road scrapings (G.M.).
   salmonicolor (Berk. et Br.) Boud.—Seamer Moor on side of ditch (G.M.).
   sexdecimsporus (Crouan) Boud.—Scarborough on cow dung; these specimens established the first British record (M. & C.).

LASIOBOLUS Saccardo
   equinus (Muell.) Karst.—Very common on horse, cow and rabbit dung, and occasionally on dog dung (M. & C.).

ASCOZONUS Renny
   argenteus (Berk. et Br.) Boud.—Scarborough on rabbit dung (M. & C.).

PYRONEMACEAE

PYRONEMA Carus
   domesticum (Sow.) Sacc.—Scarborough on damp wall (G.M.).
   omphalodes (Bull.) Fuckel.—Scarborough on burnt ground (G.M.).

EXOASCEAE

TAPHRINA Fries
   aurea (Pers.) Fr.—Locally common on Populus serotina.

EXOASCUS Fuckel
   deformans (Berk.) Fuckel.—Not uncommon on Prunus persica and P. amygdalus.
   turgidus Sadeb.—Common on Betula pendula and B. pubescens.
FUNGI — DISCOMYCETES

INOPERCULEAE

GEOGLOSSACEAE

TRICHOGLOSSUM Boudier
  hirsutum (Pers.) Boud.—Scarborough (G.M.).

GEOGLOSSUM Persoon
  difforme Fr.—Scarborough (G.M.).
  glutinosum Pers.—Scarborough (G.M.).
  ophioglossoides (L.) Sacc.—Cloughton (G.M.); Raincliffe Wood
  (A.E.P., 1917); Thornton-le-Dale (F.F., 1945).

LEPTOGLOSSUM Cooke
  tremellosum Cooke—Raincliffe Wood (G.M.).

MICROGLOSSUM Gillet
  olivaceum (Pers.) Gill.—Scarborough among grass (G.M.).
  viride (Pers.) Gill., as Mitrula serpentina.—Scarborough (G.M.,
  A.E.P., 1918).

LEOTIA Hill
  atro-virens Pers.—Scarborough (G.M.).
  lubrica (Scop.) Pers.—Not uncommon in woods.

CUDONIA Fries
  circinans (Pers.) Fr., as Vibrissea—Scarborough in fir woods, often
  forming "fairy rings" (G.M.).

CUDONIELLA Saccardo
  acicularis (Bull.) Schroet., as Helotium—Scarborough (M. & C.).

VIBRISSEA Fries
  truncorum (A. et S.) Fr.—Scalby Beck (G.M.); Staintondale
  (M. & C.).

APOSTEMIDIUM Karsten
  leptospora (Berk. et Br.) Boud.—Raincliffe Wood (F.F., 1915,
  H.W.).

OMBROPHILACEAE

OMBROPHILA Fries
  alniella (Nyl.) Karst.—Scarborough (G.M.).
  clavus (A. et S.) Cooke—Scarborough on dead leaves of Sambucus
  (G.M.); Raincliffe Wood (F.F., 1915).
  faginea (Pers.) Boud.—Scarborough on beech mast (G.M.).
  imberbis (Bull.) Boud.—Scarborough on Alnus (M. & C.).
  rudis (Berk.) Phill.—Scarborough on gravel (M. & C.).
PACHYDISCA Boudier
immutabilis (Fuckel) Boud.—Scarborough on dead leaves of Quercus (M. & C.).

CALYCELLA Fries
citrina (Hedw.) Quél.—Common.
lenticularis (Bull.) Boud.—Scarborough (M. & C.).
pallescens (Pers.) Quél.—Scarborough (M. & C.).
sublenticularis (Fr.) Boud.—Ganton (T.B.R., 1913); Ayton Moor (A.E.P., 1913).

DISCINELLA Boudier
purpurascens (Pers.) Boud.—Scarborough (G.M.); Hackness Park (T.B.R., 1910).

BULGARIACEAE

CORYNE Tulasne
sarcoides (Jacq.) Tul.—Common.
urnalis (Nyl.) Sacc.—Scarborough (M. & C.).

BULGARIA Fries
inquinans (Pers.) Fr.—Common.

CALLORIACEAE

CORYNELLA Boudier
atro-virens (Pers.) Boud.—Scarborough on Ulex (M. & C.); Howldale (J.W., Hull, 124, 1947).

POLYDESMIA Boudier
pruinosa (Berk. et Br.) Boud.—Scarborough (M. & C.); Thornton-le-Dale on Diatrypella quercina (F.F., 1945); Kingthorpe on Diatrype stigma (F.F., 1946).

CALLORIA Fries
fusarioides (Berk.) Fr.—Common on dead stems of Urtica.

ORBILIA Fries
leucostigma Fr.—Common on dead wood.
luteo-rubella (Nyl.) Karst.—Scarborough on dead Polyporus squamosus (M. & C.).
vinoa (A. et S.) Karst.—Scarborough (M. & C.).
xanthostigma Fr.—Common on dead wood.

Species under Boudier’s heading “Spp. of uncertain position”:
flexuosa Crossl.—Langdale End (F.F., 1897).
retrusa Phill. et Plowr.—Scarborough on dead leaves of Larix (M. & C.).

HYALINIA Boudier
dilutella (Fr.) Boud.—Filey on Epilobium (C.C., Nat., 1903, p. 250).
inflatula (Karst.) Boud.—Scarborough (M. & C.).

CIBORIACEAE

CIBORIA Fuckel
amentacea (Balb.) Fuckel—Forge Valley on Alnus (J.W., 1947).
sydowiana Rehm—Scarborough (M. & C.).
SCLEROTINIA Fuckel
candolleana (Lév.) Fuckel—Scarborough on dead leaves of Quercus (M. & C.).
curreyana (Berk.) Karst.—Not uncommon on Juncus.
fructigena Aderh. et Ruhl.—Scarborough (G.M.); Thornton-le-Dale on Malus pumila (F.F., 1945). Also in the imperfect state Monilia fructigena Pers. ex West., a common fruit mould.
lbertiana Fuckel.—Scarborough on Solanum tuberosum (G.M.); Thornton-le-Dale (F.F., 1945).
terosa (Hedw.) Fuckel—Widespread on rhizomes of Anemone nemorosa.

STROMATINIA Boudier
psudotuberosa (Rehm) Boud. — Raincliffe Wood on acorns (M. & C.).

PHIALEA Fries
echinophila (Bull.) Quél.—Scarborough on involucres of Castanea sativa (M. & C.).
arma (Pers.) Gill.—Oliver’s Mount on dead Quercus (M. & C.); Cloughton (A.E.P., 1917).

CHLOROSPLENIUM Fries
eruginosum (Oed.) de Not.—Records numerous, mostly on Quercus.

HELOTIUM Fries
cyathoideum (Bull.) Karst.—Common on dead herbaceous stems.
ephyllum (Pers.) Fr.—Scarborough on dead leaves of Quercus (M. & C.).
fructigenum (Bull.) Fuckel—Scarborough on beech-mast (M. & C.); Thornton-le-Dale (F.F., 1945).
herbarum (Pers.) Fr.—Scarborough on dead stems of Urtica (M. & C.).
infarciens Ces. et de Not., as Pachydisca laburni—Scarborough on Laburnum anagyroides (M. & C.).
lutescens (Hedw.) Fr.—Scarborough (M. & C.).
phylophilum (Desm.) Karst.—Scarborough on dead leaves of Fagus (M. & C.).
scutula (Pers.) Karst.—Common on decaying herbaceous stems.
serotonin (Pers.) Fr.—Scarborough (M. & C.).
urus (Wahl.) Karst.—Raincliffe Wood (T.B.R., 1911).

PSEUDOHELOTIUM Fuckel
pini (Batsch ex Fr.) Fuckel, as Belonidium jerdoni—Scarborough on leaves of Pinus sylvestris (M. & C.).

STAMNARIA Fuckel
equiseti (Hoffm.) Sacc.—Raincliffe Wood on Equisetum telmateia (M. & C.).
CYATHICULA de Notaris
coronata (Bull.) de Not.—Scarborough on Urtica (M. & C.); Forge Valley (Hull, 46, 1946).

BELONIDIUM de Notaris
deparculum (Karst.) Mass.—Filey on dead Filipendula ulmaria (C.C., 1903).

TRICHOBELONIUM (Saccardo) Rehm
obscura Rehm., as Echinella setulosa—Scarborough on dead stems of Calluna (G.M.).

LACHNELLACEAE.

DASYSCYPHA Fries
acuum (A. et S.) Sacc.—Ayton Moor on pine needles (A.E.P., 1912).
bicolor (Bull.) Fuckel—Scarborough on dead leaves of Corylus (M. & C.), a doubtful record.
brevipila de Gal—Common on Fagus. Many of the earlier records of D. nivea and D. virginea probably refer to this species.
cerina (Pers.) Fuckel—Scarborough (G.M., 1881).
ciliaris (Schrad.) Sacc.—Scarborough on dead leaves of Quercus (G.M.).
clandestina (Bull.) Fuckel—Forge Valley on Rubus idaeus (G.M.).
diminuta (Rob.) Sacc.—Staintondale on Juncus (T.B.R., 1912).
fuscescens (Pers.) Rehm—Silpho on fallen leaves of Quercus (A.E.P., 1913).
nivea (Hedw. fil.) Sacc.—Records numerous.
pulverulenta (Lib.) Sacc.—Scarborough on pine needles (G.M.).
rhytismatis (Phill.) Sacc.—Scarborough (G.M.).
virginea (Batsch)Fuckel—Records numerous.

ERINELLA Saccardo
apala (Berk. et Br.) Sacc.—Scarborough (G.M.).

LACHNELLA Fries
albo-testacea (Desm.) Quél.—Filey on grass stems (M. & C.).
corticalis (Pers.) Fr.—Scarborough on dead bark of Populus serotina (G.M.).
as Dasyscypha canescens Mass.—Scarborough (G.M.).
as Echinella crosslandi Mass.—Scarborough (G.M.).
leucophaea (Pers.) Boud.—Scarborough on dead Arctium (G.M.).
sulphurea (Pers.) Quél.—Not uncommon on dead Arctium and umbellifer stems.

TRICHOSCYPHA Boudier
calycina (Schum.) Boud.—Abundant on Larix decidua, also recorded on L. leptolepis, Pinus sylvestris, P. strobus and Pseudotsuga douglasii.
British records under the name *Dasyscypha calycina* embrace at least three species which appear very similar under a hand lens. In the *Systema Mycologicum*, Vol 2, p. 91, 1822, with which Discomycete nomenclature starts, Fries described *Peziza calycina* Schum. as occurring in two forms, only one of which was fully described and evidently regarded as the typical form. This common fungus on dead pine branches is accordingly that renamed by Boudier as *Trichoscypha calycina* and by Nannfeldt as *Trichoscyphella calycina*. It has small fusiform ascospores and is the fungus Cooke described as *Dasyscypha subtilissima*.

Fuckel however, adopted the name *Dasyscypha calycina* (Schum.) Fuckel for the very common fungus with large elliptical ascospores which occurs on dead branches of larch and this interpretation has been widely followed in Britain and America. It is however, clearly incorrect, as shown above, and actually there is no valid name for this abundant saprophytic species on larch.

The problem is complicated by the existence of a third fungus of this group which is actively parasitic and causes Larch Canker. The valid name for this species is *Trichoscyphella willkommii* (Hart.) Nannf.

resinaria (Phill.) Boud.—Scarborough on *Picea abies* (G.M.).

ARACHNOPEZIZA Fuckel

*aurata* Fuckel—Scarborough (G.M.).

HYALOSCYPHA Boudier

*dematiicola* (Berk. et Br.,) Nannf. Conidial form only (*Haplographium bicolor* Grove)—Howldale on *Fagus*, 1947 (I.M.I., 13928a); Ellerburn on dead *Abies* leaves (Nottm., 1114).

dentata (Pers.) Boud.—Forge Valley (J.W., Hull, 125, 1947).

hyalina (Pers.) Boud.—Common.

punctiformis (Grev.) Boud. — Scarborough on dead leaves of *Quercus* (M. & C.).

punctoides (Karst.) Boud.—Filey on dead *Epilobium* (M. & C.).

MICROPODIA Boudier

*oeedema* (Desm.) Boud.—Scarborough on *Phragmidium* on *Rubus fruticosus* (G.M.).

URCEOLELLA Boudier

*fugiens* (Phill.) Boud.—Filey (M. & C.); Robln Hood’s Bay on *Juncus* (C.C., 1907).

*melaxantha* (Fr.) Boud.—Scarborough on *Fagus* (G.M.).

*scrupulosa* (Karst.) Boud.—Scarborough on dead *Crataegus* (G.M.).

TRICHOPEZIZA Fuckel

citricolor (Berk. et Br.) Sacc.—Langdale End (C.C., 1897). "There being no specimens of this species in Berkeley’s Herbarium at Kew, the Scarborough specimens filled the vacancy and afforded an opportunity of drawing up a more complete diagnosis" (Nat., June, 1901).

eriobasis (Berk.) Boud.—Langton (G.M.).
MOLLISIACEAE

PYRENOPEZIZA Fuckel
 carduorum Rehm—Robin Hood’s Bay on Cirsium arvense (C.C., 1907).
 maculans (Rehm) Boud., as Mollisia—Silpho Moor on Nardus stricta
 (T.B.R., Nat., 1914, p. 46), new to Britain.
 rubi (Fr.) Rehm—Robin Hood’s Bay on dead Rubus (C.C., 1907).

MOLLISIA Fries
 atrata (Pers.) Karst.—Scarborough (M. & C.); Filey (F.A.M.,
 1931).
 conigena (Pers.) Boud.—Scarborough (M. & C.).
 cornea (Berk. et Br.) von Hoehn., as Calloria—Raincliffe Wood on
 Carex pendula (M. & C.).
 cinerea (Batsch) Karst.—Abundant.
 discolor (Mont. et Fr.) Phill.—Raincliffe Wood and Ganton (A.E.P.,
 1912-13).
 fallax (Desm.) Gill.—Scarborough on fir cones (M. & C.).
 juncina (Pers.) Rehm—Scarborough on Juncus (M. & C.).
 lignicola Phill.—Scarborough (M. & C.); Ellerburn (F.F., 1946);
 Howldale (P.B.H.T., 1946).
 polygoni (Lasch) Rehm, as M. atrocinerea—Not uncommon.
 ventosa Karst.—Scarborough (M. & C.).

TAPESIA Fuckel
 fusca (Pers.) Fuckel—Scarborough (G.M.); Hackness (Y.N.U.
 Excn., 1897); Thornton-le-Dale (F.C.R., 1946).
 rosae (Pers.) Fuckel—Scarborough (G.M.).
 sanguinea (Pers.) Fuckel—Scarborough (G.M.).

NIPTERA Fries
 lacustris Fr.—Scarborough on Glyceria maxima (M. & C.).
 punctum (Rehm) Sacc.—Broxa Moor on Nardus stricta (T.B.R.
 teste C.C., Nat., 1913, p. 175), new to Britain.

PATELLARIACEAE

PATINELLA Saccardo
 pallida (Berk.) Sacc., as Patellea—Scarborough (M. & C.).

PLACOGRAPHA Th. Fries
 flexella (Ach.) Th. Fr.—Scarborough on dead Pinus sylvestris
 (M. & C.).

HETEROSPHEREA Greville
 patella (Tode) Grev.—Scarborough on Angelica sylvestris (M. & C.);

DURELLA Tulasne
 atro-vinosa (Blox.) Sacc.—Scarborough (M. & C.).

LECANIDION Rabenhorst
 maurum (Phil.) Sacc.—Scarborough (M. & C.).

SCUTULARIA Karsten
 citrina (Chev.) Sacc.—Scarborough on dead Rosa canina (M. & C.).
VELUTARIA Fuckel
dry-olivacea (A. et S.) Fuckel—Scarborough on Fraxinus (M. & C.); Ellerburn on Fraxinus (F.F., 1946); Hackness on Fagus (F.C.R., 1946 et seq.).

PEZICULA Tulasne
dryina (Cooke) Sacc.—Scarborough on Quercus (M. & C.).
rubri (Lib.) Niessl.—Scarborough on Rubus (M. & C.),
as P. rhubarbarina (Berk.) Tul.—Hackness on Rubus (F.C.R., 1945); these specimens are now in the Kew Herbarium.

DERMATEA Fries
cerasi (Pers.) de Not.—Scarborough on Prunus laurocerasus (M. & C.); Howldale on P. avium (F.F., 1946).

CENANGIUM Fries
abietis (Pers.) Duby—Scarborough on Pinus sylvestris (M. & C.).
prunastri (Pers.) Fr.—Scarborough on Prunus communis (M. & C.).
pulveraceum (A. et S.) Fr.—Scarborough on Prunus communis (M. & C.).
sarothamni Fuckel—Scarborough on dry branches of Sarothamnus scoparius (G.M.).

ENCOELIA Fries
furfuracea (Roth.) Karst.—Scarborough on Corylus (M. & C.).

TYMPANIS Tode
conspersa Fr.—Scarborough on Populus (M. & C.).

PHAEANGELLA Saccardo
empetri (Phil.) Boud.—Seamer Moor (T.B.R., 1911). The specimens were sent to Charles Crossland and by him to Dr. Boudier, who first named the species Pseudophacidium smithianum and then transferred it to Phaeangella. Later Phillip's old record of Cenangium empetri was noticed and Boudier made the necessary transfer. Thus the nomenclatorial history is:

3. Phaeangella smithiana (Boud.) Boud., 1912.
4. Phaeangella empetri (Phil.) Boud., 1913.

SCLERODERRIS Fries
ribesia (Pers.) Karst.—Scarborough on living leaves of Ribes sativum (G.M.).

TROCHILA Fries
craterium (DC.) Fr.—Scarborough (M. & C.).
laurocerasi (Desm.) Fr.—Scarborough on Prunus laurocerasus (M. & C.).

STICTIDIACEAE

PROPOLIS Fries
faginea (Schrad.) Karst.—Scarborough (M. & C.); Kingthorpe on Fagus (F.F., 1946).
OCELLARIA Tulasne
punctiformis (Pers.) Sacc.—Scarborough on Salix caprea (M. & C.).

CRYPTODISCUS Corda
angulosus Karst.—Scarborough on Salix caprea (M. & C.).
pallidus (Pers.) Corda—Scarborough on Fagus (M. & C.).

STICTIS Persoon
annulata Cooke et Phill.—Scarborough on Lonicera (M. & C.).
radiata (L.) Pers.—Scarborough on Fagus (M. & C.).

SCHIZOXYLON Persoon
berkleyanum (Dur. et Lév.) Fuckel—Scarborough on Artemisia vulgaris (M. & C.).

NEMACYCLUS Fuckel
niveus (Pers.) Sacc.—Scarborough on dead leaves of Pinus sylvestris (M. & C.).

PHACIDIACEAE

CRYPTOMYCES Greville
maximus (Fr.) Rehm—Scarborough on living Salix caprea (M. & C.).

PHACIDIUM Fries
abietinum Kunze et Schm.—Scarborough on fallen leaves of Larix and Pinus (M. & C.).
infestans Karst.—Scarborough on living Pinus sylvestris (M. & C.).
The first British record.
striatum Phill. et Plowr.—Scarborough on Rubus (M. & C.).
PSEUDOPEZIZA Fuckel
ranunculi (Wallr.) Fuckel—Scarborough on R. repens, etc. (M. & C.); Thornton-le-Dale (F.F., 1945).
repanda (Fr.) Karst.—Thornton-le-Dale on Sherardia (W.G.B., York, 1945); Saltergate on Galium saxatile (Nottn., 1041).
trifolii (Biv.-Bern) Fuckel—Scarborough on T. repens (M. & C.); Robin Hood’s Bay on T. hybridum (W.G.B., 1946).

STEGIA Fries
ilicis Fr.—Records numerous.

SCHIZOTHYRIUM Desmazières
aquilinum (Schum.) Rehm—Scarborough on Pteridium aquilinum (M. & C.).
ptarmicae Desm.—Seamer Moor on living Achillea ptarmica (M. & C.); Filey (F.A.M., 1931).
COCCOMYCES de Notaris
coronatus (Schum.) de Not.—Scarborough on Quercus (M. & C.).
dentatus (Kunze et Schm.) Sacc.—Scarborough on Quercus (M. & C.).

COLPOMA Wallroth
quercinum (Pers.) Wallr.—Scarborough on Quercus (M. & C.);
Harwood Dale (Nottm., 1330).

RHYTISMA Fries
acerinum (Pers.) Fr.—Abundant on Acer pseudoplatanus, less common on A. campestris.
punctatum (Pers.) Fr.—Scarborough (G.M.); Raincliffe Wood (A.E.P.); Hackness (F.F., 1925); all on Acer pseudoplatanus.
salicinum (Pers.) Fr.—Scarborough on living Salix (G.M.).

PYRENOMYCETES
PERISPORIALES
EUROTIACEAE
EUROTIUM Link ex Fries
lateritium Mont.—On stale bread; Scarborough (G.M.).

ERYSIPHE Hedwig fils ex Fries
galeopsidis DC.—On Stachys; Thornton-le-Dale (F.F., 1945).
graminis DC.—Not uncommon on Triticum, Dactylis, etc.
polygoni DC., as E. communis—Fairly common on many hosts.

MICROSphaera Leveillé
berberidis (DC.) Lév.—On B. vulgaris; Scarborough (G.M.).
grossulariae (Wallr.) Lév.—On Ribes uva-crispa; Scalby (G.M.);
Thornton-le-Dale (F.F., 1945).

PODOSPHAERA Kunze ex Léveillé
oxyacantha (DC.) de Bary—On Crataegus; Scarborough (G.M.).
var. tridactyla (Wallr.) Salm.—On Prunus padus; Scarborough (G.M.).
leucotricha (Ell. et Ev.) Salm.—On apples; Scarborough (T.B.R., 1916).

SPHAEROTHECA Leveillé
humuli (DC.) Burr.—Numerous records.
pannosa (Wallr.) Lév.—Common in the district, although there are specific records only for the conidial state, Oidium leucoconium.
UNCINULA Léveillé
salicis (DC.) Wint., as U. aduncta—On Salix; Ayton (G.M.).

PERISPORIACEAE

PERISPORIUM Fries emend. Corda
vulgare Corda—On sacking; Forge Valley, 1947 (I.M.I., 13767a).

CAPNODIACEAE

CAPNODIUM Montagne
salicinum Mont.—On Salix; Scarborough (G.M.).
tiliae Sacc.—On Tilia; Scalby (G.M.); in the absence of specimens, this must be considered a doubtful record.

SPHAERIALES

SPHAERIACEAE — ALLANTOSPORAE

CRYPTOSPHAERIA Greville
eunomia (Fr.) Fuckel—On Fraxinus; Kingthorpe, 1930 (I.M.I., 1432, 14319); Thornton-le-Dale, 1947 (I.M.I., 14521); Pickering, 1947 (I.M.I., 14104).

DIATRYPE Fries
bullata (Hoffm. ex Fr.) Fr.—On Salix; Ellerburn (Nottm., 1069).
disciformis (Hoffm. ex Fr.) Fr.—Common, especially on Fagus.

DIATRYPELLA (Cesati et de Notaris) Saccardo
aspera (Fr.) Nits.—On Fagus; Boynton (W.W.S., Nat., July, 1889).
favacea (Fr.) Ces. et de Not.—On Fagus; Kingthorpe, 1930 (I.M.I., 14538); Forge Valley, 1947 (I.M.I., 14103).
quercina (Pers.) Cooke—Many records on Quercus.
tocciaeana de Not.—On Alnus; Forge Valley (W.G.B., 1947).
verruciformis (Ehrenb. ex Fr.) Nits.—Numerous records, possibly a form of D. favacea.

EUTYPA Tulasne
acharii Tul.—On Fagus; Scarborough (G.M.).
aspera (Nits.) Fuckel—On Fagus; Scarborough (G.M.).
flavovirens (Pers. ex Fr.) Tul.—Many records on wood and bark.
lata (Pers. ex Fr.) Tul.—On Hedera; Scarborough (G.M.).

EUTYPELLA (Nitschke) Saccardo
prunastri (Pers. ex Fr.) Sacc.—Numerous records on Prunus spinosa.
sorbi (Schm. ex Fr.) Sacc.—Locally common on Sorbus aucuparia in woods near Thornton-le-Dale (I.M.I., 14726, 1344, 4940, etc.).
stellulata (Fr.) Sacc.—On Ulmus; Kingthorpe, 1930 (I.M.I., 14731); Forge Valley, 1945 (I.M.I., 1885); Thornton-le-Dale, 1947 (I.M.I., 14261). On Acer; Scarborough (G.M.).
NITSCHKIA Otth
cupularis (Pers. ex Fr.) Karst.—On Fraxinus; Howldale (F.F., 1947).

PERONEUTYPA Berlese

QUATERNARIA Tulasne
dissepta (Fr.) Tul.—On Ulmus; Kingthorpe (F.F., 1946).
quaternata (Pers. ex Fr.) Schroet.—On Fagus; Howldale, 1947 (I.M.I., 14259).

VALSA Fries
ambiens (Pers. ex Fr.) Fr.—Numerous records.
ceratophora Tul.—On Quercus; Scarborough (G.M.).
leiphaemioides Berk et Curt.—On Quercus; Raincliffe Wood (G.M.);
as this is a North American species, the record must be considered doubtful.

SPHAERIACEAE — HYALOSPORAE

BOTRYOSPHAERIA Cesati et de Notaris
hoffmanni von Hoehn.—On Fagus; Howldale, 1947 (I.M.I., 14454, 14459). Pycnidia (Fusicoccum macrosorum Sacc. et Bri.) were grown from ascospores for the first time, from I.M.I., 9911 (E.W.M., 1947).

CERATOSTOMELLA Saccardo
rostrata (Fr.) Sacc.—Scarborough (G.M.).
estita Sacc.—On Quercus; Kingthorpe (F.F., 1945).

CRYPTOSPORELLA Saccardo
hypodermia (Fr.) Sacc.—On Ulmus; Forge Valley, 1947 (I.M.I., 14488, Hull, 114).

DITOPELLA de Notaris
ditopa (Fr.) Schroet.—On Alnus; Forge Valley, 1947 (I.M.I., 13828).

GNOMONIELLA Saccardo
avellanae (Schm. ex Fr.) Sacc.—On living Corylus; Scarborough (G.M.).
cyli (Batsch ex Fr.) Sacc.—On living Corylus; Scarborough (G.M.).
tubiformis (Tode ex Fr.) Sacc.—On Alnus leaves; Scarborough (G.M.).
vulgaris (Ces. et de Not.) Sacc.—On Corylus; Scarborough (G.M.).

OPHIOSTOMA Sydow
piceae (Muench.) Syd.—On conifer; Thornton-le-Dale, 1947 (I.M.I., 1395a).

PHYSALOSPORA Niessl

TRICHOSPHAERIA Fuckel
TYMPANOPSIS Starback
euomphala (Berk. et Curt.) Sacc.—On Fraxinus; Kingthorpe, 1945 (I.M.I., 1355a).

SPHAERIACEAE — PHAEOSPORAE

ANTHOSTOMA Nitschke
gastrinum (Fr.) Sacc.—On Ulmus; Kingthorpe, 1945 (I.M.I., 1350).
melanotes (Berk. et Br.) Sacc.—On Ulmus; Ellerburn (Nottm. 1346).
microsporum Karst.—On Alnus; Forge Valley, 1945 (I.M.I., 1381).
Not previously recorded for England; compared with Karsten's original material from Finland.
turgidum (Pers. ex Fr.) Nits.—Numerous records on Fagus.

BOMBARDIA Fries
fasciculata Fr.—Scarborough (G.M.). On Fraxinus; Kingthorpe, 1930 (I.M.I., 15157).

CHAETOMIUM Kunze ex Fries
chartarum Ehrenb. ex Fr.—On damp paper; Scarborough (G.M.).
this is probably a synonym of C. globosum Kunze ex Fr.

DALDINIA Cesati et de Notaris
concentrica (Bolt. ex Fr.) Ces. et de Not.—Common, usually on Fraxinus.

HYPOXYLON Bulliard ex Fries
fragiforme (Pers. ex Fr.) Kickx (= coccineum Bull.)—Common on Fagus.
fuscum (Pers. ex Fr.) Fr.—Numerous records on Corylus. On Alnus; Forge Valley, 1946 (I.M.I., 7021).
as atropurpureum Fr.—Robin Hood's Bay (C.C., 1907). Bisby and Mason say that all British specimens under this name are H. rubiginosum.
semi-immersum Nits.—On Quercus; Howldale, 1947 (I.M.I., 14479); Kingthorpe (F.F.), 1946.
serpens (Pers. ex Fr.) Fr.—On dead leaves; Scarborough (G.M.). On Betula; Forge Valley, 1947 (I.M.I., 13827a, 13833a). On Ulmus; Forge Valley, etc. (F.F., 1945-47).

NUMMULARIA Tulasne
bulliardi Tul.—On Fagus; Scarborough (G.M.).
lutea (A. et S. ex Fr.) Nits.—On Buxus; Kingthorpe, 1945 (I.M.I., 1363).

PORONIA Willdenow ex Fries
punctata (L. ex Fr.) Fr.—On horse dung; Scarborough (G.M.)
ROSELLINIA de Notaris
aquila (Fr.) de Not.—On Cornus; Kingthorpe, 1946 (I.M.I., 4931).
on Fraxinus; Kingthorpe, 1930 (I.M.I., 13351). On Ulmus;
Kingthorpe, 1930 (I.M.I., 13373). On Acer; Howldale (Nottm.,
1196).
ligniaria (Grev.) Nits.—On Fagus; Kingthorpe, 1946 (I.M.I.,
4929); Howldale (Nottm., 1159).
mammiformis (Pers. ex Fr.) Ces. et de Not.—Scarborough (G.M.).
on wood; Thornton-le-Dale (F.F., 1945).
thelela (Fr.) Rabenh.—Scarborough (G.M.).
velutina Fuckel—On Fagus; Kingthorpe (F.F., 1946); Howldale
(Nottm., 1159).

SORDARIA Cesati et de Notaris
coprophila (Fr.) Ces. et de Not.—On horse and cow dung; Scar-
borough (G.M.).

THAMNOMYCES Ehrenberg ex Fries
hippotrichoides (Sow.) Ehrenb.—On coconut fibre; Scarborough
(G.M.).

USTULINA Tulasne
deusta (Hoffm. ex Fr.) Pet. (= U. vulgaris Tul.)—Scarborough

XYLARIA Hill ex Greville
carpophila (Pers. ex Fr.) Fr.—Raincliffe Wood (G.M.). On beech-
mast; Thornton-le-Dale (F.F., 1946).
corniformis Fr. Hackness (A.E.P., 1915); Raincliffe Wood (F.F.,
1915. Now considered a doubtful species.
filiformis (A. et S. ex Fr.) Fr.—On dead leaves; Scarborough (G.M.).
hypoxylon (L. ex Fr.) Grev.—Very common on old stumps.
longipes Nits.—On Acer; Kingthorpe (W.G.B.); Forge Valley (F.F.,
1944).
polymorpha (Pers. ex Fr.) Grev.—Not uncommon on stumps.
vaporaria Berk. Scarborough, in cucumber frame (G.M.).

SPHAERIACEAE—HYALODIDYMAE

BERTIA de Notaris
moriformis (Tode ex Fr.) de Not. Numerous records, especially on
Sambucus.

CALYCUSPHAERIA Fitzpatrick
tristis (Fuckel) Fitzp.—On Acer; Forge Valley, 1947 (I.M.I., 34199).
on Crataegus and Ulmus; Thornton-le-Dale (F.F., 1945-46).

COLEROA (Fries) Rabenhorst
chaetomium (Kunze ex Fr.) Rabenh. On Rubus; Forge Valley
(W.G.B., 1947).

DIAPORTHE Nitschke
crataegi (Curr.) Nits.—On Crataegus; Scarborough (G.M.).
decedens (Fr.) Fuckel—On Corylus; Thornton-le-Dale (F.F., 1945).
eres Nits.—On Fraxinus; Kingthorpe, 1930, as D. controversa (I.M.I.,
leiphaemia (Fr.) Sacc.—Many records on Quercus.
lirella (Fr.) Nits. On Filipendula ulmaria; Scarborough (G.M.).
pardalota (Mont.) Nits. On Ilex; Howldale (W.G.B., 1947). On dead herbaceous stems; Scarborough, as D. striaeformis (G.M.).
pustulata (Desm.) Sacc.—On Acer; Kingthorpe, 1930, as D. niessli (I.M.I., 15814), Forge Valley (W.G.B., 1945).
medusaea Nits.—On Laburnum anagyroides; Scarborough, as D. striaeformis (G.M.).
sarothamni (Auersw.) Nits.—On Sarothamnus; Scarborough (G.M.).

DIDYMELLA Saccardo

planiuscula (Berk. et Br.) Sacc.—Scarborough (G.M.).
tosta (Berk. et Br.) Sacc.—On Epilobium; Scarborough (G.M.), Ellerburn (F.F., 1946).

DIDYMELLINA von Hoehnel
dianthi Burt., C.C.—On cultivated pinks; Scarborough, the conidial state only, Heterosporium echinulatum (M. & C.).

GNOMONIA Cesati et de Notaris

errabunda (Rob. in Desm.) Auersw.—On Fagus leaves; Ellers Wood (Nottm., 1043).
inclinata (Desm.) Auersw. On Acer petioles; Ellers Wood (Nottm., 1067).
rostellata (Fr.) Bref.—On Rubus; Scarborough (G.M.).
setacea (Pers. ex Fr.) Ces. et de Not. Scarborough (G.M.).

HERCOSPORA Preuss
tiliae (Pers. ex Fr.) Fr. emend. Tul. On Tilia; Scarborough (G.M.).

MELANCONIS Tulasne

stilbostoma (Fr.) Tul. On Betula; Dalby Dale (F.F., 1945); Howldale (Nottm., 1827).
thelebola (Fr.) Sacc. On Alnus; Ellerburn (Nottm., 1036).

MELANOPSAMMA Niessl


MELANOPSAMMELLA von Hoehnel


MYCOSPHAERELLA Johanson

brassicicola (Duby) Oud. On Capsella; Scarborough (G.M.).
fragariae (Tul.) Lind. On Fragaria; Thornton-le-Dale (F.F., 1945).
hedericola (Desm.) Lind. On Hedera; Scarborough (G.M.).
isariophora (Desm.) Johans. On Stellaria media; Scarborough (G.M.).
pteridis (Desm.) Schroet. On Pteridium aquilinum; Scarborough (G.M.).
punctiformis (Pers. ex Fr.) Starb. On Rumex; Scarborough (G.M.).
VENTURIA de Notaris
myrtili Cooke.—On Vaccinium; Scarborough (G.M.).

SPHAERIACEAE—PHAEODIDYMAE

DIDYMOSPHAERIA Fuckel
epidermidis (Fr.) Fuckel.—On Epilobium; Kingthorpe (F.F., 1946).

OTTHIA Nitschke
pruni Fuckel—On Prunus communis; Scarborough (G.M.).

RHYNCHOSTOMA Karsten
apiculata (Curr.) Wint. Scarborough (G.M.).

VALSARIA Cesati et de Notaris
cincta (Curr.) Sacc.—On Fagus; Scarborough (G.M.).

SPHAERIACEAE—HYALOPHRAGMIAE

CALOSPORA Nitschke

CERATOSPHAERIA Niessl
ordinata (Fr.) Kirschst.—On Quercus; Scarborough (G.M.).

HYPOSPILA Fries
bifrons (DC. ex Fr.) Sacc.—On dead Quercus leaves; Scarborough (G.M.).

LASIOSPHAERIA Cesati et de Notaris
hirsuta (Fr.) Ces. et de Not.—On Salix caprea; Scarborough (G.M.).
On Sorbus; Howldale, 1946 (I.M.I., 4935).

spermoide (Hoffm. ex. Fr.) Ces. et de Not.—Numerous records.

MASSARINA Saccardo
alni (Otth) Sacc.—On Alnus; Ellerburn (Nottm., 1316).
eburnea (Tul.) Sacc.—On Fagus; Thornton-le-Dale, 1946 (I.M.I., 5601).

METASPHAERIA Saccardo
complanata (Tode ex Fr.) Sacc.—Scarborough (G.M.); Filey (M. & C.).

ZIGNOELLA Saccardo
macrasca Sacc.—On Ulmus; Scarborough (G.M.).
pulviuscula (Curr.) Sacc.—On Fagus; Howldale (Nottm., 1148); Kingthorpe, 1930 (I.M.I., 5356). On Fraxinus; Kingthorpe, 1930 (I.M.I., 5350).
CHAETOSPHAERIA Tulasne

innumera (Berk. et Br.) Tul.—On Sorbus; Howldale, 1946 (I.M.I., 4975c.).

phaeostroma (Dur. et Mont.) Fuckel—Numerous records on Acer, Fagus, etc., usually associated with Diatrype stigma or Eutypa flavovirens.

CLYPEOSPHAERIA Fuckel

notarisi Fuckel—On Rosa; Kingthorpe (F.F., 1946).

LEPTOSPHAERIA Cesati et de Notaris

acuta (Hoffm. ex Fr.) Karst.—Very common on Urtica.

culmifraga (Fr.) Ces. et de Not.—Filey (F.A.M., 1931), no host stated.

derasa (Berk. et Br.) Thuem.—On Senecio; Kingthorpe (F.F., 1946).


doliolum (Pers. ex Fr.) de Not.—On Carduus; Scarborough (G.M.);

fuscella (Berk. et Br.) Ces. et de Not.—On Ulex; Robin Hood’s Bay
(C.C., Nat., 1907, p. 254).

lunariae (Berk. et Br.) Sacc.—On dry Lunaria pods; Scarborough
(M. & C.).

pellita (Rabenh. et Klotz.) Sacc.—Scarborough (G.M.).

MASSARIA de Notaris

argus (Berk. et Br.) Fres.—On Betula; Ellerswood (Nottm., 1324).

inquinans (Tode ex Fr.) Fr.—On Acer; Scarborough (G.M.).

MELANOMMA Nitschke ex Fuckel

pulvis-pyrius (Pers. ex Fr.) Fuckel—Numerous records.

subdispersum Karst.—On Betula; Forge Valley, 1947 (I.M.I., 13831,
etc.). On Sorbus; Howldale, 1946 (I.M.I., 14490). Conidia
(Helminthosporium longipilum Corda) grown from ascospores by
S. J. Hughes.

PSEUDOVALSA Cesati et de Notaris

aucta (Berk. et Br.) Sacc.—On Alnus; Ellersburn (Nottm., 1205-6).

lanciformis (Fr.) Ces. et de Not.—On Betula; Scarborough (G.M.);

longipes (Tul.) Sacc.—Scarborough (G.M.).

SPORORMIA de Notaris

intermedia Auersw.—On rabbit dung; Scarborough (G.M.).

TREMATOSPHAERIA Fuckel

pertusa (Pers. ex Fr.) Fuckel.—Scarborough (G.M.).
BERLESIELLA Saccardo


CAPRONIA Saccardo

*sexdecemspora* (Cooke) Sacc.—On *Fagus*; Scarborough (G.M.).

CUCURBITARIA S.F. Gray ex Greville

*aspegrenii* Ces. et de Not.—On *Prunus*; Scarborough (G.M.).

*berberidis* (Pers. ex Fr.) S. F. Gray.—On *Berberis*; Ayton (G.M.).

*labumi* (Pers. ex Fr.) de Not.—On *Cytisus*; Scarborough (G.M.).

*spartii* (Nees in Fr.) Ces. et de Not.—On *Sarothamnus*; Scarborough (G.M.).

FENESTELLA Tulasne

*vestita* (Fr.) Sacc.—On *Fagus*; Scarborough (G.M.).

PLEOMASSARIA Spegazzini

*siparia* (Berk. et Br.) Sacc.—On *Betula*; Staindale (Nottm., 1325-26).

PLEOSPORA Rabenhorst

*euonymi* Fuckel—On fallen leaves of *Euonymus*; Spa Gardens, Scarborough (T.B.R., 1913), first British record.

*herbarum* (Pers. ex Fr.) Rabenh. Numerous records on many hosts.

*meliloti* Rabenh.—On dead *Melilotus*; Scarborough (G.M.).

*pentamera* Karst.—On *Holcus*; Filey (M. & C.).

*scrophulariae* (Desm.) von Hoenh.—On old capsules of *Rhinanthus cristagalli*; South Cliff, Scarborough (T.B.R., Nat., 1914, p. 149).

*as vulgaris* Niessl—On *Daucus carota*; Scarborough (G.M.).

TEICHOSPORA Fuckel

*obducens* (Fr.) Fuckel—On *Fraxinus*; Howldale (Nottm., 1158).

SILLIA Karsten

HYPOCREALES
NECTRIACEAE

APIOCREA Sydow
chrysosperma (Tul.) Syd. (= Sepedonium chrysospernum Link ex Fr.). Common in the conidial form on boleti and agarics.

BYSSONECTRIA Karsten
lateritia (Fr.) Petch—On Lactarius deliciosus; Scarborough (G.M.).

DIALONECTRIA (Saccardo) Cooke
peziza (Tode ex Fr.) Cooke—On Acer; Scarborough (G.M.), Thornton-le-Dale (F.F., 1946).
sanguinea (Bolt. ex Fr.) Cooke—On Hypoxylon; Scarborough (G.M.). On Diatrype stigma and Anthostoma on Fagus and Sorbus; Thornton-le-Dale (F.F., 1946-7).
wegeliana (Rehm) Petch—On Diaportha; Raincliffe Wood (F.F., 1947).

GIBBERELLA Saccardo
cyanogena (Desm.) Sacc.—On Urtica; Thornton-le-Dale (F.F., 1945).
pulicaris (Fr.) Sacc.—On Sambucus; Scarborough (G.M.).

HYPOMYCES (Fries) Tulasne
rosellus (A. et S. ex Fr.) Tul.—On Stereum; Scarborough (G.M.).

HYPONECTRIA Saccardo
buxi (Desm.) Sacc.—On Buxus; Cloughton (M. & C.).

LASIONECTRIA (Saccardo) Cooke
flavida (Corda) Cooke—There is a Massie specimen in the B.M. Herbarium labelled “Scarborough” (T.P., Nat., 1937, p. 281).

NECTRIA Fries
aquifolii (Fr.) Berk.—On dead Ilex; Scarborough (G.M.). On living Ilex; Raincliffe Wood (T.B.R., 1912).
cinnabrina (Tode ex Fr.) Fr.—Abundant; also frequently recorded in the conidial state, Tubercularia vulgaris.
coccinea (Pers. ex Fr.) Fr.—On Fagus; Scarborough (G.M.), Kingthorpe (F.F., 1946), Ellerburn (Nottm., 1337).
coryli Fuckel—On Salix, Ellerburn (F.F., 1946). Our record of N. cucurbitula (G.M., 1881), probably refers to this species.
inventa Peth.—Only in the conidial state, Acrostalagmus cinnabarinus. on umbelliferous stems; Thornton-le-Dale (F.F., 1945).
mammoidea Phill. et Plowr.—On Ulex; Scarborough (G.M., 1881).
punicea (Kunze et Schm. ex Fr.) Fr.—On Fagus; Kingthorpe (F.F., 1946), Howldale, 1947 (I.M.I., 14108).
sinopica (Fr.) Fr.—On Hedera; Kingthorpe (F.F., 1946); Ellerburn (Nottm., 1068, etc.).
NECTRIOPSIS Maire  

PROTOSCREA Petch  
*farinosa* (Berk. et Br.) Petch—Scarborough (G.M.). No specimens are available and as other determinations as this species by Massee about the same date were incorrect, the record is doubtful (T.P., Nat., 1937, p. 283).

OPHIONECTRIA Saccardo  

PSEUDONECTRIA Seaver  
russeliana (Mont.) Woll.—Massee’s specimen in the B.M. Herbarium is labelled “Scarborough” (T.P., Nat., 1937, p. 279).

HYPOCREACEAE

CLAVICEPS Tulasne  
purpurea (Fr.) Tul.—Locally abundant in some years.

CORYCEPS (Fries) Link  
capitata (Holmsk. ex Fr.) Link—Yedmandale, host not established (F.F., 1915, H.W.).  
militaris (L. ex Fr.) Link—On pupa; Wykeham Moor (F.C.R., 1946).  
ophioglossoides (Ehrh. ex Fr.) Link—On *Elaphomyces muricatus* and *E. granulatus*; Raincliffe Wood (G.M., C.R., 1918).

EPICHLOE (Fries) Tulasne  
typhina (Pers. ex Fr.) Tul.—Numerous records, mostly on *Holcus*.

HYPOCREA Fries  
pulvinata Fuckel—Not uncommon on *Polyergus betulinus*.

POLYSTIGMA de Candolle ex Chevallier  
*rubrum* (Pers. ex Fr.) Chev.—On *Prunus*; Scarborough (G.M.).

LOPHIOSTOMA (Fries) Cesati et de Notaris  
caulium (Fr.) Ces. et de Not.—On *Epilobium*; Filey (M. & C.).  
macrostoma (Tode ex Fr.) de Not.—On *Ilex*; Scarborough (G.M.).

LOPHIOTREMA Saccardo  
hederae (Fuckel) Sacc.—On *Hedera*; Scarborough (G.M.).

DOTHIDEOLES

DOTHIDELLA Spegazzini  
trifolii Bayl., Ell. et Stansf.—Scarborough (G.M.). Frequently recorded in the conidial state, *Polythrincium trifolii*.

ENDODOTHELLA Theissen et Sydow  
junci (Fr.) Theiss. et Syd.—Scarborough (G.M.). On *J. effusus*; Filey (T.B.R., 1911); Robin Hood’s Bay (W.G.B., 1946).
PHYLLOCHORA Nitschke
 heraclei (Fr.) Fuckel—On living Heracleum; Scarborough (G.M.).
 RHOPOGRAPHUS Nitschke
 filicinus (Fr.) Fuckel, as Phyllochora pteridis.—Many records.
 SYSTREMMA Theissen et Sydow
 ulmi (Duv. ex Fr.) Theiss. et Syd.—On living Ulmus; Scarborough (G.M.).

MICROTHYRIALES

STIGMATEA Fries
 ostruthii (Fr.) Oud.—On living Angelica; Scarborough (G.M.).
 robertiana (Fr.) Fr.—Scarborough (G.M.).

HYSTERIALES

ACROSPERMUM Tode ex Fries

AUROGRAPHUM Libert
 vagum Desm.—On dead Ilex leaves; Scarborough (G.M.).

DICAENA Fries
 faginea (Pers. ex Fr.) Fr.—On living Fagus bark; Scarborough (G.M.).
 quercina (Pers. ex Fr.) Fr.—On living Quercus bark; Scarborough (G.M.).

FARLOWIELLA Saccardo

GLONIOPSIS de Notaris
 levantica Rehm (= G. curvata (Fr.) Sacc.)—Numerous records on Rubus and Rosa.

GLONIUM Muehlenberg ex Fries
 lineare (Fr.) de Not.—On Fagus; Scarborough (G.M.).

HYPODERMA de Candolle ex de Notaris
 commune (Fr.) Duby—On Ranunculus flammula; Scarborough Mere (G.M.).
 conigenum (Pers. ex Fr.) Sacc.—On cones of Pinus sylvestris; Silpho and Broxa (T.B.R., 1912).
 virgulorum DC. ex Sacc.—On Rubus; Scarborough (G.M.).

HYSTERIUM Tode ex Fries
 pulicarum Pers. ex Fr.—On Hedera; Raincliffe Wood (G.M.); Thorn- ton-le-Dale (F.F., 1946).
 angustatum (A. et S. ex Fr.) Chev.—On Rhododendron; Forge Valley, 1946 (I.M.I., 7750a).
HYSTEROGRAPHIUM Corda
Fraxini (Pers. ex Fr.) de Not.—Filey (T.B.R., 1914). Probably our record of H. elongatum is this species, as Bisby (Trans. B.M.S. 27 p. 27) finds almost all British records of H. elongatum erroneous.

LOPHODERMIUM Chevallier
Arundinaceum (Schrad. ex Fr.) Chev.—On Phalaris and Bromus ramosus; Scarborough and Filey (M. & C.).
Hysteroides (Pers.) Sacc.—On dead Crataegus leaves; Scarborough (G.M.).
Melaleum (Fr.) de Not.—On Vaccinium; Scarborough, 1913 (T.B.R. teste C.C.).
Pinastri (Schrad. ex Fr.) Chev.—Not uncommon on Pinus leaves.
Rhododendri Ces.—On fallen Rhododendron leaves; Raincliffe Wood (T.B.R., 1913).

USTILAGINALES

USTILAGINACEAE

CINTRACTIA Cornu
Caricis (Pers.) Magn.—Scarborough (M. & C.).

USTILAGO (Persoon) Roussel
Avenae (Pers.) Jens.—Scarborough (M. & C.); Robin Hood’s Bay (W.G.B.).
Hordei (Pers.) Lagerh.—Not uncommon.
Longissima (Sow. ex Schlect.) Mey.—Seamer Carr on Glyceria maxima and G. fluitans (M. & C.).
Perennans Rostr.—Thornton-le-Dale on Arrhenatherum elatius (F.F., 1945).
Scabiosae (Sow.) Wint.—Scarborough on Knautia arvensis (M. & C.).
Striaeformis (Westend.) Niessl—Raincliffe Wood and Beedale on Holcus (W.G.B., 1942 and 1945).
Triticum (Pers.) Rostr.—Occasional.
Violacea (Pers.) Rouss.—Scarborough on Silene cucubalus and common on the anthers of Melandrium dioicum.

TILLETIACEAE

ENTYLOMA de Bary
Microsporum (Ung.) Schroet.—Kingthorpe on Ranunculus spp. (T.B.M.S., 1931).

MELANOTAENIUM de Bary
Endogenum (Ung.) de Bary—Scarborough on Galium verum (M. & C.).
TILLETIA Tulasne
caries (DC.) Tul.—Occasional on cultivated Triticum spp.

UROCYSTIS Rabenhorst
violae (Sow.) Fisch. et Waldh.—Scarborough on Viola reichenbachiana (M. & C.); Kingthorpe on V. riviniana (W.G.B., 1938).

UREDINALES
MELAMPSORACEAE

MILESINA Magnus
blechni Syd.—Kingthorpe (T.B.M.S., 1931).

THECOPSORA Magnus
vacciniorum (DC.) Karst.—Thornton-le-Dale on V. myrtillus (F.F., 1945).

MELAMPSORELLA Schroeter
cerastii (Pers.) Schroet.—Scarborough on C. arvense (M. & C.).

PUCCINIASTRUM Otth
agrimoniae (Schw.) Tranzsch.—Thornton-le-Dale (F.F., 1945).
pyrolae (Mart.) Schroet.—Silpho Moor on Pyrola minor (T.B.R., 1911).

MELAMPSORIDIUM Klebahn
betulinum (Pers.) Kleb.—Wykeham (F.F., 1945).

COLEOSPORIUM Léveillé
campanulae (Pers.) Lév.—Scarborough on C. rotundifolia (M. & C.); Thornton-le-Dale (F.F., 1945).
euphrasiae (Schum.) Wint.—Scarborough on Odontites rubra (M. & C.).
senecionis (Pers.) Fr.—II and III common on Senecio spp., all the year round.
petasitis Lév.—Common on Petasites.
sonchi (Pers.) Lév.—Scarborough, II and III on Sonchus arvensis (M. & C.); Thornton-le-Dale (F.F., 1945).
tussilaginis (Schum.) Lév.—Common on T. farfara (M. & C.).
MELAMPSORA Castagne
euphorbiae Cast.—Robin Hood’s Bay (F.A.M., 1933).
lini (Ehr.) Lév.—Scarborough on Linum catharticum (M. & C.).
orchidi-repentis Kleb.—Scarborough, I on Listera cordata and Orchis latifolia (M. & C.).

The Willow Rusters in our district have not been worked out and appear in our records only under the collective species:—
“farinosa Pers.”—Scarborough on S. caprea (M. & C.).

PUCCINIAECAE

OCHROPSORA Dietel

TRANZSCHELIA Arthur
fusca Diet.—Fairly common on A. nemorosa (M. & C.).

KUEHNEOLA Magnus
albida (Kuehn.) Magn.—Forge Valley, probably not uncommon (W.G.B., 1946).
tormentilla (Fuckel) Arth. (= Frommea obtusa (Str.) Arth.)—Oliver’s Mount on Potentilla erecta (M. & C.).

PHRAGMIDIUM Link
fragariastri (DC.) Schroet.—Scarborough (M. & C.); Robin Hood’s Bay (W.G.B., 1946), both on Potentilla sterilis.
mucronatum (Pers.) Schlecht.—Common on wild and cultivated roses: more frequent as I & II than III (M. & C.).
rubi-idaei (DC.) Karst.—Scarborough on R. idaeus (M. & C.).

XENODOCHUS Schlechtendal
carbonarius Schlecht.—Seamer Carr on Sanguisorba officinalis (M. & C.).

TRIPHRAGMIUM Link
ulmariae (Schum.) Wint.—Seamer Carr on Filipendula ulmaria (M. & C.); Ellerburn (F.A.M., Nat., July, 1922).

GYMNOSPORANGIUM Hedwig fils
clavariiforme (Jacq.) DC.—Scarborough, I on Crataegus, II on Juniperus (M. & C.).
sabinae (Dicks.) Wint.—Scalby, III on Juniperus sabina (M. & C.).
UROMYCES Link

acetosae Schroet.—Thornton-le-Dale on Rumex acetosella (F.F., 1945).

alchemillae (Pers.) Lév.—Common on A. vulgaris (M. & C.).

anthyllidis (Grev.) Schroet.—Scarborough, II on A. vulneraria (T.B.R., 1912).


dianthi (Pers.) Niessl—Hackness Hall greenhouses on D. caryophyllus (T.B.R., 1914).

fabricae (Pers.) de Bary—Everley Hotel garden on Vicia faba (W.G.B.); other records probably refer to U. pisi.

ficariae (Schum.) Lév.—Kingthorpe, III (F.F., 1946).

flectens Lag.—Thornton-le-Dale on Trifolium repens (M. & C.).

genista-tinctoriae (Pers.) Wint.—Thornton-le-Dale on Laburnum anagyroides (F.F., 1945); new British host.

geranii Otth et Wart.—Thornton-le-Dale on G. pratense (F.F., 1945).


loti Blytt.—Raincliff Wood on L. corniculatus (T.B.R., Nat., 1912, p. 88); new to Britain; Dalby Dale (F.F., 1945).


poae Rab.—Numerous records; II on Ranunculus spp., III on Poa spp.

polygoni-avicularis Ramsb.—Scarborough on P. aviculare (M. & C.).

scillarum (Grev.) Wint.—Scarborough on Scilla non-scripta (M. & C.); Kingthorpe, III (F.F., 1946).


trifolii (Hedw. f.) Lév.—Scarborough on T. pratense (M. & C.).

valerianae (Schum.) Fuckel—Filey on Valeriana spp. (M. & C.).

PUCCINIA Persoon

acetosae (Schum.) Koern.—Robin Hood’s Bay on Rumex acetosa (W.G.B., 1946).

adoxae Hedw. f.—Scarborough on A. moschatellina (M. & C.).

albescens Plowr.—Scarborough on A. moschatellina (M. & C.).

anomala Rost.—Thornton-le-Dale on Hordeum spp. (F.F., 1945).

annularis (Strauss) Schlecht.—Thornton-le-Dale on Teucrium scorodonia (F.F., 1945).


asperulae-odoratae Wurth.—Scarborough on Asperula (M. & C.).

baryi (Br.) Wint.—Thornton-le-Dale, II & III on Brachypodium sylvaticum (F.F., 1945-46).

betonicae DC.—Common on Stachys officinalis (M. & C.).


caricis (Schum.) Reb.—Common; I on Urtica, III on Carex (M. & C.).

celakovskyan a Bub.—Thornton-le-D ale on Galium cruciata (F. F., 1945).


ciarophylli Purt.—Thornton-le-Dale on Myrrhis odorata (F. F., 1945); Howldale, OI on Anthriscus (F. F., 1946); Robin Hood’s Bay, II & III on Myrrhis (W.G.B.).


ychrysanthe mi Roze—Once common, but the only recent record is from Newby, II in greenhouse (F. C. R., 1947).

ychryso spleni Grev.—Scarborough on C. alternifolium (A. E. P., 1923).

circaeae Pers.—Forge Valley on C. lutetiana (M. & C.).

circis-lanceolati Schreot.—Thornton-le-Dale (F. F., 1945).

cinii Fuceli—Scarborough on C. maculatum (M. & C.).


dioicae Magn.—Scarborough, I on Cirsium palustre (M. & C.).

dispersa Erikss. et Henn.—Scarborough, I on Anchusa officinalis (M. & C.).

epilobii DC.—Hole of Horcum on E. palustre (W. G. B., 1938).

glomerata Grev.—Scarborough, III on Senecio jacobaea (M. & C.).
graminis Pers.—Scarborough and Thornton-le-Dale, III on cultivated Triticum spp. and Agropyron (F. F., 1945-46); Robin Hood’s Bay, OI on Berberis (W. G. B.). We have no records of the generally more common P. triticina.


eraccii (Schum.) Mart.—Pickering and Staxton, II & III on H. pilosa, II on H. boreale (W. G. B.).


hydrocotyles (Link) Cooke—Seamer Carr on H. vulgaris (M. & C., “Very rare”).

lapsanae Fuckel—Common on L. communis (M. & C.).
malvacearum Mont.—Thornton-le-Dale on Althaea rosea (F.F., 1945); probably not uncommon and M. & C. (1905) says “Common throughout the county”.
major Diet.—Frequent on Crepis paludosa (W.G.B.).
menthae Pers.—Common on Mentha spp., and on Clinopodium vulgare (M. & C.).
moliniae Tul.—Seamer Moor on M. caerulea (M. & C.).
obscura Schroet.—Thornton-le-Dale on Luzula sylvatica (F.F., 1945).
obtegens (Link) Tul.—Common on Cirsium arvense (M. & C.).
persistens Plowr.—Rillington, I on Thalictrum flavum (Wm. Falconer, 1932).
phragmitis (Schum.) Koern.—Seamer, I on Rumex spp., II & III on Phragmites communis (M. & C.); Scarborough Mere, OI on Rumex spp., II & III on Phragmites (W.G.B., Nat., 1943, p. 120).
poarum Niels.—Very common; I on Tussilago, III on Poa spp.
saniculae Grev.—Numerous records; O, I, II, III on S. europaea.
sessilis Schneid.—Forge Valley on Phalaris (F.F., 1945).
silenes Schroet.—Scarborough on S. cucubalus (M. & C.).
smyrnii Cord.—Scarborough Castle Hill on S. olusatrum (M. & C.); still there, 1943 (W.G.B.).
sonchi Rob.—Thornton-le-Dale on S. arvensis and S. oleraceus (F.F., 1945).
taraxaci Plowr.—Thornton-le-Dale on T. officinale (F.F., 1945).
thalictri Chev.—Seamer Carr on T. flavum (M. & C.).
tragopogi Chev.—Kingthorpe, I on T. pratensis (F.A.M., 1929).
valantiae Pers.—Thornton-le-Dale on Galium cruciata (F.F., 1945).
FUNGI — TREMELLALES

variabilis Grev.—Scarborough (M. & C.); Ellerburn, OI (F.F., 1946), both on Taraxacum.
veronicae Schroe.—Thornton-le-Dale on V. montana (F.F., 1945).
vincae (DC.) Berk.—Scarborough on V. minor (M. & C.).
violae DC.—Common on Viola spp.

zopfii Wint.—In a note in C. Crossland’s interleaved copy of M. & C., it is stated that specimens collected at Throksenby by W.W.S. and now in the B.M. under the name of P. calthae, have been determined by Dr. J. Ramsbottom as P. zopfii.

AURICULARIALES

AURICULARIA Bulliard
mesenterica (Dicks. ex Fr.) Fr.—Scarborough (G.M.).
auricula-Judae (L. ex Pers.) Schroe.—Abundant on Sambucus; also recorded on Ulmus, Salix, and Acer (A.E.P.), on Fagus (F.C.R.), on Berberis at Boynton (F.A.M.); while the record on Alnus from Flotmanby in 1920 was said by Carleton Rea to be the first ever brought to his notice.

STILBUM (Tode) Juel
vulgare (Tode) Juel—Scarborough (G.M.).

TREMELLALES

TREMELLA (Dillenius) Fries
albida (Huds.) Fr.—Cloughton (G.M.); Raincliffe Wood (T.B.R., 1911).
fimbriata (Pers.) Fr.—Scarborough (G.M., 1881).
frondosa Fr.—Scarborough (G.M.).
lutescens Pers.—Scarborough (G.M.); Yedmandale (A.E.P., 1912).
mesenterica (Retz.) Fr.—Common, often on Fagus.
moriformis Berk.—Scarborough (G.M.).
tubercularia Berk.—Scarborough on Quercus (G.M., 1881).
virescens (Schum.) Quél.—Scarborough on Ulex (G.M.).

EXIDIA Fries
glandulosa (Bull.) Fr.—Not uncommon, usually on Quercus.
intumescentes (Sm.) Rea—Scarborough on Fagus (G.M.); Stone Haggs on Quercus (T.B.R., 1915). A form of E. glandulosa according to Bourdo and Galzin.
nucleata (Schwein.) Rea—Forge Valley (F.F., 1944); Wykeham (W.G.B., 1945); Kingthorpe (F.F., 1946).
recisa (Ditm.) Fr.—Scarborough on Salix (G.M.).
saccharina Fr.—Scarborough on Pinus (G.M.).
var. foliacea (Bref.) Bres.—Scarborough on Pinus (G.M.).
thurietiana (Lév.) Fr.—Howldale (F.F., 1946); same place (P.H.T.B., 1947).
TREMELLODON  Persoon
gelatinosum  (Scop.)  Pers.—Although not previously recorded from Yorkshire before the foray at Beadale in 1915, this fungus is now not uncommon on sawdust and conifer stumps.

SEBACINA  Tulasne
calcea  (Pers.)  Bres.—Scarborough  (G.M., 1881).
incrustans  (Pers.)  Tul., as Soppittiella sebacea—Scarborough  (G.M., 1881).

EICHLERIELLA  Bresadola
spinulosa  (Berk. et Curt.)  Burt.—Forge Valley  (F.F., 1944).

TULASNELLALES

TULASNELLA  Schroeter
violae  (Quél.)  Bourd. et Galz.—Howldale on Fagus  (P.H.B.T., 1947); Raincliffe Wood  (W.G.B., 1947).

CALOCERALES

DACROMYCES  Nees
chrysoscomus  (Bull.)  Tul.—Scarborough  (G.M., Nat., July, 1881).
deliquescent  Bull. ex Duby—Abundant.
(Óidial stage = D. stillatus  Nees ex Fr.—Common on Pinus).

CALOCERA  Fries
cornea  Batsch ex Fr.—Not uncommon on Quercus.
stricta  Fr.—Yedmandale  (A.C., 1912).
viscosa  Pers. ex Fr.—Common on coniferous stumps.

APHYLLOPHORALES

POLYPORACEAE

POLYPORUS  (Micheli)  Fries
adiposus  Berk. et Br.—Scarborough  (G.M.); Raincliffe Wood  (F.C.R., 1945 et seq.).
adustus  (Willd.)  Fr.—Scarborough  (G.M.); Hackness  (F.C.R., 1945 et seq.).
amorphus  Fr., as P. armeniacus—Scarborough  (G.M.); Boynton  (W.W.S., 1880).
betulinus  (Bull.)  Fr.—Abundant.
brumalis  (Pers.)  Fr.—Raincliffe Wood  (T.B.R., 1912); Ellerburn  (F.A.M., 1922); Kingthorpe  (F.F., 1946).
ciaeus  (Schrad.)  Fr.—Not uncommon.
chioneus  Fr.—Not uncommon.
dryadeus  (Pers.)  Fr.—Scarborough on Quercus  (G.M.).
fragilis  Fr.—Scarborough  (G.M.); Forge Valley  (F.F., 1915).
frondosus  (Fl. Dan.)  Fr.—Hackness  (F.F., 1925).
fumosus (Pers.) Fr.—Scarborough (G.M.); Flotmanby (A.E.P., 1920).

as P. alligatus Fr.—Scarborough (A.E.P. & A.C., 1910).

as P. salignus Fr.—Scarborough on Salix (F.F., 1915).

as Daedalea saligna Fr.—Scarborough (G.M., A.C., A.E.P.).

giganteus (Pers.) Fr.—Frequent on Fagus and Ulmus.

hispidus Fr.—Locally common on Fraxinus.

intybeaceus Fr.—Scarborough (G.M.).

lentus Berk.—Scarborough (A.E.P., 1911, A.C., 1923).

melanopus (Swartz) Fr.—Yedmandale and Raincliffe Wood (A.E.P., 1914).

nummularius (Bull.) Quél.—Kingthorpe (T.B.M.S., 1931).

perennis (L.) Fr.—Flixton and Raincliffe Wood (A.E.P., 1911-12).

picipes Fr.—Locally common on Salix.

radiatus (Sow.) Fr.—Not uncommon on Alnus.

varius Fr.—Not uncommon.

wynnei Berk. et Br.—Kingthorpe (T.B.M.S., 1931).

FOMES Fries

annosus Fr.—Common in most pine woods.

conchatus (Pers.) Fr.—Scarborough on Salix (G.M.).

as F. salicinus (Pers.) Fr.—Ellerburn (F.A.M., 1922).

connatus Fr.—Scarborough (G.M.); Allerston (A.E.P., 1914).

ferruginosus (Schrad.) Mass.—Not uncommon on Crataegus.

ignarius (L.) Fr.—Occasional on Salix.

var. nigricans (Fr.) Lloyd—Ellerburn on Alnus (F.A.M., 1922).

fomentarius (Fr.) Kickx—Numerous records on various hosts, but as this fungus is not now considered to occur south of Perth, they probably refer to Ganoderma applanatum. Many specimens, definitely identifiable as F. fomentarius, were found, on Betula and detached, under post-glacial peat at Star Carr, Seamer, associated with a Mesolithic lake-dwelling. They were remarkably well preserved but contained no spores. (Proc. Prehist. Soc., 1950, p. 123).

pomaceus (Pers.) Big. et Guill.—Not uncommon on Crataegus, Pyrus and Prunus.

riba (Schum.) Fr.—Scarborough on Ribes uva-crispa (G.M.).

ulmarius (Sow.) Fr.—Scarborough on Ulmus (G.M.).

GANODERMA (Karsten) Patouillard

applanatum (Pers.) Pat.—Not uncommon on Fagus, etc. Formerly erroneously recorded as Fomes fomentarius.

var. laccatum (Kalchbr.) Rea—Flotmanby on Alnus (A.E.P. teste G.M., 1911), first British record.
lucidum (Leyss.) Karst.—Scarborough (G.M.); Forge Valley (F.F., 1944).

PORIA (Persoon) Fries
blepharistoma Berk. et Br.—Scarborough (G.M.).
hibernica Berk. et Br.—Scarborough on dead pine wood (G.M.).
laestadii Fr. et Berk.—Scarborough in greenhouse (G.M.).
medulla-panis (Pers.) Fr.—Scarborough (G.M.); Beedale and Raincliffe Wood (A.E.P., 1911-12); Forge Valley (F.F., 1915).
mollusca (Pers.) Fr.—Scarborough (G.M.); Beedale (A.E.P., 1929).
nitida (Pers.) Fr.—Scarborough (G.M.).
obduces (Pers.) Fr.—Staxton on Crataegus (T.B.R., 1913).
purpurea (Pers.) Fr.—Scarborough (G.M.).
violacea (A. et S.) Fr.—Scarborough (G.M.).

POLYSTICTACEAE

POLYSTICTUS Fries
abietinus (Dicks.) Fr.—Common.
hirsutus (Wulf.) Fr.—Scarborough (G.M.); Seamer on Fraxinus (A.E.P.); Raincliffe Wood (F.C.R., 1945 et seq.).
versicolor (L.) Fr.—Abundant.

TRAMETES Fries
gibbosa (Pers.) Fr.—Yedmandale (F.C.R., 1945).
mollis (Somm.) Fr.—Not uncommon on Fagus and Prunus.
serpens Fr.—Scarborough on Quercus (G.M.).
suaveolens (L.) Fr.—Ganton on Salix (G.M.).

DAEDALEA (Persoon) Fries
biennis (Bull.) Quël.—Scarborough (G.M.); Kingthorpe (F.F., 1945).
quercina (L.) Fr.—Not uncommon on Quercus.
unicolor (Bull.) Fr.—Seamer and Ganton (A.E.P., 1910, A.C. 1914).

MERULIACEAE

corium Fr.—Folkton (T.B.R., 1914); Howldale on Fraxinus (F.F., 1946).
fugax Fr.—Scarborough (G.M.).
lacrymans (Wulf.) Fr.—Abundant.
rufus (Pers.) Fr.—Thornton-le-Dale (F.F., 1945).
serpens (Tode) Fr.—Scarborough (G.M.); Forge Valley (F.F., 1944).
tremellosus (Schrad.) Fr.—Cloughton (T.B.R. & A.C., 1913); Kingthorpe (T.B.M.S., 1931).

PHLEBIA Fries
merismoides Fr.—Not uncommon.
as P. radiata Fr.—Not uncommon on Sambucus.

CONIOPHORA (de Candolle) Persoon
arida Fr.—Scarborough (G.M.).
membranacea (DC.) Mass.—Scarborough (G.M.).
puteana (Schum.) Karst.—Kingthorpe (F.A.M., 1929); Hackness (F.C.R., 1945).
sulphurea (Fr.) Mass.—Scarborough (G.M.).

FISTULINACEAE

FISTULINA (Bulliard) Fries
hepatica (Huds.) Fr.—Occasional on Quercus.

HYDNACEAE

HYDNUM (Linnaeus) Fries
aurantiacum (A. et S.) Fr.—Forge Valley (F.F., 1915).
auriscalpium (L.) Fr.—Not uncommon on fir-cones.
diversidens Fr.—Scarborough on Fagus (G.M.).
ferrugineum Fr.—Boynton (W.W.S., Nat., June, 1889).
imbricatum (L.) Fr.—Seamer (G.M.).
repandum (L.) Fr.—Locally common.
zonatum (Batsch) Fr.—Boynton (W.W.S., Nat., June, 1889).

MYCOLEPTODON Patouillard
fimbriatum (Pers.) Bourd. et Galz.—Locally common.

RADULUM Fries
molare Fr.—Boynton (W.W.S., Nat., June, 1889).
orbiculare Fr.—Yedmandale (T.B.R., 1911).
quercinum Fr.—Scarborough (G.M.); Goathland (T.B.M.S., 1931).

ACIA Karsten
fusco-atra (Fr.) Pat.—Scarborough (G.M.).

GRANDINIA (Fries) Patouillard
brinkmannii (Bres.) Bourd. et Galz.—Howldale (F.F., 1946).
farinacea (Pers.) Bourd. et Galz.—Not uncommon.
helvetica (Pers.) Fr.—Kingthorpe (T.B.M.S., 1931).

ODONTIA (Persoon) Patouillard
arguta (Fr.) Quél.—Scarborough (G.M.).
crustosa (Pers.) Quél.—Scarborough (G.M.).
stipata (Fr.) Quél.—Scarborough (F.F., 1915).

CALDESIELLA Saccardo
crinalis (Fr.) Bourd. et Galz.—Scarborough (G.M.); Kingthorpe (F.A.M., Nat., Sept., 1929).
viridis (A. et S.) Pat.—Scarborough (G.M.).
THELEPHORA Ehrhart ex Fries (= PHYLACTERIA (Persoon) Pat.)

anthocephala (Bull.) Fr.—Scarborough (G.M.); Raincliffe Wood (A.E.P., 1917).
caryophyllea (Scheff.) Fr.—Raincliffe Wood (G.M.).
clavularis (Pers.) Fr.—Scarborough (G.M.).
mollissima (Pers.) Fr.—Scarborough (G.M.).
palmata (Scop.) Fr.—Boynton (W.W.S., Nat., June, 1889).
terrestris (Ehrh.) Fr.—Frequent in pine woods, and a pioneer species when the moors are planted with conifers.

TOMENTELLA Patouillard (= HYPOCHNUS (Fries) Karst.)
crustacea (Schum.) Karst.—Scarborough (G.M.).
ferruginea (Pers.) Fr.—Kingthorpe (F.F., 1930 & 1946).
fumosus Fr.—Scarborough and Filey (G.M.); Goathland (T.B.M.S., 1931).

THELEPHORACEAE

STEREUM (Persoon) Massee

hirsutum (Willd.) Fr.—Abundant.
ochroleucum Fr.—Scarborough on Aesculus (G.M.).

tabacina (Sow.) Lev.—Scarborough on Ulmus (G.M.).

HYMENOCHAETE Léveillé
corrugata (Fr.) Lév.—Scarborough (G.M.); Howldale on Corylus (F.C.R., 1946).
rubiginosa (Dicks.) Lév.—Frequent.

Aleurdiscus Rabenhorst

acerinus (Pers.) von Hoehn. et Litsch.—Scarborough on Acer campestis (G.M.).

CORTICICUM Persoon

arachnoideum Berk.—Forge Valley on Quercus (W.G.B., 1947).

female (Schrad.) Fr.—Scarborough (M. & C.).

comedens (Nees) Fr.—Frequent on Corylus and Fagus.

confine Bourd. et Galz.—Forge Valley on Corylus (F.F., 1945).

laetum Karst.—Forge Valley on mud (P.H.B.T., 1947), new to Britain.

laeave (Pers.) Quél.—Kingthorpe (F.F., 1946).
lividum (Pers.) Fr.—Scarborough (G.M.).
pelliculare Karst.—Kingthorpe (F.F., 1945).
populinum (Somm.) Fr.—Scarborough on Populus (G.M.).
roseum (Pers.) Fr.—Scarborough (G.M.).
sambuci (Pers.) Fr.—Common.
subcoronatum von Hoehn. et Litsch.—Forge Valley (F.F., 1944).
   Conidial form (Monilia candidans Sacc.), Forge Valley, 1947 (Hull, 118).
subcostatum (Karst.) Bourd. et Galz.—Scarborough (G.M.).
vagum Berk. et Curt.—Ellerburn (F.F., 1946).
sub-genus GLOEOCYSTIDIUM Karsten
albostramineum (Bres.) Bourd. et Galz.—Kingthorpe on Fagus (F.F., 1946).
lactescens Berk.—Ellerburn (F.F., 1946).
porosum Berk. et Curt.—Scarborough (G.M.); Kingthorpe (F.F., 1930 & 1946).
praetermissum (Karst.) Bres.—Howldale (F.F., 1946).

CRISTELLA Patouillard
cristata (Pers.) Pat.—Kingthorpe (T.B.M.S., 1931).

PENIOPHORA Cooke
aegerita von Hoehn.—Only in the imperfect state (Aegerita candida)
byssoidea (Pers.) von Hoehn. et Litsch.—Scarborough (G.M.);
   Kingthorpe (T.B.M.S., 1931).
caesia (Bres.) Bourd. et Galz.—Kingthorpe (F.F., 1945); Forge
   Valley on Fraxinus (P.H.B.T., 1947).
cinerea (Fr.) Cooke—Common.
cremea Bres.—Kingthorpe (F.F., 1946).
gigantea (Fr.) Mass.—Scarborough on Larix (G.M.); Thornton-le-
   Dale (F.F., 1945).
glebulosa (Fr.) Bres.—Howldale (F.F., 1946).
hydnoides Cooke et Mass.—Scarborough (G.M.); Howldale (F.F.,
   1946).
incarnata (Pers.) Cooke—Locally common.
leprosa Bourd. et Galz.—Howldale on Fagus (P.H.B.T., 1947).
quercina (Pers.) Cooke—Not uncommon.
sanguinea (Fr.) Bres.—Scarborough (G.M.).
setigera (Fr.) Bres.—Scarborough (G.M.); Forge Valley (F.F.,
   1944).
subalutacea (Karst.) von Hoehn. et Litsch.—Forge Valley (F.F.,
   1944); Kingthorpe (F.F., 1946).
velutina (DC.) Cooke—Not uncommon.
violaceo-livida (Somm.) Bres. ex Bourd. et Galz.—Seamer on
   Sambucus (A.E.P., 1925).

CYPHELLACEAE

CYPHELLA Fries
alboviolascens (A. et S.) Karst.—Scarborough (G.M.).
capula (Holmsk.) Fr.—Not uncommon.
muscigena (Pers.) Fr.—Scarborough (G.M.).

*SOLENIA* (Hoffmann) Fries

anomala (Pers.) Fr.—Not uncommon on *Alnus* and *Fagus*.

*PISTILLARIA* Fries

culmigena Mont. et Fr.—Scarborough on grass stems (G.M.).

*Pistillaria* Fries

culmigena Mont. et Fr.—Scarborough on grass stems (G.M.).

*Phaeocyphella* Patouillard

galeata (Schum.) Bres.—Scarborough on *Hypnum scorpioides* (G.M.).

*SCIARIA* (Hoffmann) Fries

anomala (Pers.) Fr.—Not uncommon on *Alnus* and *Fagus*.

*Solenia* (Hoffmann) Fries

anomala (Pers.) Fr.—Not uncommon on *Alnus* and *Fagus*.

*Phaeocyphella* Patouillard

galeata (Schum.) Bres.—Scarborough on *Hypnum scorpioides* (G.M.).

*SCIARIA* (Hoffmann) Fries

anomala (Pers.) Fr.—Not uncommon on *Alnus* and *Fagus*.

*Solenia* (Hoffmann) Fries

anomala (Pers.) Fr.—Not uncommon on *Alnus* and *Fagus*.

*Phaeocyphella* Patouillard

galeata (Schum.) Bres.—Scarborough on *Hypnum scorpioides* (G.M.).

*SCIARIA* (Hoffmann) Fries

anomala (Pers.) Fr.—Not uncommon on *Alnus* and *Fagus*.

*Solenia* (Hoffmann) Fries

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anomala (Pers.) Fr.—Not uncommon on *Alnus* and *Fagus*.

*Solenia* (Hoffmann) Fries

anomala (Pers.) Fr.—Not uncommon on *Alnus* and *Fagus*.
quisquiliaris Fr.—Occasional on *Pteridium* (T.B.R., A.E.P., etc.).
uncialis (Grev.) Cost. et Duf.—Scarborough (G.M.).

**EXOBASIDIUM** Woronin

vaccinii (Fuckel) Woron.—Goathland on *V. myrtillus* (T.B.M.S., 1931).

**AGARICALES**

**AMANITA** (Persoon) Fries
citrina (Schaeff.) Roques—Not uncommon in mixed woods.
excelsa Fr.—Beedale (G.M., A.E.P., 1929).
as spissa Fr.—Occasional in mixed woods, Cloughton, Forge Valley, etc.
gemmata (Fr.) Gill., as *A. junquillea*—Flixton Carr plantation (A.E.P., 1912).
muscaria (L.) Fr.—Not uncommon in birch and fir woods.
pantherina (DC.) Fr.—Not uncommon in open woods, frequent at Cloughton, including the white form.
phalloides (Vaill.) Fr.—Yedmandale (A.E.P., 1911, "in quantity"), now found only very occasionally (F.C.R.).
opophyria (A. et S.) Fr.—Hackness (F.F., 1925).
rubescens (Pers.) Fr.—Generally distributed and common.
solitaria (Bull.) Fr.—Irton and Beedale, etc. (A.E.P.).
virosa Fr.—Scarborough (G.M.); Beedale (A.E.P., 1910).

**AMANITOPSIS** Roze

fulva (Grev.) Rea—Widely distributed and not uncommon.
vaginata (Bull.) Roze—Widely distributed and not uncommon.

**LEPIOTA** Fries

acutesquamosa (Weinm.) Fr.—Widely distributed and not uncommon.
amianthina (Scop.) Fr.—Goathland (T.B.M.S., 1931).
bucknallii Berk. et Br.—Kingthorpe (T.B.M.S., 1931); Hackness (F.F., 1944).
carcharias (Pers.) Fr.—Yedmandale (G.M. & A.E.P.); Thornton-le-Dale (F.F., 1945); Wintringham (F.C.R., 1947).
castanea Quël.—Hackness (F.F., 1944).
cepaeptipes (Sow.) Fr.—Scarborough in conservatory (G.M.).
clypeolaria (Bull.) Fr.—Flixton Carr plantation (A.E.P., 1910-11); Forge Valley (F.F., 1944).
cristata (A. et S.) Fr.—Widely distributed and not uncommon.
delicata Fr.—Yedmandale (T.B.R., 1911).
erminea Fr.—Ganton, in quantity (A.E.P., 1912).
excoriata (Schaeff.) Fr.—Scarborough (G.M.).
felina (Pers.) Fr.—Scarborough (G.M., Cooke’s Illust. pl 943a was drawn from these specimens); Ings Plantation (F.F., 1915).
gracilenta (Krombh.) Fr.—Occasional; Ayton, Willerby, etc. (A.E.P.).
granulosa (Batsch) Fr. sensu Lange—Occasional in upland woods; Cloughton, Scampston, Wykeham Moor, etc. (A.E.P., F.C.R.).
guttata (Pers.) Fr.—Beedale (F.F., 1944).
hæmatosperma (Bull.) Boud.—Hackness (F.F., 1944).
hispida (Lasch) Fr.—Hackness, 1 specimen only (F.F., 1925).
nigromarginata Mass.—Scarborough (G.M., 1885. Journ. Bot. XLI, p. 385), new to Britain,

**ARMILLARIA** Fries

mellea (Vahl.) Fr.—Abundant in woods, particularly Raincliffe. var. minor Barl. is recorded (A.E.P., 1925).
mucida (Schrad.) Fr.—Raincliffe Wood (G.M.).

**TRICHOLOMA** Fries

acerbum (Bull.) Fr.—Iront Moor (T.B.R., 1912).
aggregatum (Schaeff.) Secr.—Scarborough, Valley Park and Oliver’s Mount (A.E.P., 1910-14).
albo-brunneum (Pers.) Fr.—Scampston (G.M.); Raincliffe Wood (A.E.P., 1911-17); Wintringham (F.C.R., 1947).
album (Schaeff.) Fr.—Ganton Pheasant Covert (A.E.P., 1920); Kingthorpe (T.B.M.S., 1931).
atro-squamosum (Chev.) Sacc.—Raincliffe Wood (A.E.P., 1915); Wintringham (F.C.R., 1946).
carneum (Bull.) Fr.—Scarborough (G.M. & T.B.R.); Forge Valley (F.F., 1944).
cartilagineum Fr. non Bull.—Oliver’s Mount (C.R., 1918).
cinerascens (Bull.) Fr. as Clitocybe fumosa—Oliver’s Mount (A.E.P., 1920).
cuneifolium Fr.—Hackness (H.W., 1925); Forge Valley (F.F., 1944).
fallax Peck—Scarborough in fir wood (G.M., Cooke’s Illust. pl. 1151a was drawn from these specimens). The only European record of this North American species and probably erroneous.
flavo-virens Fr.—Scarborough (G.M.).
grammopodium (Bull.) Fr.—Raincliffe Wood (G.M., A.E.P.); Staxton Wold (A.C., 1914).
ionoides (Bull.) Fr.—Hackness (F.F., 1914).
imbricatum Fr.—Not uncommon, Cloughton, Wykeham, etc. (F.C.R.).
immundum Berk.—Raincliffe Wood (C.R., 1918); Forge Valley (A.E.P., 1920).
inamoenum Fr.—Kingthorpe (T.B.M.S., 1931).
irinum Fr.—Scarborough (G.M., 1879).
loricatum Fr.—Thornton-le-Dale (F.F., 1945).
meleaeicum (Pers.) Fr.—Scarborough Mere (A.C., 1914); Kingthorpe (T.B.M.S., 1931).
nudum Fr.—Not uncommon in Raincliffe and other woods.
orirubens Quéél.—Scarborough (G.M.).
panaeolum Fr.—Cockmoor Hall (A.E.P., 1929); Forge Valley and Thornton-le-Dale (F.F., 1944-45).
personatum Fr.—Common in pastures.
psammopus (Kalch.) Fr.—Hackness (F.F., 1944).
ramentaceum (Bull.) Quéél.—Scarborough (G.M.).
resplendens Fr.—Common on conifer stumps.
scalpturatum Fr.—Seamer Quarry Plantations (A.E.P., 1912).

CLITOCYBE Fries
amara Fr.—Occasional; Willerby, Scampston, Ayton, etc. (A.E.P.).
angustissima (Lasch) Fr.—Forge Valley (A.E.P., 1927).
aurantiaca (Wulf.) Stud.—Locally common; Cloughton, Irton Moor, etc.
brunalis Fr.—Cloughton (H.T.S., A.E.P.); Raincliffe Wood (A.E.P., 1915).
candicans (Pers.) Fr.—Common in mixed woods.
cerussata Fr.—Ganton (G.M., F.F., 1915).
clavipes (Pers.) Fr.—Raincliffe Wood (C.R., 1918); Cloughton (F.C.R., 1945).
cyathiformis (Bull.) Fr.—Not uncommon; Hackness, Wintringham, etc.
dealbata (Sow.) Fr.—Staxton Wood (A.E.P., 1910).
ditopus Fr.—Ganton (G.M.); Thornton-le-Dale (F.F., 1930 & 1945).
flaccida (Sow.) Fr.—Beadale (A.E.P., 1912); Forge Valley (F.F.,
1944); Raincliff Wood (F.C.R., 1945).
fragrans (Sow.) Fr.—Common in woods and in poor mossy pastures.
geotropa (Bull.) Fr.—Flixton Carr Plantation (A.C., 1910); Hack-
ness (A.E.P., 1910).
gigantea (Sow.) Fr.—Langdale End and Beadale (A.E.P.); Hay
Brow (F.C.R.).
gilva (Pers.) Fr.—Not uncommon in conifer woods.
incilis Fr.—Kingthorpe (T.B.M.S., 1931).
infundibuliformis (Schaeff.) Fr.—Widely distributed and common.
metachroa Fr.—Scarborough (G.M.).
nebularis (Batsch) Fr.—Widely distributed and common.
phyllophila Fr.—Seamer Quarry Plantation (C.C., 1910); Scampston
(A.C., 1914).
pithyophila Fr.—Scarborough (G.M. & A.C.); Seamer Quarry Plan-
tation (C.C., 1910).
rivulosa (Pers.) Fr.—Forge Valley (F.F., 1944).
tuba Fr.—Scarborough (G.M.).
vibecina Fr.—Kingthorpe (T.B.M.S., 1931); Forge Valley (F.F.,
1944).

LACCARIA Berkeley et Broome
amethystina (Vaill.) Cooke—Widely distributed and not uncommon.
bella (Pers.) Cooke—Raincliffe Wood (G.M., A.E.P.); Hackness
(F.F., 1925).
laccata (Scop.) Cooke—Abundant. The first and chief pioneer
species when the moors are planted with conifers.
tortilis (Bolt.) Cooke—Kingthorpe (T.B.M.S., 1931).

MYCENA Fries
acacula (Schaeff.) Fr.—Not uncommon in woods and hedgerows.
adonis (Bull.) Fr.—Seamer Carr Plantation (A.E.P., 1912); Wint-
ingham (F.C.R., 1945).
aetites Fr.—Ganton Pheasant Covert (A.E.P., 1920).
alcalina Fr.—Massee records this species as "Frequent at Scarbor-
ough", but it has not been recorded since his day.
amicta Fr.—Scarborough (G.M.); Ganton (A.E.P., 1913).
ammoniaca Fr.—Spital Corner (A.E.P.); Forge Valley and
atrocyanea (Batsch) Fr.—Scarborough (G.M.); Cloughton (H.T.S.,
1892).
avenacea Fr.—Hakness (F.F., 1925).
capillaris (Schum.) Fr.—Filey (G.M.); Forge Valley (A.C., F.F.,
1944).
corticola (Pers.) Fr.—Scarborough (G.M.).
debilis Fr.—Hakness (A.C., 1924).
elegans Fr.—Forge Valley (C.R., 1918).
epipterygia (Scop.) Fr.—Widely distributed and not uncommon.
flavo-alba Fr.—Scarborough (G.M.); Forge Valley (F.F., 1944).
filopes (Bull.) Fr. non Kuehn.—Forge Valley (G.M., F.F., 1944).
galericulata (Scop.) Fr.—Common on or near dead stumps.
galopus (Pers.) Fr.—Widely distributed and common.
gypseae Fr.—Scarborough (G.M.); the first British record; Cooke’s Illust. pl. 952 was drawn from these specimens. Forge Valley (F.F., 1915); Lockton (A.C., 1924).
hainematopus (Pers.) Fr.—Not uncommon on decaying stumps.
inclinata Fr.—Raincliffe Wood and Hackness (A.E.P.); Kingthorpe (T.B.M.S., 1931).
lactea (Pers.) Fr.—Common in all woods.
rorida (Scop.) Fr.—Seamer Quarry Plantation and Forge Valley (A.E.P.).
rosella Fr.—Boynton (W.W.S., 1889); Scarborough (G.M.).
rubro-marginata Fr.—Irton Moor, Cloughton, Flixton Carr (A.E.P.).
sanguinolenta (A. et S.) Fr.—Very common in almost any damp wood.
speirea Fr.—Forge Valley (F.F., 1944).
stylobates (Pers.) Fr.—Not uncommon in damp places.
tenerrima Berk.—Boynton (W.W.S., 1880); Raincliffe Wood (C.R. & T.B.R.).
vitilis Fr. non Kuehn.—Flixton Carr Plantation and Forge Valley (A.E.P.); Thornton-le-Dale (F.F., 1945).

COLLYBIA Fries

ambusta Fr.—Scarborough (G.M.); Seamer Plantation (A.C., 1923).
atrata Fr.—Scarborough (G.M.); Hole of Horcum (W.G.B., 1938).
butyrasea (Bull.) Fr.—Widely distributed and common.
cirrata (Schum.) Fr.—Scarborough (G.M., 1880-81).
culusius Fr.—Harwood Dale in swamp (G.M., 1904); Foulisyke (A.E.P., 1914).
distorta Fr.—Scarborough (G.M., A.E.P., 1912).
fusipes (Bull.) Berk.—Hackness and Yedmandale (T.B.R., A.E.P.).
inolens Fr.—Scampston (A.E.P., 1914).
maculata (A. et S.) Fr.—Not uncommon in conifer woods.
nitellina Fr.—Black Rigg Plantation (T.B.R., 1911); Beedale (A.E.P., 1911).
nummularia Fr.—Cloughton Wood (A.C., 1923).
platyphylla (Pers.) Fr.—Frequent in woods.
radicata (Rehl) Berk.—Frequent in woods.

rancida Fr.—Forge Valley and Thornton-le-Dale (F.F., 1944-45).

succinea Fr.—Scarborough (G.M.).

ceratopus (Pers.) Quél.—Scarborough (G.M.).

as cohaerens (A. et S.) Cooke—Kingthorpe in abundance under Fagus (T.B.M.S., 1931).

confluens (Pers.) Karst.—Widely distributed and common.

dryophilus (Bull.) Karst.—Common in woods.

esculentus (Wulf. ex Fr.) Karst.—Scarborough (G.M.).

epiphyllus (Pers.) Fr.—Scarborough (G.M., 1881); Seamer (A.E.P., 1911).

foetidus (Sow.) Fr.—Cloughton (G.M., 1892); Forge Valley (F.F., 1944).

fusco-purpureus (Pers.) Fr.—Forge Valley (A.E.P., 1927).


impudicus Fr.—Thornton-le-Dale (F.F., 1945).

myosurus (Wulf. ex Fr.) Karst., as Collybia conigena—Knapton and Ebberston plantations (A.E.P., 1927).

oreades (Bolt.) Fr.—Common in pastures.

peronatus (Bolt.) Fr.—Widely distributed in woods and not uncommon.

prasiomus Fr.—Scarborough (G.M.).

ramealis (Bull.) Fr.—Widely distributed and common.

rotula (Scop.) Fr.—Widely distributed and common.

scorodonius Fr.—Scarborough (G.M.).

undatus Berk.—Cockmoor Hall (A.E.P., 1929); Forge Valley (F.F., 1944).

vaillantii (Pers.) Fr.—Raincliffe Wood (A.C., 1910 & 1924); Lockton (A.E.P., 1924).

wynnei Berk. et Br.—Kingthorpe, abundant under Fagus (T.B.M.S., 1931).

CRINIPELLIS Patouillard

stipitarius (Fr.) Pat.—Irton Moor (A.E.P., 1913).

OMPHALIA Fries

atropuncta (Pers.) Fr.—Kingthorpe (T.B.M.S., 1931).

brownii (Berk. et Br.) Favre—Boynton (W.W.S., 1889).

campanella (Batsch) Fr.—Scarborough (G.M.).
demissa Fr.—Langdale End (T.B.R., 1912).
fibula (Bull.) Fr.—Widely distributed and not uncommon among mosses.
gracillima Weinm.—Raincliffe Wood (C.R., 1918).
hepatica (Batsch) Fr.—Scarborough (G.M., 1901).
hydrogramma (Bull.) Fr.—Scarborough (G.M.); Silpho Moor (F.C.R., 1945).
muralis (Sow.) Fr.—Scarborough (G.M.); Staintondale (A.E.P., 1919).
oniscus Fr.—Scarborough (G.M., 1882).
postii Fr.—Scarborough (G.M.).
pyxidata (Bull.) Fr.—Scarborough (G.M.).
sphagnicola Berk.—Irton Moor (C.C., 1904).
stellata Fr.—Scarborough (G.M., 1881).
telamatiaea Berk. et Cooke—Scarbrough among sphagnum (G.M.).
umbrellifera (L.) Fr.—Langdale End (T.B.R.); Forge Valley A.E.P.; Thornton-le-Dale (F.F., 1945).
wynniae (Berk. et Br.) Quél.—Scarborough (G.M.); Boynton Pond Wood (W.W.S., 1880).

PLEUROTUS Fries
applicatus (Batsch) Fr.—Boynton Pond Wood (W.W.S., 1880); Scarborough (G.M., 1879).
chioneus (Pers.) Fr.—Scarborough (G.M.).
cyphelliformis Berk.—Irton Moor (C.C., 1912).
dryinus (Pers.), Fr.—Brompton on Ulmus (A.E.P., 1910).
mitis (Pers.) Berk.—Scarborough (G.M.); Boynton (W.W.S., 1885).
ostreatus (Jacq.) Fr.—Not uncommon; usually on Ulmus or Fagus; Willerby on Sambucus (A.E.P., 1910).
var. salignus (Pers.) Fr.—Forge Valley (F.F., 1915).
petaloides (Bull.) Fr.—Forge Valley and Cloughton, in abundance on sawdust (A.E.P., F.C.R.).
reniformis Fr.—Seamer (A.E.P., 1912).
septicus Fr.—Widely distributed in woods and not uncommon.
serotinus (Schrad.) Fr.—Flotmanby (A.E.P., 1920); Raincliffe Wood (F.C.R., 1945 et seq.).
tremulus (Schaeff.) Fr.—Raincliffe Wood (C.R., 1918); Hackness (A.C., 1924); Thornton-le-Dale (F.C.R., 1945).
ulmarius (Bull.) Fr.—Cayton (A.E.P.); Raincliffe Wood (F.C.R.).

PANUS Fries
stipticus Karst.—Massée, 1905, says this species is common at Scarborough on decaying trunks, but it has been recorded only once since that date, at Kingthorpe (T.B.M.S., 1931).
torulosus (Pers.) Fr.—Forge Valley on sawdust (A.E.P.); Hackness (T.B.R.); Wykeham (W.G.B.).

LENTINUS Fries
cochleatus (Pers.) Fr.—Beedale (F.F., 1915); Raincliffe Wood (T.B.R., 1915).
lepidius Fr.—Occasional on cut timber.
SCHIZOPHYLLUM Fries
commune Fr.—Scarborough (G.M.); Hackness on Fraxinus (F.C.R., 1946).

NYCTALIS Fries
asterophora Fr.—Scarborough (G.M.); Hackness (T.B.R., 1911).
parasitica (Bull.) Fr.—Not uncommon on Russula spp.

HYGROPHORUS Fries
agathosmus Fr.—Ebberston (A.E.P., 1927).
ceraceus (Wulf.) Fr.—Forge Valley and Thornton-le-Dale (F.F., 1944-45).
cerasinus Berk.—Cloughton (A.E.P., 1910); Scampston (T.B.R., 1913); Silpho Moor (A.E.P., 1927).
chlorophanus Fr.—Not uncommon in pastures.
coccineus (Schaeff.) Fr.—Common in pastures.
colemanianus Blox.—Cockmoor Hall (A.E.P., 1929).
conicus Fr.—Common in pastures.
cossus (Sow.) Fr.—Scarborough (G.M.).
eburneus (Bull.) Fr.—Not uncommon in woods and pastures.
fornicatus Fr.—Yedmandale and Cockmoor Hall (A.E.P., 1917 & 1929).
hypothejus Fr.—Common near conifers.
lacmus Fr.—Forge Valley (F.F., 1944).
laetus (Pers.) Fr.—Cockmoor Hall (A.E.P., 1918); Thornton-le-Dale (F.F., 1945).
metapodius Fr.—Thornton-le-Dale (F.F., 1945).
miniatus Fr.—Massee, 1905, says this species is common on moist banks at Scarborough, but it has been recorded only once since that date, at Goathland (T.B.M.S., 1931).
nemoreus (Lasch) Fr.—Cloughton Wyke (A.E.P., 1909); Raincliffe Wood (F.C.R., 1946).
nitratus (Pers.) Fr.—Beedale, Hackness, Yedmandale, etc. (A.E.P.).
niveus (Scop.) Fr.—Common in pastures.
olivaceo-albus Fr.—Racecourse Plantation (G.M. & A.E.P., Dec., 1910, "in quantity").
ovinus (Bull.) Fr.—Hutton Buscel (A.E.P., 1914); Scarborough (F.F., 1915).
pratensis (Pers.) Fr.—Common in pastures.
psittacinus (Schaeff.) Fr.—Common in pastures.
puniceus Fr.—Common in pastures, occasional in woods.
reai Maire—Kingthorpe (T.B.M.S., 1931); Robin Hood’s Bay (W.G.B., 1946).
russo-coriaceus Berk. et Mill.—Boynton (W.W.S., 1880); Scarborough (G.M.).
russula (Schaeff.) Quél., as Tricholoma frumentaceum—Robin Hood’s Bay (F.F., 1894).

turundus Fr.—Staxton (A.C., 1914); Hackness (F.F., 1925).

unguinatus Fr.—Cloughton (T.B.R., 1915); Ayton (A.E.P., 1920); Hackness (F.F., 1925).

virgineus (Wulf.) Fr.—Common in pastures.

vitellinus Fr.—Scarborough (G.M.).

LACTARIUS Fries

aspideus Fr.—Scarborough (G.M.); these specimens formed the first British record and pl. 1083 of Cooke’s Illust. was drawn from them.

aurantiacus (Fl. Dan.) Fr.—Scarborough among moss (G.M.).

bennius Fr.—Common in and near woods.

camphoratus (Bull.) Fr.—Scarborough (G.M.); Flask Inn (A.E.P., 1925).

cyathula (Fr.) Rick.—Forge Valley (F.F., 1944).

deliciosus (L.) Fr.—Not uncommon near conifers.

flexuosus Fr.—Hackness (F.F., 1925); Cloughton (F.C.R., 1946).

fuliginosus Fr.—Raincliffe Wood (C.R., 1918); Forge Valley (F.F., 1944).

glycyosmus Fr.—Ganton Pheasant Covert (A.E.P.); Hackness and Forge Valley (F.F., 1915, 1925, 1944).

helvus Fr.—Scarborough (G.M.).

hysginus Fr.—Hackness (F.F., 1925).

insulsus Fr.—Scarborough (G.M. & F.F., 1915).

lignyotus (Lindb.) Fr.—Scarborough (G.M.); Lockton (A.E.P., 1924).

mammosus Fr.—Scarborough (G.M., 1888).

mitissimus Fr.—Scarborough (G.M. & C.R.); Forge Valley (F.F., 1944).

obnubilus (Lasch) Fr.—Raincliffe Wood (G.M., C.R., 1918).

pallidus (Pers.) Fr.—Scarborough (G.M.).

picinus Fr.—Scarborough (G.M.); Hackness (F.F., 1925).

piparius (Scop.) Fr.—Hackness (F.F., 1925).

plumbeus Fr.—Common in mixed woods.

pyrogalus (Lindb.) Fr.—Scarborough (G.M.).

trivialis Fr.—Scarborough (G.M.).

torvus Fr.—Raincliffe Wood (G.M., A.E.P.); Hackness (T.B.R.)
uvidus Fr.—Kingthorpe (T.B.M.S., 1931).
vellereus Fr.—Beedale (A.E.P., 1910); Goathland (T.B.M.S., 1931).
vietus Fr.—Scarborough (F.F., 1915); Goathland (T.B.M.S., 1931).
volemus Fr.—Scarborough (G.M.).
zonarius (Bull.) Fr.—Hackness (F.F., 1925).

RUSSULA Fries

adusta Fr.—Hackness (A.C., F.F., 1915); Raincliffe Wood (F.C.R., 1946).
aeruginea Lindb.—Yedmandale (A.E.P., 1911).
alutacea (Pers.) Fr.—Scarborough (G.M.); Hackness (F.F., 1925).
atro-purpurea Kromb.—Not uncommon in mixed woods.
var. depallens (Cooke) Maire—Cloughton (A.E.P., 1913); Raincliffe Wood (A.E.P., 1915).
azurea Bres.—Scarborough (G.M.).
cyanoxantha (Schaeff.) Fr.—Very common in moist mixed woods.
decolorans Fr.—Scarborough (G.M.).
delica Fr.—Irton Moor (T.B.R.); Thornton-le-Dale (F.F., 1945).
densifolia (Secr.) Gill.—Scarborough (G.M.); the first British record was founded on these specimens, and pl. 1017 of Cooke’s Illust. was drawn from them.
drimeia Cooke—Common in conifer woods.
emetica (Schaeff.) Fr.—Common in beech woods.
fallax (Fr.) Cooke—Scarborough (G.M.).
fellea Fr.—Not uncommon under beeches.
foetens Fr.—Scarborough (G.M.); Hackness (A.C., F.F., 1925).
fragilis Fr.—Not uncommon in moist woods.
grisea (Pers. ex Secr.) Fr.—Beedale (F.F., 1944).
heterophylla Fr.—Hackness (G.M., F.F., 1925).
integra (L.) Fr.—Scarborough (G.M.).
lepida Fr.—Irton Moor (A.E.P., F.F., 1915); Raincliffe Wood (C.R., 1918).
lutea Fr.—Flixton Carr Plantation (A.E.P., 1927); Harwood Dale A.E.P., 1929).
form luteorosella Britz.—Silpho Moor under conifers (F.C.R., 1948).
mustelina Fr.—Goathland (T.B.M.S., 1931).
nauseosa (Pers.) Fr.—Scarborough (G.M.); Flixton Carr (A.E.P., 1927).
nigricans Fr.—Common in mixed woods.
nitida (Pers.) Fr.—Scarborough (G.M.).
ochroleuca Fr.—Common in beech and conifer woods.
queletii Fr.—Ellerburn (F.C.R., 1945).
rubra (Kromb.) Bres.—Scarborough (G.M., F.F., 1915); Hackness (A.C., 1924); Cloughton (F.C.R., 1945-46).
sanguinea (Bull.) Fr.—Ebberston (A.E.P., 1927); Lockton (A.C., 1924).
venosa  Vel.—Forge Valley (F.F., 1924).
vesca  Fr.—Irtont (A.C. & F.F., 1915); Wykeham (A.E.P., 1931).
virescens  (Schaeff.) Fr.—Massie, 1895, says this species is frequent at Scarborough, but there was no further record until 1948 at Cloughton (W.G.B. & F.C.R.).
xerampelina  Fr.—Scarborough (G.M.); Hackness (F.F., 1925).

CANTHARELLUS  Adanson

cibarius  Fr.—Not uncommon in woods, especially beech.
friesii  Quél.—Scarborough (F.F., 1915).
tubaeformis  (Bull.) Fr.—Boynton (W.W.S., 1880); Raincliffe Wood (A.E.P., 1917).

LEPTOTUS  Karsten em. Maire

obatus  (Pers.) Karst., as Cantharellus—Scarborough (G.M.); Ellerburn in damp alder wood (F.A.M., 1922).
musci genus  (Bull.) Maire, as Cantharellus—Scarborough on the larger mosses (G.M.).
retirugis  (Bull.) Karst., as Cantharellus—Scarborough (G.M.).

CRATERELLUS  Fries
cornucopioides  (L.) Fr.—Not uncommon in woods.

VOLVARIA  Fries

dombicina  (Pers.) Fr.—Scarborough on decayed wood (G.M.).
pusilla  (Pers.) Fr., as V. temperata—Scarborough in conservatory (G.M.).
speciosa  Fr.—Seamer, Hackness & Wykeham on rubbish heaps (A.E.P., F.C.R.).
var. gloiocephala  (DC.) Kon. et Maubl.—Robin Hood’s Bay (G.M.); Scarborough (T.B.R., A.C., F.C.R.).
taylori  Berk.—Allerston (A.E.P., 1920).

PLUTEUS  Fries
cervinus  (Schaeff.) Fr.—Common, particularly on old sawdust.
var. patricius  (Schulz.) Fr.—Forge Valley on sawdust (A.E.P., 1927).
chrysophaeus  (Schaeff.) Fr.—Boynton (W.W.S., 1880); Thornton-le-Dale (G.M.).
leoninus  (Schaeff.) Fr.—Scarborough (G.M.).
nanus  (Pers.) Fr.—Ganton (A.E.P., 1910); Hackness on sawdust (F.C.R., 1946).
var. lutescens  Fr.—Forge Valley and Hackness (A.E.P., F.C.R.).
pellitus  (Pers.) Fr.—Scarborough (G.M.).
phlebophorus  (Ditm.) Fr.—Scarborough (G.M.).
salicinus  (Pers.) Fr.—Hackness (F.F., 1925); Kingthorpe (T.B.M.S., 1931).
semi-bulbosus  (Lasch) Fr.—Scarborough (G.M.).
vio larius  Mass.—The species was established on specimens found at Scarborough (G.M.); it has not been found since first collected.

PLUTEOLUS  Fries
ale viatus  Fr. var. reticulatus  (Pers. ex Fr.) Lange—Scarborough (G.M.).
CLITOPILUS Fries
cretatus Berk. et Br.—Scarborough (G.M.).
prunulus (Scop.) Fr.—Frequent among grass in open woods.

RIPARTITES Karsten

ENTOLOMA Fries
bloxami Berk. et Br.—Scarborough (G.M.); Fylingdales (A.E.P., 1927).
clypeatum (L.) Fr.—Scarborough, Seamer, Irton, etc. (A.E.P., 1910).
costatum Fr.—Massee, 1905, says this species is frequent in pastures and moist woods at Scarborough, but it has not been recorded since his time.
lividum (Bull.) Fr.—Scarborough (G.M., A.E.P., 1914); Irton and Suffield (A.C., 1914).
nidorosum Fr.—Scarborough (G.M.); Cloughton (A.E.P., 1920).
nigrocinnamomeum Kalch.—Scarborough (G.M.); first British record, and pl. 1153 of Cooke's Illust. was drawn from these specimens.
porphyrophaeum Fr.—Common in meadows; was erroneously recorded at E. jubatum prior to 1945.
prunuloides Fr.—Irton Moor and Hackness (A.E.P. & A.C.).
rhodopolium Fr.—Forge Valley (F.F., 1944).
sericeum (Bull.) Fr.—Widely distributed and not uncommon.
speculum (Fr.) Quel.—Scarborough (F.F., 1915).

LEPTONIA Fries
aethiops Fr.—Scarborough (F.F., 1915).
asprella Fr.—Scarborough (G.M. & F.F., 1915).
euchroa (Pers.) Fr.—Scarborough (G.M.).
formosa Fr. var. suavis (Lasch) Fr.—Scarborough among Equisetum (G.M.); first British record, and pl. 448 of Cooke's Illust. was drawn from these specimens.
incana Fr.—Beedale and Staxton (A.E.P., 1910); Boynton (W.W.S., 1880).
lampropus Fr.—Not uncommon in hillside pastures.
lappula Fr.—Scarborough among beech leaves (G.M.).
placida Fr.—Scarborough (G.M.).
serrulata Fr.—Scarborough (G.M.).
sericella (Fr.) Quél., as Entoloma—Not uncommon on grassy banks in woods.
var. decurrens Boud.—Cloughton (A.C.); Yedmandale (T.B.R., 1911).

NOLANEA Fries
cetrata (Fr.) Schroet.—Forge Valley (F.F., 1944); Thornton-le-Dale (F.F., 1945).
ICTERINA Fr., as Leptonia chloropolia—Scarborough (G.M.).

juncea Fr.—Cloughton among sphagnum (A.E.P., 1929).

mammosa (L.) Fr.—Cloughton (A.C., 1910).

papillata Bres.—Langdale End (A.E.P., 1927); Forge Valley and Thornton-le-Dale (F.F., 1944-45).

stauropsora Bres.—Common almost everywhere.

ECCILIA Fries

cancrina Fr.—Scarborough (G.M.).

nigrella (Pers.) Fr.—Staxton (A.C., 1915), now considered a decurrent form of Leptonia serrulata.

CLAUDOPUS W. G. Smith em. Patouillard

depluens (Batsch) Fr.—Scarborough among moss (G.M.).

PHOLIOTA Fries

adiposa Fr.—Hackness (F.F., 1925).

aegerita Brig.—Hackness on Sambucus (T.B.R., 1913).

aurea (Matt.) Fr.—Raincliffe Wood (A.E.P., 1911).

aurivella (Batsch) Fr.—Thornton-le-Dale (F.F., 1945).

dura (Bolt.) Fr.—Not uncommon in fields and gardens.

erebia Fr.—Not uncommon in woods and pastures.

flammans Fr.—Raincliffe Wood (G.M.); Kingthorpe (T.B.M.S., 1931).

marginata (Batsch) Fr.—Raincliffe Wood (G.M., C.R., 1918); Givendale (A.E.P., 1919); Hackness on sawdust (F.C.R., 1945).

mutabilis (Schaeff.) Fr.—Widely distributed and not uncommon.

mycenoides Fr.—Harwood Dale (G.M., 1904).

praecox (Pers.) Fr.—Raincliffe Wood (A.C., 1910); Harwood Dale (A.E.P., 1912).

pumila Fr.—Beedale on sawdust (A.E.P., 1929).

radicosa (Bull.) Fr.—Scarborough (G.M.); Kingthorpe and Goathland (T.B.M.S., 1931).

spectabilis Fr.—Cloughton (T.B.R.); Allerston (A.E.P., 1920); Raincliffe Wood (F.C.R., 1946).

squarrosa (Mull.) Fr.—Common on or near stumps, chiefly ash.

togularis (Bull.) Fr. non Rick.—Forge Valley, etc. (A.E.P., 1910); Hackness (F.F., 1944 & F.C.R., 1946).

HEBELOMA Fries

crustuliniforme (Bull.) Fr.—Scarborough, frequent (G.M.); Staxton (A.E.P., 1910); Forge Valley (F.F., 1944).

elatum (Batsch) Fr.—Scarborough (G.M.).

fastibile (Pers.) Fr.—Not uncommon in mixed woods.

longicaudum (Pers.) Fr.—Scarborough (G.M., A.E.P., 1912).

mesophaeum (Pers.) Fr.—Forge Valley (F.F., 1944); Thornton-le-Dale (F.F., 1945).

sacchariolens Quéll.—Ganton (A.C., 1915); Yedmandale (A.E.P., 1915).

sinapizans (Paul.) Fr.—Ganton and Staxton (A.E.P., 1910); Wykeham Abbey (A.E.P., 1927).

versipelle Fr.—Scarborough (G.M.)
FLAMMULA Fries
alnicola Fr.—Occasional in woods.
apicrea Fr.—Scarborough (G.M.); Cloughton (A.E.P., 1913).
carbonaria Fr.—Scarborough, frequent (G.M.); Silpho Moor (F.C.R., 1945).
flavida (Schaeff.) Fr.—Scarborough (G.M.).
gummosa (Lasch) Quél.—Hackness (F.C.R., 1945).
hybrida Fr.—Scarborough (G.M.), first British record.
lenta (Pers.) Fr., as F. glutinosum—Seamer (F.F., 1915); Allerston (A.E.P., 1919); Thornton-le-Dale (F.F., 1945).
ochrochloa Fr.—Scarborough (G.M., "Grevillea", XIV, p. 37), first British record; Rillington (A.C., 1914).
picrea Fr.—Cockmoor Hall (A.E.P., 1929).
sapinea Fr.—Common on dead trunks and stumps.
somba (Fr.) Sacc.—Iront Moor (T.B.R., 1914).
splumosa Fr.—Scarborough (G.M.).

NAUCORIA Fries
cerodes Fr.—Scarborough on burnt soil (G.M.).
cucumis (Pers.) Fr.—Not uncommon in damp woods.
erinacea Fr.—Scarborough, rare (G.M.).
escharoides Fr.—Forge Valley (F.F., 1944); Thornton-le-Dale (F.F., 1945).
pedda Fr.—Scarborough (G.M.).
semi-orbicularis (Bull.) Fr.—Scarborough (G.M.).
sideroides (Bull.) Fr.—Scarborough (G.M.); Flotmanby (T.B.R., 1911).
temulenta Fr.—Scarborough (G.M.); Cloughton (A.C., 1910).

TUBARIA Gillet
furfuracea (Pers.) Gill.—Not uncommon.
inquilina (Fr.) Gill.—Scarborough (G.M.); Hackness (F.C.R., 1945).
paludosa (Fr.) Karst.—Scarborough (G.M.).
stagnina (Fr.) Gill.—Scarborough in sphagnum swamp (G.M. & A.E.P., 1929).

GALERA Fries
antipus (Lasch) Fr.—Scarborough (G.M.); Thornton-le-Dale (F.F., 1945).
campanulata Mass.—Scarborough (G.M.).
hypnorum (Batsch) Fr.—Hackness (G.M., F.F., 1925); Thornton-le-Dale (F.F., 1946).
mniophila (Lasch) Fr.—Scarborough (G.M., A.E.P., 1910); Goathland (T.B.M.S., 1931).
pygmaeo-affinis Fr.—Cayton (A.E.P., 1910).
rubiginosa (Pers.) Fr.—Seamer (A.E.P., 1912 & 1927).
siliginea Fr.—Scarborough (G.M.).
tena (Schaeff.) Fr.—Common in woods, pastures, etc.
CREPIDOTUS Fries

*applanatus* (Pers.) Fr.—Rillington (A.C., 1914).
*mollis* (Schaeff.) Fr.—Common on stumps, sawdust, etc.
*variabilis* (Pers.) Fr., as *Claudopus*—Scarborough (G.M.); Raincliffe Wood (F.C.R., 1945).

BOLBITIUS Fries

*fragilis* (L.) Fr.—Not uncommon on roadsides, etc.
*titubans* (Bull.) Fr.—Scarborough (G.M.).
*vitellinus* (Pers.) Fr.—Scarborough on dung (G.M.); Forge Valley and Thornton-le-Dale (F.F., 1944-45).

CORTINARIUS Fries

Section MYXACIUM Fr.

*delibutus* Fr.—Scarborough (F.F., 1915); Goathland (T.B.M.S., 1931).
*elatior* Fr.—Not uncommon in mixed woods.
*mucosus* (Bull.) Fr.—Kingthorpe (T.B.M.S., 1931).

Section PHLEGMACIUM Fr.

*cristallinus* Fr.—Forge Valley (F.F., 1944).
*cyanopus* (Secr.) Fr.—Scarborough (G.M.).
*fulgens* (A. et S.) Fr.—Flamborough (G.M.); Forge Valley (F.F., 1944).
*glaucopus* (Schaeff.) Fr.—Scarborough (G.M.).
*infractus* (Pers.) Fr.—Ellerburn (F.C.R., 1945).
*largus* Fr.—Scarborough (G.M.).
*porphyropus* (A. et S.) Fr.—Scarborough in mixed wood (G.M.).
*purpurascens* Fr.—Forge Valley (G.M., F.F., 1944).
*rufo-olivaceus* (Pers.) Fr.—Forge Valley (F.F., 1944).
*sebaceus* Fr.—Cloughton and Beedale (A.E.P., 1910-14).
*varius* (Schaeff.) Fr.—Scarborough (G.M.); Ellerburn (F.C.R., 1946).

Section INOLOMA Fr.

*albo-violaceus* (Pers.) Fr.—Scarborough (G.M.).
*bolaris* (Pers.) Fr.—Scarborough in beech-wood (G.M.).
*bulliardii* (Pers.) Fr.—Cockmoor Hall (A.E.P., 1924).
*pholideus* Fr.—Ganton (G.M.); Hackness on sawdust (F.C.R., 1946).

Section DERMOCYBE Fr.

*anomalus* Fr.—Forge Valley and Thornton-le-Dale (F.F., 1944-45).
*caninus* Fr.—Forge Valley (G.M., F.F., 1944).
*azureus* Fr.—Scarborough (G.M.).
*cinnabarinus* Fr.—Thornton-le-Dale (F.F., 1945).
cinnamomeus Fr.—Not uncommon in mixed woods.
ochroleucus (Schaeff.) Fr.—Scarborough, Ganton, Filey (G.M.).
sanguineus (Wulf.) Fr.—Cloughton (T.B.R.); Forge Valley (F.F., 1915, 1944).
semi-sanguineus Gill.—Forge Valley (A.E.P., F.F., 1944); Silpho Moor (F.C.R., 1946).
uliginosus Berk.—Cloughton Duchy Wood (A.E.P., 1929).

Section TELAMONIA Fr.
armillatus Fr.—Hackness (G.M., F.F., 1925).
bivelus Fr.—Scarborough (G.M.).
brunneo-fulvus Fr.—Scarborough (G.M.).
brunneus (Pers.) Fr.—Scarborough (G.M.).
bulbosus (Sow.) Fr.—Scarborough among moss (G.M.).
callisteus Fr.—Scarborough in pine wood (G.M., A.E.P., 1912).
evernius Fr.—Scarborough in damp pine wood (G.M.).
glandicolor Fr.—Forge Valley (F.F., 1944).
hemitrichus (Pers.) Fr.—Scarborough (G.M.).
hinnuleus Fr.—Scarborough (G.M.); Irton Moor (C.C., A.C., 1910).
iliopodius (Bull.) Fr.—Scarborough (G.M., A.C., 1911).
penicillatus Fr.—Scarborough in pine wood (G.M.).
paleaceus Fr.—Ganton (G.M.); Scarborough (F.F., 1915).
rigidus (Scop.) Fr.—Cockmoor Hall (A.E.P., 1920); Raincliffe Wood (F.C.R., 1946).
tonvus Fr. non Quél.—Scarborough (G.M.); Kingthorpe (T.B.M.S., 1931).

Section HYDROCYBE Fr.
acutus (Pers.) Fr.—Seamer Quarry Plantation (G.M., A.E.P., 1913); Goathland (T.B.M.S., 1931).
castaneus (Bull.) Fr.—Scarborough and Ganton (G.M.); Goathland (T.B.M.S., 1931).
decipiens (Pers.) Fr.—Scarborough (G.M.); Forge Valley (F.F., 1944).
duracinus Fr.—Goathland (T.B.M.S., 1931).
erhythrinus Fr.—Hackness (G.M., F.F., 1925).
fasciatus Fr.—Scarborough (G.M.); Troutsdale (A.E.P., 1932).
firmus Fr.—Scarborough in mixed wood (G.M.).
leucopus (Bull.) Fr.—Forge Valley (G.M., F.F., 1944-45).
obtusus Fr.—Goathland (T.B.M.S., 1931).
rigens Fr.—Scarborough (G.M.).
saturninus Fr.—Scarborough (G.M.).
tortuosus Fr.—Scarborough (G.M.).
uraceus Fr.—Forge Valley (F.F., 1944).

INOCYBE Fries
asterospora Quél.—Not uncommon in open woods.
auricoma (Batsch) Fr.—Forge Valley (F.F., 1944); Thornton-le-Dale (F.F., 1945).
cincinnata Fr.—Raincliffe Wood (G.M., C.R.); Cloughton (A.E.P., 1929); Thornton-le-Dale (F.F., 1945).
descissa Fr.—Forge Valley (F.F., 1944).
dulcamara (A. et S.) Fr.—Scarborough (G.M.).
fastigiata (Schaeff.) Fr.—Forge Valley (G.M., F.F., 1944); Flixton Carr (A.E.P., 1910).
flocculosa Berk.—Ayton Road Plantation (A.E.P., 1911-12).
geophylla (Sow.) Fr.—Not uncommon in woods and under trees.
var. lilacina Fr.—Hakness (F.F., 1925); Thornton-le-Dale (F.C.R., 1945-46).

PAXILLUS Fries

atrotomentosus (Batsch) Fr.—Pickering (G.M.); Cloughton (F.C.R., 1946).
involutus (Batsch) Fr.—Very common in woods, especially conifer.
panuoides Fr.—Ganton and Seamer (A.E.P., 1913); Cloughton on sawdust (F.C.R., 1946).

STROPHARIA Fries

aeruginosa (Curt.) Fr.—Common in moist shady woods.
albo-cyanea (Desm.) Fr.—Scarborough (G.M.); Ellerburn (F.F., 1945).
coronilla (Bull.) Fr.—Scarborough (G.M., A.E.P., 1915); Forge Valley (F.F., 1944); Ellerburn (F.F., 1945).
hornemannii Fr.—Raincliffe Wood (G.M.).
hypsipus Fr. sensu Lange—Scarborough (G.M.); Kingthorpe (T.B.M.S., 1931).
inuncta Fr.—Scarborough (G.M., A.E.P., 1914).
merdaria Fr.—Scarborough (G.M.).
semi-globata (Batsch) Fr.—Common on dung.
squamosa (Pers.) Fr.—Not uncommon in woods.
var. thrausta Kalch.—Forge Valley, etc. (A.E.P., T.B.R.).

HYPHOLOMA Fries
candolleanum Fr.—Raincliffe Wood and Hackness (G.M., A.E.P., 1925).
capnoides Fr.—Not uncommon on conifer stumps.
dispersum Fr.—Scarborough (G.M.).
fasciculare (Huds.) Fr.—Widely distributed and very common.
hydrophilum (Bull.) Fr.—Not uncommon on stumps and sawdust.
lacrymabundum Fr. non Bull.—Scarborough (G.M., A.E.P.).
leucotephrum Berk, et Br.—Beedale and Yedmandale (A.E.P., 1912-33).
radicosum Lange—Kingthorpe (T.B.M.S., 1931).
sublateritium Fr.—Not uncommon in woods, etc.
velutinum (Pers.) Fr.—Widely distributed and not uncommon.

PSILOCYBE Fries
bullacea (Bull.) Fr.—Scarborough (G.M.).
cernua (Vahl) Fr.—Irton (A.E.P., 1914); Hackness (F.C.R., 1946).
clivensis Berk. et Br.—Scarborough (G.M.).
coprophila (Bull.) Fr.—Hackness (G.M., F.C.R., 1945).
ericaea (Pers.) Fr.—Scarborough (G.M.); Flixton Carr (A.E.P., 1927).
foenisecii (Pers.) Fr.—Not uncommon on lawns, pastures, etc.
physaloides (Bull.) Lasch—Goathland (T.B.M.S., 1931).
sarcocephala Fr.—Forge Valley and Yedmandale (G.M., A.E.P., 1927); Kingthorpe (T.B.M.S., 1931).
semi-lanceata Fr.—Scarborough (G.M.).
var. caerulescens Cooke—Raincliffe Wood (A.E.P., 1910).
spadicea Fr.—Scarborough and Cloughton (G.M., A.C., A.E.P.).
sub-ericacea Fr.—Forge Valley (A.E.P., 1927, F.F., 1945).

PSATHYRELLA Fries
atomata Fr.—Not uncommon among grass in open woods.
bifrons (Berk.) Smith, A. H.—Scarborough, rare (G.M.).
conopilea Fr.—Not uncommon among grass in rich soil.
disseminata (Pers.) Fr.—Widely distributed and not uncommon.
fibrillosa (Pers. ex Fr.) Pears. et Denn.—Scarborough (G.M.); Goathland (T.B.M.S., 1931).
var. corrugis (Pers.) Lange—Scarborough (G.M., A.E.P., 1911).
var. vinosa (Corda) Pears. et Denn.—Langdale End (A.E.P., 1927).

obtusata (Fr. sensu Lange) Smith, A. H.—Oliver’s Mount (A.E.P., 1912).
pennata (Fr.) Pears. et Denn.—Spital Corner (A.E.P., 1927).
prona Fr.—Scarborough (G.M.); Seamer Carr (A.E.P., 1912).
pennata (Fr.) Pears., et Denn.—Spital Corner (A.E.P., 1927).
prona Fr.—Scarborough (G.M.), Seamer Carr (A.E.P., 1912).
semi-vestita (Berk.) Smith, A. H.—Massee, 1905, says this species is frequent in the Scarborough district, but it has not been recorded since.

PANAEOLUS Fries
acuminatus (Schaeff.) Fr.—Thornton-le-Dale (F.F., 1945).
campanulatus (L.) Fr.—Wideley distributed on dung.
var. sphinctrinus (Fr.) Bres.—Forge Valley (F.F., 1944-45).
fimicola Fr.—Scarborough (G.M., A.E.P., 1910).
papilionaceus (Bull.) Fr.—Forge Valley (G.M., & F.F., 1944).
retirugis Fr.—Hackness (G.M., A.E.P., 1911).
subbalteatus Berk. et Br.—Seamer (A.E.P., 1927).

ANELLARIA Karsten
fimiputris (Fr.) Karst.—Scarborough (G.M., A.E.P., 1912).
semi-ovata (Sow. ex Fr.) Pears et Denn.—Very common on dung in moist pastures.

PSALLIOTA Fries
arvensis (Schaeff.) Fr.—Common in pastures, etc.
augusta Fr.—Locally not uncommon; occasionally abundant.
campestris (L.) Fr.—Common in pastures.
comtula Fr.—Scarborough (G.M.); Wintringham (A.E.P., 1920).
elvensis Berk. et Br.—Raincliffe Wood, etc. (A.E.P., 1912); Scampston (F.C.R., 1946).
haemorrhoidaria Karst.—Seamer Carr (G.M., A.E.P.); Raincliffe Wood (C.R., 1918); Forge Valley (F.F., 1944).
russiophylla (Lasch) Fr.—Raincliffe Wood (C.R., 1918).
silvatica (Schaeff.) Fr.—Not uncommon in woods.
silvicola (Vitt.) Sacc.—Not uncommon in woods.
villatica Brond. sensu Bres.—Seamer, Staxton, etc. (A.E.P.); Thornton-le-Dale (F.F., 1945).
xanthoderma Gen.—Brompton Dale (A.E.P., 1927); Kingthorpe (T.B.M.S., 1931); Forge Valley (F.F., 1944).
var. obscurata Maire—Ayton (A.A.P., F.F., 1944), first British record.

COPRINUS Fries
atramentarius (Bull.) Fr.—Common about old stumps.
cinereus (Schaeff.) Fr.—Raincliffe Wood (A.E.P.); Hackness (F.F., 1925); Thornton-le-Dale (F.F., 1945).
comatus (Fl. Dan.) Fr.—Common.
domesticus (Pers.) Fr.—Scarborough (G.M., A.E.P., 1912).
ephemerus (Bull.) Fr.—Massee (1905) says, “Frequent on dung-hills”, but recorded only at the 1915 F.F.
fuscescens (Schaeff.) Fr.—Scarborough (F.F., 1915).
lagopus Fr.—Forge Valley (G.M., F.F., 1944); Kingthorpe T.B.M.S., 1931).
micaceus (Bull.) Fr.—Very common about old stumps.
niveus (Pers.) Fr.—Not uncommon on horse dung.
ovatus (Schaeff.) Fr.—Scarborough (G.M.).
picaceus (Bull.) Fr.—Hackness (G.M., A.E.P., 1910); Raincliffe Wood (F.C.R., 1947).
placatilis (Curt.) Fr.—Numerous records.
radians (Desm.) Fr.—Scarborough on damp wall (G.M.).
radiatus (Bolt.) Fr.—Massee (1905) says, “Very common on horse dung”, but recorded only once since, Filey (Nat., Oct., 1922).
stercorarius (Bull.) Fr.—Scarborough (G.M.).
sterquilinus Fr.—Scarborough (G.M.).
GOMPHEIDUS Fries
glutinosus (Schaeff.) Fr.—Scarborough (G.M.).
gracilis Berk. et Br.—Irton Moor (C.C., 1910); Raincliffe Wood (G.M. & A.E.P., 1910); Wykeham (F.C.R., 1946).
maculatus (Scop.) Fr.—Scarborough (G.M.).
roseus Fr.—Irton Moor (A.C., 1910); Thornton-le-Dale (F.F., 1945).
rutilus (Schaeff.) Fr.—Numerous records.

BOLETALES

PORPHYRELLUS Gilbert
porphyrosporus (Fr.) Gilb.—Pickering (G.M., 1892); Beedale (A.C., 1911).

GYROPORUS Quélet
castaneus (Bull.) Quél., as Boletus fulvus—Scarborough (G.M.); Hackness (F.F., 1925).

PHYLOPORUS Quélet
rhodoxanthus (Schwein.) Bres. (= Paxillus paradoxus)—Scarborough (G.M.), first British record, see Cooke’s plate 884; Beedale (T.B.R., 1911).

BOLETUS Dillenius ex Fries
appendiculatus (Schaeff.) Fr., as the pale form of B. aestivalis—Beedale (A.E.P., 1910).
badius Fr.—Common in woods.
bovinus (L.) Fr.—Common near pines.
chrysenteron (Bull.) Fr.—Common in mixed woods.
cramesinus Seer.—Forge Valley (G.M.).
**FUNGI — GASTEROMYCETALES**

**GASTEROMYCETALES**

**PHALLACEAE**

**MUTINUS** Fries  
*caninus* (Huds. ex Fr.) Fr.—Numerous records.

**PHALLUS** (Micheli) Persoon  
*impudicus* L. ex Pers.—Common, especially in coniferous woods.  
var. *togatus* (Kalchbr.) Cost. et Duf.—Beedale, not uncommon (F.F., 1915).

**LYCOPERDACEAE**

**LYCOPERDON** (Tournefort) Persoon  
*caelatum* Bull. ex Fr.—Frequent.  
*depressum* Bon.—Forge Valley (F.F., 1944).  
*echinatum* Pers.—Scarborough (G.M.); Silpho Moor, not uncommon (F.C.R.).
**NATURAL HISTORY OF THE SCARBOROUGH DISTRICT**

**giganteum** Batsch ex Pers.—Not uncommon; a specimen found in 1934 was 16 ins. high and 60 ins. in circumference.

**molle** Pers.—Forge Valley (F.F., 1915).

**perlatum** Pers. (= *L. gemmatum*)—Locally common.

**polymorphum** Vitt.—Levisham, on cinders of railway track (A.E.P. & F.A.M., 1929); Ayton, in pasture (A.E.P., 1920).

**BOVISTA** (Dillenius) Morgan

**nigrescens** Pers.—Occasional.

**plumbea** Pers.—Suffield (T.B.R., 1913); Forge Valley (F.F., 1944).

**GEASTER** (Micheli) Fries

**rufescens** Pers.—Boynton (W.W.S., Nat., July, 1889).

**NIDULARIACEAE**

**NIDULARIA** (Fries) Tulasne

**pisiformis** (Roth) Tul.—Scarborough on rotten leaves (G.M.).

**CRUCIBULUM** Tulasne

**vulgare** Tul.—Locally abundant on twigs, sacking, etc.

**CYATHUS** Haller

**olla** Pers.—Scarborough on manure (T.B.R., 1912); Hackness on sawdust (F.C.R., 1945).

**striatus** Pers.—Scarborough (G.M.); Raincliffe Wood (T.B.R., 1910); Seamer (A.E.P., 1925).

**SCLERODERMATACEAE**

**MELANOGASTER** Corda

**variegatus** (Vitt.) Tul.—Scarborough under beech (G.M.).

**ambiguus** (Vitt.) Tul.—Boynton (W.W.S., Nat., July, 1889).

**SCLERODERMA** Persoon

**aurantium** Pers.—Raincliffe Wood (A.E.P., 1910); Thornton-le-Dale (F.F., 1945).


**geaster** Fr.—Scarborough (G.M.).

**verrucosum** Vaill. ex Pers.—Scarborough (G.M.); Thornton-le-Dale (F.F., 1945).

**CALOSTOMATACEAE**

**ASTRAEUS** Morgan


**SPHAEROBOLACEAE**

**SPHAEROBOLUS** Tode ex Pers.

**stellatus** Tode ex Pers.—Common on sawdust, etc.
A COMMON PUFFBALL (*Lycoperdon perlatum* Pers.)

Photograph: A. E. Peck
COELOMYCETES
SPHAEROPSIDALES
SPHAERIOIDACEAE

PHYLLOSTICTA Persoon ex Desmazières
berberidis Rabenh.—Scarborough on B. vulgaris (M. & C.).
lappae Sacc.—Scarborough on Arctium (M. & C.).
lauri West.—Scarborough on Laurus nobilis leaves (G.M.).
rosae Rob. et Desm.—Scarborough on Rosa canina leaves (G.M.),

PHOMA Fries emend. Desmazières
acicola (Lèv.) Sacc.—Howldale on Pinus leaves (W.G.B., 1947).
acuta (Berk.) Fuckel—Seamer on dead Urtica stems (A.E.P., 1925).
araucariae Trav.—Fylingdale Hall on A. imbricata (T.B.R., 1913).
complanata (Tode ex Fr.) Desm.—Kingthorpe, etc., on dead
umbelliferous stems (F.F., 1946); Ellerburn on Angelica (Nottn.,
1214-5).
herbarum West.—A collective species reported on many hosts and
in many localities.
lingam (Tode ex Fr.) Desm.—Scarborough on old cabbage stems
(G.M.).
nebulosa (Pers. ex Fr.) Berk.—Scarborough on dead Urtica stems
(G.M.).
samararum Desm.—Common on fruits (samaras) of Fraxinus (G.M.).
urticae Sch. et Sacc.—Kingthorpe on Urtica (F.F., 1946).

NEOTTIOSPORA Desemazieres
caricum Desm.—Scarborough on Carex rostrata (G.M.).

APOSPHAERIA Berkeley
fibricola (Berk.) Sacc.—Scarborough on wood (G.M.).

SCLEROPHOMA von Hoehnel
pithyophila von Hoehn.—Ellerburn on Abies leaves (Nottn., 1106).

SPHAERONEMA Fries
aemulans Berk. et Br.—Scarborough on dead wood (G.M.).
subulatum Tode ex Fr.—Scarborough on Russula nigricans (G.M.).
Although recorded as Eleutheromyces subulatus, Petch
(T.B.M.S., 26, p. 561), found all accessible British collections
under that name to be pycnidial and so referable to Sphaero-
naema. The Scarborough collection has not been preserved, but
we are referring it to Sphaeronaema in the meantime.

PHOMOPSIS Saccardo
asteriscus (Berk.) Grove.—Scarborough on dead Heracleum
sphondylium (G.M.).
crustosa (Bonn., Rouss et Sacc.) Trav.—Robin Hood’s Bay on Ilex
scobina (Cooke) von Hoehn.—Scarborough on Fraxinus leaves (G.M.).
velata (Sacc.) von Hoehn.—Scarborough on Tilia (G.M.).

CYTOSPORA Ehrenberg ex Fries
foliicola Lib.—Scarborough on Escallonia (W.G.B., 1945).
laurocerasi Fuckel—Scarborough on P. laurocerasus (W.G.B., York, 1945).
nivea Fuckel—Scarborough on Populus serotina (G.M.).
rosarum Grev.—Scarborough on Rosa canina (G.M.).

CEUTHOSPORA Fries
laurocerasi Grove—Scarborough on P. laurocerasus (G.M., 1881).

DARLUCA Castagne
filum (Biv. et Bern.) Cast.—Throxenby Mere on sori of Puccinia calthae (T.B.R., 1911); Thornton-le-Dale (F.F., 1945).

STAGONOSPORA Saccardo
macropus (Berk. et Br.) Sacc.—Scarborough on Carex (M. & C.).

SEPTORIA Saccardo
hederæ Desm.—Ellerburn on Hedera (F.A.M., 1922).
apii (Br. et Cav.) Chest.—Scarborough on Apium (T.B.R., 1916).
rubi West.—Scarborough on R. fruticosus (G.M.).
virgaureae Desm.—Scarborough on Solidago virgaurea (M. & C.).

DILOPHOSPORA Desmazières
alopecuri (Fr.) Fr.—Robin Hood’s Bay on Holcus (W.G.B., 1946).

SPHAEROPSIS Saccardo

DIPLODIA Fries
hederæ Fuckel—Scarborough on Hedera (G.M.).
herbarum (Corda) Lév.—Scarborough on Urtica (G.M., 1881).
ligustri West.—Scarborough on L. vulgare (G.M.).
malorum Fuckel—Scarborough on fallen apples (G.M.).
taxi (Sow. ex Fr.) de Not.—Scarborough on T. baccata (G.M.).
tiliae Fuckel—Scarborough on Tilia twigs (G.M.).

EXCIPULACEAE

DINEMASPORIUM Léveillé
graminum Lév.—Scarborough on grass (G.M.).

EXCIPIULA Fries
petiolicola Fuckel—Scarborough on petioles of Tilia; considered by Grove to be a doubtful record.

LEPTOSTROMATAUCEAE

THYRIOSTROMA Diedecke
spiraeae (Fr.) Died.—Scarborough on dead Filipendula ulmaria (G.M., 1881).

LEPTOSTROMA Fries
spiraeinum Vest.—Ellerburn on Filipendula ulmaria (Nottm., 1102).
FUNGI — COELOMYCETES

MELANCONIALES
HYALOSPERMAE

COLLETOTRICHUM Corda
[lycopersici Chest.—Whitby on potato haulms (F.F., 1900), first European record.]
lindemuthianum (Sacc. et Magn.) Bri. et Cav.—Occasionally a destructive parasite on runner beans.

MYXOSPORIUM Link
croceum Pers. ex Link—Scarborough on Fagus (G.M., 1881).

ACTINONEMA Fries
rosae (Lib.) Fr.—Not uncommon on cultivated and wild roses.

MARSSONINA Magnus
populi (Lib.) Magn.—Scarborough on living Populus leaves (M. & C.).

PHAEOSPERMAE

MELANCONIUM Link
bicolor Nees ex Link—Scarborough on Corylus bark (G.M.).

STILBOSPORA Persoon ex Link
macrosperna Pers.—Scarborough on Quercus (M. & C.).

CORYNEUM Nees ex Link
compactum Berk. et Br.—Scarborough on Ulmus (G.M.).
kunzei Corda—Scarborough on Quercus (G.M.).

ASTEROSPORIUM Kunze ex Wallroth
hoffmanni Kunze—Scarborough (G.M., 1881); Thornton-le-Dale and Forge Valley (F.F., 1946), all on Fagus.

STEGANOSPORIUM Corda
cellulosum Corda—Scarborough on Tilia bark (M. & C.).
pyriforme (Hoffm. ex Fr.) Corda—Thornpton-le-Dale on Acer (F.F., 1945).

HYPHOMYCETES

GLOIOSPORAE — AMEROSPORAE

ACROSTALAGMUS Corda
cinnabarinus Corda—See Nectria inventa.

AMBLYOSPORIUM Fresenius
botrytis Fres., as Rhinotrichum aureum—On old agarics; Scarborough (G.M.).

CEPHALOSPORIUM Corda
acremonium Corda—On stems of Rubus, Heracleum, etc.; Scarborough (G.M.). On dead Abies leaves; Ellerburn (Nottm., 1114).
CORETHROPSIS Corda
epimyces Mass.—On old Mycena; Scarborough (G.M.).
paradoxa Corda—On old shoe; Scarborough (G.M.).

GLIOCLADIUM Corda
penicillioides Corda—See Nectriopsis aureonitens.

GLIOMASTIX Guéguen
luzulae (Fuckel) Mason comb. nov. (= Torula luzulae Fuckel, Fusidium viride Grove)—On Petasites; Forge Valley, 1945 (I.M.I., 1537), 1946 (I.M.I., 7032).

GONYTRICHUM Nees ex Wallr.
caesium Nees ex Wallr.—See Melanopsammella inaequalis.

GRAPHIUM Corda
glaucocephalum (Corda) Sacc.—Boynton (W.W.S., Nat., July, 1889).
subulatum (Nees ex Fr.) Sacc.—On old wood; Scarborough (M. & C.).

HAPLOGRAPHIUM Berkeley et Broome
bicolor Grove (= H. delicatum Berk. et Br.)—See Hyaloscypha dematiicola.

MENISPORA Persoon ex Chevallier

OOSPORA Wallroth
candidula Sacc.—On Nectria cinnabarina on Ulmus; Forge Valley, 1945 (I.M.I., 1384).

SARCOPODIUM Ehrenberg ex Wallroth
circinatum Ehrenb. ex Fr. (= Volutella gilva (Pers. ex Fr.) Sacc.)—On Arctium; Howldale, 1946 (I.M.I., 4903).

SPOROCYBE Fries emend. Bonorden

STACHYLIDIUM Link ex Fries

STILBUM Tode ex Fries
erythrocephalum Ditm. ex Fr.—On dung; Scarborough (Grev., 1888, p. 9).
fimetarium (Pers. ex Fr.) Berk. et Br.—On dung; Scarborough (Grev., 1888, p. 9).
pellucidum Schrad. ex Fr.—Scarborough (A.E.P., 1923), no host stated.
tomentosum Schrad. ex Fr. var. ovalisporum A. L. Sm. (= Tilachlidium)—On Trichia; Howldale, 1947 (I.M.I., 14029); Scarborough (G.M.).

TRICHOMEDEMA Persoon ex Fries
viride Pers. ex Fr.—See Hypocrea rufa.

TUBERCULARIA Tode ex Fries
vulgaris Tode ex Fr.—See Nectria cinnabarina.

VERTICILLIUM Nees ex Wallroth
apicale Berk. et Br. (= Verticicladium)—On Fagus; Howldale, 1947 (I.M.I., 13928b, 14456, 13904a).
epimyces Berk. et Br.—On decaying fungi; Scarborough (G.M.).

VOLUTELLA Tode ex Fries
ciliata Fr.—On rotten leaves; Scarborough (G.M.).

GLOIOSPORAE — ENDOSPORAE

SPORENDONEMA Desmazières ex Fries
casei Desm. ex Fr.—On cheese; Scarborough (G.M.).

SPOROSCHISMA Berkeley et Broome

THIELAVIOPSIS Went
basicola (Berk. et Br.) Ferr.—On Blysmus compressus (G.M.).

GLOIOSPORAE—PHRAGMOSPORAE

FUSARIUM Link ex Fries
caureruleum (Lib.) Sacc.—Common on stored potatoes.
heterosporum Nees ex Fr.—On Pea annua and Arrhenatherum elatius; Wykeham (F.F., 1945).
merismoides Corda—On Beta vulgaris; Scarborough (M. & C.).

MASTIGOSPORIUM Riess
rubricosum (Dearn. et Barth.) Sprague, R.—recorded incorrectly as M. album Reiss—On Dactylis; Thornton-le-Dale (F.F., 1945).
MICROCERA Desmazières
coccophila Desm.—On Chionaspis salicis on Salix; Scarborough (G.M.). Petch (T.B.M.S., XVII, p. 177), considers this record doubtful.

GLOIOSPORAE — SPEIROSPORAE

CHEIROMYCELLA von Hoehnel
gyrosa (Cooke et Mass.) Mason et Hughes comb. nov. (= Torula gyrosa Cooke et Mass.)—On conifer; Howldale, 1947 (I.M.I., 14017).

XEROSPORAE — AMEROSPORAE

AEGERITA Persoon ex Fries
candida Pers. ex Fr.—See Peniophora candida.

ARTHRRNIUM Kunze ex Fries
sporophleum Kunze ex Fr.—On Carex hirta; Ellerburn (Nottm., 1095).

ASPERGILLUS Micheli ex Fries
candidus Link ex Fr.—Scarborough (G.M.).

BOTRYOSPORIUM Corda
pulchrum Corda—On Urtica; Kingthorpe, 1945 (I.M.I., 1359).

BOTRYTIS Persoon ex Fries

CHAETOPSIS Greville ex Corda

CYLINDRIUM Bonorden
flavovirens (Ditm. ex Fr.) Bon.—On dead Quercus leaves; Scarborough (G.M.).

GEOTRICHUM Link ex Saccardo
candidum Link ex Sacc.—On damp paper; Scarborough Museum (T.B.R., 1914).

GONATOBOTRYS Corda
simplex Corda—On old perithecia of Valsa on Crataegus; Scarborough (G.M.).

HAPLARIA Link ex Chevallier
grisea Link ex Chev.—On rotten wood; Thornton-le-Dale, 1946 (I.M.I., 5099).
HYMENOSTILBE Petch  
muscaria Petch—On flies; Goathland (T.P., T.B.M.S., XVII, p. 176).

ISARIA Persoon ex Fries  
 albida (Fr.) Sacc.—On rotten wood; Scarborough (G.M.).  
 farinosa Fr.—Common on dead pupae of various insects, especially those buried under dead leaves.  
 intricata Fr.—On dead Stereum; Scarborough (G.M.).  
 umbrina Pers. ex Wallr.—On Fagus; Howldale, 1947 (I.M.I., 14105).

MONILIA Persoon ex Fries  
 candicans Sacc.—See Corticium subcoronatum.  
 cinerea Bon.—See Sclerotinia laxa.  
 fructigena Fr.—Common on dead pupae of various insects, especially those buried under dead leaves, intricata Fr.—On dead Stereum; Scarborough (G.M.).  
 umbrina Pers. ex Wallr.—On Fagus; Howldale, 1947 (I.M.I., 14105).

MONOTOSPORA Saccardo  
 megalospora Berk, et Br.—On Taxus; Scarborough (G.M.).  
 pumila (Mass.) Sacc.—See Farlowiella carmichaeliana.

NEMATOGONIUM Desmazières  
 aurantiacum Desm.—On bark; Boynton (W.W.S., Nat., July, 1889).

OIDIUM Link ex Fries  

OVULARIA Saccardo  
 bistortae (Fuckel) Sacc.—Thornton-le-Dale (F.F., 1945).  
 obliqua (Cooke) Oud.—On Rumex; Kingthorpe, 1946 (I.M.I., 5059).

PERICONIA Bonorden  
 curta (Berk.) Mason et Ellis, M. B. comb. nov. (= Cephalotrichum curtum Berk.)—On Juncus; Kingthorpe, 1946 (I.M.I., 9756).  
 nigrella (Berk.) Sacc.—Boynton (W.W.S., Nat., July, 1889).

PHAEOSARIA von Hoehnel  
 clavulata (Grove) Mason et Hughes comb. nov. (= Pachnocybe clavulata Grove)—On wood; Kingthorpe, 1945 (I.M.I., 1535).  

RHINOTRICHUM Corda  
 repens Preuss—On rotten wood; Scarborough (G.M.), a presumed synonym of Acladium conspersum Link (Oidi um conspersum (Link) Lind.).

RHOPALOMYCES Corda  
 candidus Berk. et Br.—On rotten leaves; Scarborough (G.M.).
SEPEDONIUM Link ex Fries
chrysospermum Fr.—See Apiocrea chrysosperma.

STYSANUS Corda
stenonites (Pers. ex Fr.) Corda—On dead leaves; Scarborough (G.M.).

TORULA Persoon ex Fries
gyrosa Cooke et Mass.—See Cheiromycella gyrosa.
herbarum Link ex Fr.—Numerous records on many hosts.
hysterioides Corda—See Cryptocoryneum condensatum.
ovalispora Berk.—Numerous records on many hosts.
pulveracea Corda—On dead wood; Scarborough (G.M.).

TRICHOSPORIUM Fries
fuscum (Link ex Wallr.) Sacc.—Filey (T.B.R., Nat., 1914, p. 253).
inosculans (Berk.) Sacc.—On dead Thelephora; Scarborough (G.M.).

XYLOHYPHA (Fries) Mason comb. nov.
nigrescens (Pers. ex Fr.) Mason—On Fraxinus; Ellers Wood (Nottm., 1070).

ZYGODESmus Corda
fuscus Corda—On rotten wood; Scarborough (G.M.).

XEROSPORAE — DIDYMOSPORAE

ARTHROBOTRYS Corda
rosea Mass.—On rotten wood; Scarborough (G.M.).

BISPORA Corda
antennata (Pers. ex Fr.) Mason comb. nov. (= Torula antennata
Pers., B. monilioides Corda)—On rotten wood; Scarborough (G.M.).

CLADOSPORIUM Link ex Fries
epiphyllum Nees ex Fr.—On leaves; Scarborough (G.M.), probably
C. herbarum.
herbarum Link ex Fr.—A very common mould.

DIPLOCLADIUM Bonorden
penicillioides Sacc.—See Hypomyces aurantius.

DIPLORHINOTRICHUM von Hoehnel
candidulum von Hoehn.—On Fraxinus; Howldale, 1947 (I.M.I.,

POLYTHRINCIUM Kunze et Schmidt ex Fries
trifolii Kunze ex Fr.—See Dothidella trifolii.

TRICHOTHECIUM Link ex Fries
roseum Link ex Fr.—Numerous records.

XEROSPORAE — PHRAGMOSPORAE

ACROTHECIUM Corda
delicatulum Berk. et Br.—On Acer; Forge Valley, 1947 (I.M.I.,
PHRAGMOCEPHALA Mason et Hughes

BACTRIDIUM Kunze ex Fries
flavum Kunze ex Fr.—On Sorbus; Howldale, 1947 (Hull, 134).

BACTRODESMIUM Cooke
abruptum (Berk. et Br.) Mason et Hughes comb. nov. (= Clasterosporium abruptum (Berk. et Br.) Sacc.)—On Acer; Forge Valley, 1946 (I.M.I., 6843a).
fasciculare (Corda) Mason et Hughes comb. nov. (=Clasterosporium fasciculare (Corda) Sacc.)—On Fraxinus; Howldale, 1947 (I.M.I., 14014).

BRACHYSPORIUM Saccardo
apicale (Berk. et Br.) Sacc.—On Fraxinus; Howldale, 1947 (I.M.I., 13918a).
hyalospermum (Corda) Sacc.—See Helminthosporium hyalospermum.
oosporum (Corda) Sacc.—On Lonicera; Boynton, 1880 (W.W.S.). A doubtful record, as the only British material seen under this name is conidial Chaetosphaeria phaeostroma (E.W.M.).

CERCOSPORA Fresenius
mercurialis Pass.—On Mercurialis; Thornton-le-Dale, 1946 (I.M.I., 9756), Scarborough (G.M.).

CLASTEROSPORIUM Schweinitz
abruptum (Berk. et Br.) Sacc.—See Bactrodesmium abruptum.
fasciculare (Corda) Sacc.—See Bactrodesmium fasciculare.
opacum (Corda) Sacc.—On Fraxinus; Kingthorpe, 1945 (I.M.I., 1355b), Howldale, 1947 (I.M.I., 14486). The material is the same as British material previously referred to this name and is a Bactrodesmium (E.W.M.).

DENDRYPHION Wallroth
EXOSPORIUM Link ex Wallroth

hysterioides (Corda) von Hoehn.—See Cryptocoryneum condensatum.

tiliae (Link ex Wallr.) Fr.—On Tilia; Forge Valley, 1946 (I.M.I., 6787), 1947 (I.M.I., 13763).

HELMINTHOSPORIUM Link ex Fries


At the 1945-46 F.F., H. apiculatum was included with H. simplex as H. fusisporium.

folliculatum Corda—On rotten wood; Scarborough (G.M.). British collections previously referred to this species are Dendryphion laxum (E.W.M.).

hyalospermum Corda (= Brachysporium hyalospermum (Corda) Sacc.)—On Betula; Forge Valley, 1947 (I.M.I., 13832b).

longipilum Corda—See Melanomma subdispersum.

rhopaloides Fres.—See Dendryphion laxum.


turbinatum Berk. et Br.—See Podoconis turbinata.

velutinum Link ex Fr.—Numerous records on many hosts; also recorded as H. macrocarpum.

DACTYLOSPORIUM Harz

macropus (Corda) Harz (= Helminthosporium tingens Cooke)—On Acer; Forge Valley, 1946 (I.M.I., 7014a, Nat., 1952, p. 64).

HETEROSPORIUM Klotzsch ex Cooke

echinulatum (Berk.) Cooke—See Didymellina dianthi.

MUCROSPORIUM Preuss

sphaerocephalum (Berk.) Sacc.—On dead wood; Scarborough (G.M.).

PODOCONIS Boedijn

turbinata (Berk. et Br.) Mason et Hughes comb. nov. (= Helminthosporium turbinatum Berk. et Br.)—On Sambucus; Howldale, 1947 (I.M.I., 13809).
Fungi — Hypomycetes

Ramularia (Unger) Corda
armoracae Fuckel—On living leaves of Cochlearia; Scarborough (G.M.).
hellebori Fuckel—On H. viridis; Ayton (G.M.).
lychnicola Cooke—On living Lychnis leaves; Scarborough (G.M.).

Septocylinindrium Bonorden

Xerosporae — Speirosporae

Cryptocoryneum Fuckel

Speira Corda

Xerosporae — Dicytosporae

Coniosporium Link
paradoxum (Corda) Mason et Hughes (= Sporodesmium paradoxum Corda)—On Betula; Forge Valley, 1947 (I.M.I., 14515b).

Coniothecium Corda
betulinum Corda—On Betula; Thornton-le-Dale (F.F., 1945).

Epicoccum Link ex Wallroth
herbarum Corda—On dead leaves; Scarborough (G.M.).
eglectum Desm.—On reeds and grasses; Scarborough (G.M.).
purpurascens Ehrenb. ex Wallr.—On conifer; Dalby Dale, 1945, (I.M.I., 1395b).
These three names probably refer to a single plurivorous species.

Sporodesmium Link ex Fries
paradoxum Corda—See Coniosporium paradoxum.

Xerosporae — Helicosporae

Helicodendron Peyronel
tubulosum (Riess) Lind.—On rotten wood; Scarborough (G.M.).

Helicosporium Nees ex Fries
vegetum Nees ex Fr.—See Ophionectria cerea.
XEROSPORAE — STAUROSPORAE

**TRIPOSPIRUM** Corda

**AQUATIC HYPHOMYCETES — WATER MOULDS**

At the joint foray of the B.M.S. and the Y.N.U. in September, 1946, the following water moulds were collected by Prof. C. T. Ingold in Forge Valley:

- *Clavariopsis aquatica* de Wild.
- *Flagellospora curvula* Ing.
- *Lemonniera aquatica* de Wild.
- *Lunulospora curvula* Ing.
- *Tetrachaetum elegans* Ing.
- *Tetracladium marchalianum* de Wild.

**MYCELIA STERILIA**

**OZONIUM** Link ex Fries

- *auricomum* Link ex Wallr.—Scarborough, etc. (F.C.R.).

**RHIZOCTONIA** de Candolle ex Fries.

- *crococorum* DC. ex Fr.—See *Helicobasidium purpureum*.

In mycology comparatively few English names are used, but the following list of generally accepted trivial names may be of interest to the general botanist and may help in the interpretation of the records:

- **BEEFSTEAK FUNGUS**—*Fistulina hepatica*.
- **BLEWIT**—*Tricholoma personatum*.
- **BLUSHER**—*Amanita rubescens*.
- **CANDLE-SNUFF FUNGUS**—*Xylaria hypoxylon*.
- **CHANTERELLE**—*Cantharellus cibarius*.
- **DEATH CAP**—*Amanita phalloides*.
- **DRYADS’ SADDLE**—*Polyporus squamosus*.
- **DRY ROT**—*Merulius lacrymans*.
- **ERGOT**—*Claviceps purpurea*.
- **FAIRY RING CHAMPIGNON**—*Marasmius oreades*.
- **FLY AGARIC**—*Amanita muscaria*.
- **GRISETTE**—*Amanitopsis vaginata*.
- **HONEY FUNGUS**—*Armillaria mellea*.
- **HORN OF PLENTY**—*Craterellus cornucopioides*.
- **INK CAP**—*Coprinus atramentarius*. 
JEW'S EAR—Auricularia auricula-Judae.
LAWYER'S WIG—Coprinus comatus.
MOREL—Morchella esculenta.
MUSHROOM, FIELD—Psalliota campestris.
,, CULTIVATED—Psalliota hortensis.
,, HORSE—Psalliota arvensis.
,, WOOD—Psalliota silvicola.
OYSTER MUSHROOM—Pleurotus ostreatus.
PARASOL—Lepiota procera.
PUFF-BALL, GIANT—Lycoperdon giganteum.
ST. GEORGE'S MUSHROOM—Tricholoma gambosum.
SHAGGY CAP—Coprinus comatus.
STINKHORN—Phallus impudicus.
SULPHUR-TUFT—Hypholoma fasciculare.
TRUFFLE—Tuber spp.
VELVET STEM—Collybia velutipes.
WITCHES' BUTTER—Exidia glandulosa.
,, BROOMS—Exoascus turgidus.

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LICHENS

F. C. Rimington

INTRODUCTION

W. Watson, D.Sc.

The area investigated is situated in the botanical vice-county 62. This vice-county was well worked by W. Mudd, whose "Manual of British Lichens" was published in 1861, but most of his work was done in the northern parts of V.C. 62 and apparently he did little or no collecting in our area. Some lichens have been collected since Mudd's work was published, by J. G. Baker, S. Hailstone, E. M. Holmes, T. Hebdon and H. Britten, but mostly from the area north of Whitby. The most important collecting in our area was done during this century by W. E. L. Wattam. In 1927 I did some collecting in the Pickering district, whilst H. H. Knight and F. A. Sowter in more recent years also examined lichens in the vice-county, but the Scarborough area was not intensely worked for lichens until F. C. Rimington collected them during the last year or so and sent them to me for definite determination. His work revealed some peculiarities in the distribution of these plants and it was surprising to find a fair amount of evidence of injury by smoke. Many lichens are susceptible to smoke-contamination and in the neighbourhood of a large town entirely disappear or become rare or depauperate. The occurrence of the var. dissipata of Lecanora albescens was particularly suggestive as this occurs only where smoke contaminates the air. The rarity or absence of many other lichens supported this theory of smoke-contamination though it was unexpected as Scarborough cannot be considered an industrial centre.

The coast rocks show little evidence of the zonation of lichens which is often shown on many coasts, and this is presumably due to their instability though no doubt many characteristic crustaceous lichens have been overlooked.

Among notable absentees from the list are Diploschistes scruposus, Thelotrema lepadinum, Phlyctis agelae, Bacidia phacodes, Cladonia rangiformis, Calicium hyperellum, Acrocodia gemmata, and Arthopyrenia punctiformis. Some of these were probably seen by me near Pickering, but no records of plants previously recorded from V.C. 62 were kept, and no specimens of them were seen in the material sent to me for identification. One plant, Acarospora amphibola had not previously been recorded for Britain.

The method of citation of the authority, in which the abbreviation of the surname is placed first, is not in accordance with my usual practice, nor with that of botanists generally, it is due to an editorial decision.
Although so little work has been done here on this group of plants, the Scarborough district appears to be a promising one for lichen collection. It possesses habitats for most of the ecological communities into which lichen growth can conveniently be divided: rock exposures and stone walls, some siliceous but mostly calcareous, a rocky sea-coast, peaty moorlands and much old woodland.

Probably the best places to study the saxicolous lichens of our area are in the disused oolitic limestone quarries of the Suffield district and along the calcareous sandstone walls near Cloughton and Harwood Dale, particularly those walls bordering the roads. Road sides are always favoured by lichens and regular tar-spraying does not seem to have any noticeable deleterious effect on the vigour of their growth. No authoritative information exists of the state of the roadside lichens in this area before the advent of tar-spraying, but it is not easy to visualise them as having been then more numerous than they are now.

Higher up on the moors where many of the walls are almost entirely of the siliceous sandstone called "Moor Grit," the lichen flora is scanty, with Acarospora fuscata often the dominant species, accompanied by Lecidea macrocarpa.

On the walls in the oolitic limestone areas the following characteristic lichens are found: Lecanora atra, L. campestris, L. gangaleoides, L. albescens, Ochrolechia parella (often very large), Aspicilia calcarea, Biatora immersa, Placodium callopismum, Caloplaca citrina, Protoblastenia rupestris and Verrucaria nigrescens.

On the more sheltered walls Parmelia saxatilis, P. fuliginosa, Platyisma glaucum, Physcia hispida, P. caesia and, near the farms, Xanthoria parietina flourish.

Some of the old quarry faces in the Suffield area have an almost continuous mosaic of Protoblastenia rupestris, Verrucaria integra, V. nigrescens, Placodium murorum and Biatora immersa.

Many of the older trees in Raincliffe Wood and in the hedge-rows carry an extensive lichen flora, Pertusaria pertusa, P. amara (both sometimes of very large size. several feet across), Evernia prunastri, Ramalina farinacea, Parmelia saxatilis, P. fuliginosa, Hypogymnia physodes, Buellia myriocarpa, etc. The bark of the younger trees, particularly of ash, frequently shows considerable growth of Lecanora chlarona, Lecidea parasema and various corticolous species of the Opegraphaceae.

On the moors, Cladonia pyxidata, C. coccifera, C. macilenta, C. impexa, and C. sylvatica are widespread and quite common, but the only abundant lichen is Biatora granulosa which occurs in enormous quantities on the wet peat of Ravenscar and Fylingdales Moor.

Of the marine Verrucarias, V. maura is abundant, while V. mucosa and V. microspora are frequent between the tide marks, but other lichens in this specialised habitat are not so obvious; Lichina confinis, Lecanora prosechoidiza, L. helicopsis, Rhizocarpon confervoides and Ramalina scopulorum may be found regularly at or above H.W.M.
The nomenclature and classification are those used in W. Watson’s “The Lichens of Yorkshire” (Trans. Y.N.U., Part 37, 1946), emended by the author. Where the name used differs from that given in A. L. Smith’s “British Lichens” (Brit. Mus. Nat. Hist., 1918, 1926), the latter name is given in brackets.

All the lichens recorded by F. C. Rimington have been determined or confirmed by Dr. W. Watson. They were collected during the years 1949-51 and are preserved in the recorder’s herbarium.

Grateful thanks are due to Dr. W. Watson for his constant help and advice, without which the list in its present form would not have been possible: to Mr. W. E. L. Wattam for permission to use his many records and for a great deal of information concerning the lichens of our area, also to Mr. F. A. Sowter for many helpful suggestions.

**Abbreviations**:

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<th>Abbreviation</th>
<th>Name</th>
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<tr>
<td>J.G.B.</td>
<td>J. G. Baker</td>
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<td>H.B.</td>
<td>H. Britten flls</td>
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<td>S.H.</td>
<td>S. Hailstone</td>
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<td>H.W.M.</td>
<td>High Water Mark</td>
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<td>E.M.H.</td>
<td>E. M. Holmes</td>
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<td>H.H.K.</td>
<td>H. H. Knight</td>
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<td>L.Y.</td>
<td>“Lichens of Yorkshire”</td>
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<td>(W. Watson, D.Sc.)</td>
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<td>F.C.R.</td>
<td>F. C. Rimington</td>
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<td>F.A.S.</td>
<td>F. A. Sowter</td>
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<td>W. E. L. Wattam</td>
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<td>Y.N.U.</td>
<td>Yorkshire Naturalists’</td>
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Species marked with an asterisk are not to be found in “The Lichens of Yorkshire,” as at that time (1946), they had not been recorded for the county.

**LICHENES**

**PARMELIALES**

**USNEACEAE**

**USNEA** Dillenius

- *fulvoreagens* (Ras.) Mot.—On oak, etc., Raincliffe Wood (F.C.R.).

**ALECTORIA** Acharius

- *jubata* (L.) Ach.—Goathland (H.H.K.); among moss, Raincliffe Wood (F.C.R.).

**EVERNIA** Acharius

- *prunastri* (L.) Ach.—Common on tree trunks, widely distributed.
- *furfuracea* (L.) Mann.—Not uncommon on tree trunks and walls.
  - form *ceratea* (Ach.) Cromb.—Ellerburn (W.E.L.W.).
  - form *scobicina* (Ach.) Nyl.—Cloughton Quarry (F.C.R.).
PARMELIACEAE

PARMELIA Acharius

trichotera Hue (P. perlata (Huds.) auct. plur.)—Not uncommon on trunks of old trees and occasionally on rocks.
caperata (L.) Ach.—On oak, Hackness (F.C.R.).
saxatilis (L.) Ach.—Abundant on rocks and trees, very widely distributed.

form furfuracea Schaeer.—Commonly found with the type.
ompalodes (L.) Ach.—On rocks, Burniston, Levisham (W.E.L.W.).
sulcata Tayl.—On tree trunks and walls, Pickering, Goathland, etc.
(W.E.L.W.); Burniston, Cloughton (F.C.R.).
subaurifera Nyl.—On pine, Helwath Beck (F.C.R.); Forge Valley (F.A.S.).

fuliginosa Nyl.—Common on rocks and trees.
var. laetevirens (Flot.) Kickx.—Commonly found with the type.
conspersa (Ehrh.) Ach.—On trees, Thornton-le-Dale, Pickering, etc.
(W.E.L.W.).

*form isidiata (Anzi) Leight.—Helwath Beck (F.C.R.).

*laevigata (Sm.) Ach. var. dissecta Oliv.—On soil, Helwath Beck (F.C.R.).
dubia (Wulf.) Schaeer.—Forge Valley (F.C.R.).


HYPOGYMNIA Nylander

physodes (L.) Wats. (sub-genus of Parmelia)—Abundant, even near towns.
form labrosa (Ach.) Wats.—Commonly found with the type.
var. platyphylla (Ach.) Wats.—Pickering, etc. (W.W.); Suffield (F.C.R.).

CETRARIA Acharius

islandica (L.) Ach.—Seamer Moor (J.G.B.).
aculeata (Schreb.) Fr.—Not uncommon among heather on the moors.

PLATYSMA Nylander

glaucum (L.) Nyl. (Cetraria)—Common on trees and walls, particularly on high ground.
chlorophyllum (Humb.) Wats. (Cetraria)—On oak, Hayburn Wyke (F.C.R.).

LECANORACEAE

SQUAMARIA de Candolle

cartilagina (Lightf.) Sm., A. L. (Lecanora)—On stone wall, Pickering (W.E.L.W.).
muralis (Schreb.) Elenk. (Lecanora)—Not uncommon on stone walls and widely distributed.
var. diffusica (Ach.) Poetsch.—On moorland boulder, Bickley (F.C.R.).
gelida (L.) Hook. (Lecanora)—On siliceous rock, Ravenscar (F.C.R.).
LECANORA Acharius

albescens (Hoffm.) Floerk. (L. galactina Ach.)—Common on walls and rocks, both inland and on the coast.
  var. dissipata (Nyl.)—Occasionally found with the type (W.E.L.W.)
  var. dispersa (Pers.) Arn.—Pickering (W.W.); Hayburn Wyke (F.C.R.).
hageni Ach.—On oaks, Ellerburn, Levisham (W.E.L.W.); on palings, Harwood Dale (F.C.R.).
umbrina (Ehrh.) Massal.—Cornelian Bay (F.C.R.).
crenulata (Dicks.) Hook.—On walls and rocks, Thornton-le-Dale (W.E.L.W.); Pickering (W.W.); Ravenscar (F.C.R.).
badia (Pers.) Ach.—Not uncommon on rocks and walls.
  var. cinerascens Nyl.—Occasionally found with the type.
subfuscus (L.) Ach.—Scarborough (F.C.R.).
allophana (Ach.) Roehl. (L. subfuscus var. allophana Ach.)—On trees, Hackness, Cumboots (F.C.R.).
chlarona (Ach.) Nyl. (L. subfuscus var. chlarona Ach.)—Quite common on the smooth bark of trees.
rugosa (Pers.) Nyl.—On ash, etc., Ramsdale (W.E.L.W.); Cloughton, Troutsdale, Hutton Buscel (F.C.R.).
coilocarpa (Ach.) Nyl.—On rocks and walls, Goathland (H.H.K.); Hackness, Langdale End, etc. (F.C.R.).
gangaleoides Nyl.—On stone walls, Burniston, Harwood Dale, etc. (F.C.R.).
campestris (Schraer.) Hue—Common on rocks and walls.
pallida (Schrebb.) Schraer.—On beech, Ellerburn, Levisham (W.E.L.W.).
rupicola (L.) Zahlbr. (L. sordida Fr., Th.)—On calcareous grit, Levisham (W.E.L.W.); on siliceous rock, Burniston, Cloughton (F.C.R.).
aatra (Huds.) Ach.—Common, mostly on stone walls.
sulphurea (Hoffm.) Ach.—On stone wall, Hole of Horcum (W.E.L.W.); Cumboots (F.C.R.).
polytropa (Ehrh.) Schraer.—Common on rocks, mostly in upland districts.
  form efflorescens Cromb.—Pickering (W.E.L.W.).
varia (Ehrh.) Ach.—Occasional, Hayburn Wyke, etc., (F.C.R.),
  there are many records but probably most of them refer to L. conizaeoides, which was formerly included in L. varia.
conizae (Ach.) Nyl. (L. farinaria Borr.)—On old palings, etc. Bempton, Pickering (W.E.L.W.); Scalby (F.C.R.).
conizaeoides Cromb. (L. farinaria var. conizaeoides Sm., A. L.)—
  Abundant on old palings and trees, even in built-up areas.
symmicta Ach.—On old palings, Thornton-le-Dale, Hole of Horcum (W.E.L.W.); Suffield (F.C.R.).
symmictera Nyl.—On trees, Pickering (W.E.L.W.); Hackness, Suffield, Lindhead (F.C.R.).
saligna (Schrad.) Zahlbr. (L. effusa Ach.)—Pickering (W.W.).
*prosechoidiza Nyl. (Lecania)—Although very few stations are given for this species in A. L. Smith’s “British Lichens,” and none at all in W. Watson’s “Lichens of Yorkshire,” it is not uncommon near H.W.M. in Cornelian Bay, Hayburn Wyke, Burniston Wyke, etc.
*helicopsis (Wahl.) Ach. (Lecania prosechoides (Nyl.) Oliv.)—Not uncommon near H.W.M., Cornelian Bay, Cayton Bay, etc.
*form aeruginosus (Wedd.) Magn.—Mowthorpe Sluice (F.C.R.).
*atriseda (Fr.) Nyl.—Silpho Moor (F.C.R.). A. L. Smith in “British Lichens” says this species is always associated with Rhizocarpon geographicum in a state of “antagonistic symbiosis,” but the plant recorded above had no such association.

OCHROLECHIA Massalonga
tartarea (L.) Massal.—Occasional; Forge Valley on oak (F.C.R.).
parella (L.) Massal. (Lecanora)—Common on rocks and stone walls, often reaching a large size.

ASPICILIA Massalonga
cinerea (Ach.) Koerb. (Lecanora)—On stone walls, Hole of Horcum, Goathland (W.E.L.W.).
calcarea (L.) Koerb. (Lecanora)—Common on limestone walls, etc.

var. contorta (Hoffm.) Mudd—Harwood Dale, Yedmandale, etc. (F.C.R.).

lacustris (With.) Fr., Th. (Lecanora)—On rocks in stream, Hayburn Wyke (F.C.R.).

LECIDEACEAE

PSORA Haller
ostreata Hoffm. (Lecidea)—On sandstone, Seamer Moor (F.C.R.).

BIATORA Fries
lucida (Ach.) Fr. (Lecidea)—On stone walls, Pickering (W.E.L.W.).
coarctata (Sm.) Fr., Th. (Lecidea)—Not uncommon on stone walls and rocks.

var. elachista (Ach.) Fr., Th.—Occasionally with the type (W.E.L.W.).

var. glebulosa (Sm.) Arn.—Goathland (H.H.K.).
quernea (Dicks.) Fr. (Lecidea)—On old oaks, Ellerburn (W.E.L.W.).
flexuosa Fr. (Lecidea)—On old palings, Hole of Horcum (W.E.L.W.).
granulosa (Ehrh.) Massal. (Lecidea)—Common, often abundant, on peat.

var. escharoides (Ehrh.) Rehm—Not uncommon with the type.
uliginosa (Schrad.) Fr. (Lecidea)—On peat, Staindale, Hole of Horcum, Levisham (W.E.L.W.).

var. fuliginea (Ach.) Fr.—On wood, Pickering (W.W.).
bauschiana Koerb. (Lecidea)—On siliceous rock, Bickley (F.C.R.).

immersa (Web.) Syd. (Lecidea)—On limestone, Pickering (W.W.); Suffield (F.C.R.).

LECIDEA Acharius

prostrusa Schäer.—Not uncommon on stone walls and rocks.

parasema Ach.—Common on tree trunks and old palings.

*form atrorubens B. de Lesd.—Hayburn Wyke (F.C.R.).

latypea Ach.—On siliceous rock, Hackness (F.C.R.).

*form continuior Nyl.—Hackness (F.C.R.).

goniophila (Floerke) Schäer.—On siliceous boulder, Cumboots (F.C.R.).

leucophaea (Floerke) Nyl.—Ravenscar (F.C.R.).

lithophila Ach.—On sandstone, Ravenscar (W.E.L.W.); Burniston, Hayburn Wyke, etc. (F.C.R.).

plana (Lahm.) Nyl.—Goathland (H.H.K.).

cyathoides Ach. (L. rivulosa Ach.)—Not uncommon on siliceous rocks.

macrocarpa (DC.) Fr., Th. (L. contigua Fr.)—Common on siliceous rocks and boulders.

var. platycarpa (Ach.) Fr.—Not uncommon with the type, particularly near water.

var. flavicunda (Ach.) Nyl.—On grit boulder, Bickley (F.C.R.).

tumida Massal. (L. sorediza Nyl.)—Hayburn Wyke beach (F.C.R.).

crustulata (Ach.) Koerb.—On siliceous rocks, Cumboots, Bloody Beck, Cornelian Bay, Cayton Bay (F.C.R.).

var. meiospora Oliv.—Hayburn Wyke (F.C.R.).


form subinnata Vain.—Hayburn Wyke beach (F.C.R.).

confluens (Web.) Ach.—On stone walls, Bridestones, Ravenscar, Hole of Horcum, etc. (W.E.L.W.).

sublatypea Leight.—On siliceous rock, Langdale End (F.C.R.).

MYCOBLASTUS Norman

sanguinarius (L.) Norm. (Lecidea)—Not uncommon on stone walls, etc.

PERTUSARIACEAE

PERTUSARIA de Candolle

globulifera (Turn.) Nyl.—On old oaks, Ellerburn, Levisham, Langdale End (W.E.L.W.).

lactea (L.) Nyl.—On old oaks, Ellerburn, Langdale End (W.E.L.W.).

amara (Ach.) Nyl. (P. faginea Leight.)—On trunks of old trees, mostly oaks, common and widely distributed; abundant in Forge Valley and Raincliffe Wood.

var. flotowiana (Floerke) Erichs.—Occasional on stone walls, Burniston, Harwood Dale, etc. (F.C.R.).

pertusa (L.) Tuck.—Common and widely distributed; abundant in Forge Valley and Raincliffe Wood.
corallina (L.) Fr., Th. (P. dealbata Cumb.)—On sandstone, Levisham (W.E.L.W.); Goathland (H.H.K.). Most British records of this species are unreliable (W.W., L.Y., p. 21).

dealbescens Erichs. (incl. in P. dealbata Cumb.)—On siliceous boulder, Cayton Bay (F.C.R.).

leioplasca (Ach.) Schaer.—On ash, Cumboots (F.C.R.).


*henrici (Harm.) Erichs.—On stone wall, Burniston (F.C.R.).

*var. granosa Erichs.—On elm, Hutton Buscel (F.C.R.).

*leucosora Nyl.—On limestone, Hackness (F.C.R.).

*inopinata Erichs.—On siliceous rock, Staintondale (F.C.R.).

ACAROSPORACEAE

ACAROSPORA Massalonga

smaragdula (Wahl.) Massal.—On rocks and walls, Ellerburn, Ravenscar, Pickering (W.E.L.W.).

fuscata (Schrad.) Fr., Th.—Common on rocks and particularly on stone walls on the moors.

[veronensis Massal. (A. discreta Fr., Th.)—Saltwick Bay (H.B.).]


RAMALINACEAE

RAMALINA Acharius

calicaris (L.) Fr.—Yedmandale (F.C.R.).

farinacea (L.) Ach.—Common on old trees.

form multifida Ach.—Pickering (W.W.).

fraxinea (L.) Ach.—Probably not uncommon but no specific records (L.Y., p. 23).

var. calicariformis Nyl.—Hackness (F.C.R.).

fastigiata (Pers.) Ach.—Only the small form (f. minutula Ach.) has been recorded, Pickering (W.W.); Lindhead (F.C.R.).


cuspidata (Ach.) Nyl. (incl. in R. siliquosa)—Ravenscar (F.C.R.).

subfarinacea Nyl.—Not uncommon at H.W.M., Ravenscar (F.C.R.).

LECANIACEAE

LECANIA Massalonga

erysibe (Ach.) Mudd—On boulders, Cornelian Bay, Cayton Bay, Hayburn Wyke, etc. (F.C.R.).

*form migrata Nyl.—On wall, Cumboots (F.C.R.).

*var. sincerior (Nyl.) de Lesd.—Cloughton Wyke (F.C.R.).

BIATORINA Massalonga

graniformis (Hag.) Sm., A. L.—On ash, Troutsdale (F.C.R.).

griphiithii (Sm.) Massal.—On ash, Cumboots, Ravenscar (F.C.R.).

lenticularis (Ach.) Koerb.—On rocks, Hackness, Hayburn Wyke (F.C.R.).
form nigricans (Ach.) Koerb.—On limestone, Hutton Buscel, Staintondale (F.C.R.).

CATILLARIA Fries, Theodore
chalybeia (Borr.) Massal.—On siliceous rock, Harwood Dale (F.C.R.).

BACIDIACEAE

TONINIA Fries, Theodore
aromatica (Sm.) Massal. (Bilimbia)—Cloughton Wyke (F.C.R.).

BILIMBIA de Notaris
sabuletorum (Floerke) Arn.—On soil on wall, Langdale End (F.C.R.).
*spododes (Nyl.) B. de Lesd. (B. nitschkeana Lahm)—Rare; Scarborough on elder (F.C.R.).

BACIDIA de Notaris
umbrina (Ach.) Branth. et Rostr.—On siliceous rock, Hayburn Wyke, Fylingdales (F.C.R.).

HAEMATOMMA Massalonga
coccineum (Dicks.) Koerb.—On grit boulders, Staindale (W.E.L.W.).
ventosum (Ach.) Koerb.—On siliceous rocks, Goathland (W.E.L.W.).

LECANACTIS Eschweiler
abietina (Ach.) Koerb.—On oak, Ravenscar (F.C.R.).

TELOSCHISTACEAE

XANTHORIA Fries, Theodore
parietina (L.) Fr., Th.—Common, often abundant, widely distributed, form cinerascens Leight.—Pickering, (W.W.) ; Hackness (F.C.R.).
var. aureola (Ach.) Fr., Th.—Pickering (W.W.).
polycarpa (Ehrh.) Oliv.—On ash, Thornton-le-Dale (F.C.R.).
lychnea (Ach.) Fr., Th.—Pickering (W.W.); Cornelian Bay, Hackness, etc. (F.C.R.).

CALOPLACACEAE

PLACODIUM de Candolle
murorum (Hoffm.) DC.—On calcareous rocks, Pickering (W.W.); Suffield, Yedmandale (F.C.R.).
var. pusillum (Massal.) Flag.—Suffield (F.C.R.).
callopismum (Ach.) Mer.—Common, locally abundant, on stone walls, etc.
var. brevilobatum (Nyl.) Sm., A. L.—Pickering (W.W.); Filey Brigg (F.C.R.).
var. plicatum (Wedd.) Leight. (P. flavescens Sm., A. L.)—Frequently found with the type (W.E.L.W.); Ravenscar (F.C.R.).
lobulatum (Floerke) Flag.—Not common; Ravenscar (F.C.R.).
*form subeffiguratum (Wedd.) Wats.—with the type (F.C.R.).
CALOPLACA Fries, Theodore (CALLOPISMA in L.Y.)
citrina (Hoffm.) Fr., Th. (Placodium)—Common on limestone, widespread.
var. flavocitrina Nyl.—Scarborough (F.C.R.).
aurantiaca (Lightf.) Fr., Th. (Placodium)—On ash, Levisham (W.E.L.W.); Pickering (W.W.); on palings, Hutton Buscel (F.C.R.).
ferruginea (Huds.) Fr., Th. var. festiva (Ach.) Mudd (Placodium)—On rocks and stone walls, Burniston, Hayburn Wyke, etc. (F.C.R.).
vitellinula (Nyl.) Oliv. (Placodium)—On limestone, Thornton-le-Dale (W.E.L.W.).
*crenulatella (Nyl.) Fr., Th. (Placodium)—Above H.W.M., Pickering, 1950 (F.C.R.); very few British records.
*viridirufa (Ach.) Zahlbr. (Placodium fuscoatrum Sm., A. L.)—Rare Ravenscar on siliceous rock (F.C.R.).
PROTOBASTENIA (Zahlbruckner) Steiner
rupestris (Scop.) Zahlbr.—On limestone, Hackness, Suffield, etc. (F.C.R.).
CANDELARIELLA Mueller-Argau
vitellina (Ehrh.) Muell.-Arg.—Common on rocks, old palings, etc.

PHYSCIACEAE

ANAPTYCHIA Massalonga
ciliaris (L.) Massal. (Physcia)—Hutton Buscel (F.C.R.).
var. melanosticta (Ach.) Boist.—On calcareous rock, Langdale End (F.C.R.).

PHYScia Schreber
fusca (Huds.) Sm., A. L.—Occasional on stone walls, Burniston, Cloughton, etc. (F.C.R.).
pulverulenta (Schreb.) Nyl.—Not uncommon, Pickering; on oak, Hackness; on limestone, Hutton Buscel (F.C.R.).
form subvenusta (Nyl.) Oliv.—Pickering (W.W.).
*var. leucoleiptes Tuck.—On oak, Hackness (F.C.R.).
grisea (Lam.) Zahlbr.—Not uncommon on oak, Hackness; on limestone, Hutton Buscel (F.C.R.).
stellaris (L.) Nyl.—On apple tree, Hole of Horcum (W.E.L.W.); on pine, Hackness (F.C.R.).
aipolia (Ach.) Nyl.—On ash, Hutton Buscel, Troutsdale (F.C.R.).
var. cercidia (Ach.) Fr., Th.—On oak and ash, Troutsdale, Hackness (F.C.R.).
hispid a (Schreb.) Frege—There are numerous records for the aggregate species, the common form is the plant with the convex laciniae (P. tenella Scop.). The plant with flatter thalli (P. leptalea DC.), Pickering (W.W.). The form with well-hooded ascending and strongly sorediate laciniae (P. ascendens Bitt.), Cloughton, Troutsdale, etc. (F.C.R.).
caesia (Hoffm.) Nyl.—Not uncommon on walls, boulders, etc.
virella (Ach.) Lynge—Pickering (W.W.); on oaks, Hackness, Troutsdale (F.C.R.).
sciastra (Ach.) Du Rietz (P. lithotea Nyl.)—On boulder, Hackness (F.C.R.).

RINODINA Gray, S. F.
sophodes (Ach.) Fr., Th.—On ash, Langdale End (W.E.L.W.).
exigua (Ach.) Fr., Th.—On pine, Hackness (F.C.R.).
demissa (Koerb.) Arn.—Pickering (W.W.); Yedmandale (F.C.R.).
*umbrinofusca (Nyl.) Oliv.—On siliceous rock at H.W.M., Ravenscar (F.C.R.); very few British records.

DIPLOICIA Massalonga canescens (Dicks.) Massal. (Buelli)—Locally common on walls and trees, Hutton Buscel, Burniston, etc.

BUCELLA de Notaris spuria (Schaer.) Koerb.—On limestone, Hutton Buscel (F.C.R.).
myriocarpa (DC.) de Not.—Common on the bark of trees.
disciformis (Fr.) Mudd—On ash, Hackness (F.C.R.).

RHIZOCARPON Ramond alboatrum (Hoffm.) Fr., Th.—Not uncommon on trees and palings.
var. epipolium (Ach.) Sm., A. L.—Filey Brigg, Cayton Bay (F.C.R.).
geographicum (L.) DC.—This plant, so abundant in some parts of the country, is only occasionally found in east Yorkshire.
viridiatrum (Floerke) Koerb.—Bridestones, Thornton-le-Dale (W.E.L.W.).
calcareaum (Weis.) Fr., Th.—Harwood Dale, Hackness (F.C.R.).
confervoides DC.—Not uncommon on siliceous rocks, particularly near the sea. Probably better under R. reductum Fr., Th., as the name confervoides may be considered a nomen vagum.
obscuratum (Ach.) Massal.—Bridestones, Thornton-le-Dale, etc. (W.E.L.W.).

GYROPHORACEAE

GYROPHORA Acharius polyphylia (L.) Hook.—On boulders, Bridestones, Ravenscar (W.E.L.W.).

THELOTREMACEAE

THELOTREMA Acharius lepadinum Ach.—On ash, Langdale End (F.C.R.).

CLADONIALES

CLADONIACEAE

CLADONIA Hill sylvatica (L.) Hoffm.—Not uncommon among heather on most of the moors.
**impexa** Harm. (incl. with *C. sylvatica*)—On alder, Helwath Beck (F.C.R.).

form **pumila** (Ach.) Rabh. (*C. alpestris* f. *pumila* Sm., A. L.)—
On turf, Hackness (F.C.R.).

form **laxiuscula** (Del.) Sands.—On moorland boulder, Bloody Beck (F.C.R.).

**uncialis** (L.) Web.—Not uncommon among mosses on the wetter moors.

**foliacea** (Huds.) Schaer.—In dry sandy places, South Cheek, Raven-car (W.E.L.W.).

**pyxidata** (L.) Hoffm.—Common and widely distributed on the moors.

var. **chlorophaea** Floerke—Frequently found with the type.

var. **pocilla** (Ach.) Fr.—Langdale End (W.E.L.W.).

**fimbriata** (L.) Fr.—Common on moss-covered stumps, etc.

form **integra** (Wallr.)—Pickering (W.W.).

var. **subulata** (L.) Wain.—Hackness (F.C.R.).

**ochrochlora** Floerke—On peaty soil, Ravenscar (F.C.R.).

**lepidota** Nyl., form **hypophylla** (Nyl.) Wain.—Scarborough Moors (W.E.L.W.).

**cervicornis** (Ach.) Schaer.—On the ground, Pexton Moor, Levisham, Hole of Horcum (W.E.L.W.).

**gracilis** (L.) Willd.—form **chordalis** Floerke may be taken as the type, Ramsdale, Hole of Horcum, etc. (W.E.L.W.) ; Pickering (W.W.).

form **subulata** Hag.—Co-extensive with the type (L.Y., p. 39).

**cornuta** (L.) Schaer.—Scarborough Moors (W.E.L.W.).

**crispata** (Ach.) Flot.—Pickering (W.W.).

**furcata** (Huds.) Schrad.—Not uncommon on the moors.

**squamosa** (Scop.) Hoffm.—On the ground among mosses, Ellerburn, Levisham, Hole of Horcum (W.E.L.W.).

form **muricella** (Del.) Wain.—Pickering (W.W.).

**subsquamosa** Nyl.—Among heather, Harwood Dale (F.C.R.).

**caespiticia** (Pers.) Floerke—Fylingdales Moor (W.E.L.W.).

**digitata** (L.) Schaer.—On peat, Levisham, Hole of Horcum (W.E.L.W.) ; Hackness (F.C.R.).

form **cephalotes** Ach.—On old stump, Seamer Moor (F.C.R.).

**coccifera** (L.) Willd.—Common and widely distributed on the moors.

form **coronata** Del. Pickering (W.W.).

**macilenta** Hoffm.—Common on moss-covered stumps, widely distributed.

**polydactyla** Floerke (*C. flabelliformis* Wain.)—Among moss on the the ground, Raincliffe Wood (F.C.R.).

**bacillaris** Nyl.—On peat, Levisham, Staindale (W.E.L.W.).

**floerkeana** (Fr.) Somm.—On peat, Levisham, Staindale (W.E.L.W.) ; Hackness, Silpho Moor (F.C.R.).

var. **carcata** (Nyl.) Wain.—Common on the moors.

*var. intermedia* Hepp.—Seamer Moor (F.C.R.).
LICHENS

PYCNOHELIA Leighton
papillaria (Ehrh.) Duf. (Cladonia)—On peat, Levisham, Staindale (W.E.L.W.).

BAEOMYCES Persoon
rufus (Huds.) DC.—On grit blocks, Levisham, Staindale (W.E.L.W.).
Goathland (H.H.K.); Pickering (W.W.).
var. subsquamosus Nyl.—Goathland (W.E.L.W.).

STEREOCAULONACEAE

STEREOCAULON Scherber
coralloides Fr.—Langdale End (F.C.R.).
denudatum Floerke—Ravenscar (F.C.R.).

ECTOLECHIALES
GYALECTACEAE

PETRACTIS Fries
clausa (Hoffm.) Kremp. (Gyalecta exanthematica Fr.)—Pickering (W.W.).

GYALECTA Acharius

COENOGONIUM Ehrenberg
ebeneum (Dillw.) Sm., A. L.—On shaded rocks, Mallyan Spout, Goathland (W.E.L.W.).

RACODIUM Persoon
rupestr Pers.—On shaded moorland rocks, Bloody Beck, common (F.C.R.).

CHRYSTHRICACEAE

CROCYNIA Massalonga
lanuginosa (Ach.) Hue—On moss, Burniston, Hayburn Wyke, etc. (F.C.R.).
flava Hue—The sterile plant is quite common in the interstices of the bark of old oaks and ash, Raincliffe Wood, Hayburn Wyke, etc.
*libricoIa B. de Lesd.—On alder, Seamer Moor (F.C.R.).
*aeruginosa (Schaer.) Hue—On ash, Yedmandale (F.C.R.).

PELTIGERALES
STICTACEAE

STICTINA Nylander
fuliginosa (Dicks.) Nyl. (Sticta)—Among moss, Forge Valley, Hackness (F.C.R).

LOBARINA Nylander
scrobiculata (Scop.) Nyl. (Lobaria)—On ash, Hayburn Wyke (F.C.R.).

LOBARIA Schreber
laciniata (Huds.) Wain.—On oak, Forge Valley (F.C.R.).
alaeveirens (Lightf.) Zahlbr.—On oak, Hackness, Forge Valley (F.C.R.).
PELTIGERACEAE

PELTIGERA Willdenow

canina (L.) Willd.—Not uncommon on the ground and on stones.
rufescens (Weis.) Hoffm.—Among ground mosses, Ravenscar, Pickering, etc. (W.E.L.W., F.C.R.).
var. praetextata (Floerke) Nyl.—Goathland (W.E.L.W.).
polydactyla (Neck.) Hoffm.—On old wall, Raincliffe Wood (F.C.R.).

SOLORINA Acharius

saccata (L.) Ach.—On peat, Staindale (W.E.L.W.).

PANNARIACEAE

PANNARIA Mudd

rubiginosa (Thunb.) Del.—On stone walls, Thornton-le-Dale (W.E.L.W.); Langdale End (F.C.R.).

PLACYNTHIUM Gray, S. F.

COLLEMALES

COLLEMACEAE

LEPTOGIUM Gray, S. F.
sinuatum (Huds.) Massal., var. scotinum (Ach.) Koerb.—On calcareous stones in stream, Ellerburn (W.E.L.W.).
lacerum (Lil.) Gray—Pickering (W.W.).
subtile (Schrad.) Nyl.—Pickering, fruiting (W.W.).
schraderi (Bernh.) Nyl.—On wall, Yedmandale (F.C.R.).
turgidum (Ach.) Cromb.—Near Scarborough (S.H., L.Y., p. 47).

SYNECHOBASTUS Trevisan

form furfuraceus Schaer.—Hackness (F.C.R.).

COLLEMA Hill

furvum Ach.—On calcareous stones in stream, Staindale (W.E.L.W.).
pulposum (Bernh.) Ach.—Not uncommon on limestone walls.
crispum Ach.—Pickering Castle (W.E.L.W.).
granuliferum Nyl.—On calcareous rock, Langdale End (F.C.R.).
cheileum Ach.—Not uncommon on the mortar of old walls.
form nudum (Schaer.) Leight.—Pickering (W.W.).

LICHINACEAE

LICHINA Agardh

*confinis (Ach.) Ag.—Only local along the coast, there is a fairly well-defined zone at Filey Brigg and it is not uncommon at Ravenscar. L. pygmaea, so common on most of the rocky coasts of Britain, has not been recorded.

PYRENOPSIDACEAE

PSOROTICHIA Massalonga

lugubris (Massal.) Arn.—Mowthorpe Bridge (F.C.R.).
GRAPHIDALES
ARTHONIACEAE

ARTHONIA Acharius
lurida Ach.—On beech, Ellerburn (W.E.L.W.).

OPEGRAPHACEAE

OPEGRAPHA Humboldt
atra Pers.—Not uncommon on the bark of trees.
var. denigrata (Ach.) Schaer.—On young ash, Cayton, Hackness (F.C.R.).
var. arthonoidea Leight.—On ash, Cayton Bay (F.C.R.).
saxicola Ach.—On calcareous rocks, Burniston, Hayburn Wyke, Cornelian Bay (F.C.R.).
var. decandollei Stiz.—Not uncommon on calcareous rocks, Helwath Beck, Cumboots, Suffield, etc.
calcarea Turn.—On limestone, Suffield (F.C.R.).
form heteromorpha (Stiz.) Sm., A. L.—On siliceous rock, Cloughton Wyke (F.C.R.).
confluens Stiz.—Pickering (W.W.); Helwath Beck, Cumboots (F.C.R.).
varia Pers.—On beech, Ellerburn, Levisham (W.E.L.W.).
vulgata Ach.—On ash, Ramsdale (W.E.L.W.); Lindhead, etc. (F.C.R.). On holly, Hackness (F.C.R.).
subsiderella Nyl. (O. vulgata var. siderella)—On ash, Cumboots (F.C.R.)

GRAPHIS Adanson
elegans (Borr.) Ach.—On holly, Bloody Beck, with the type were found form stellata Leight. and form parallela (Schaer.) Leight. (F.C.R.).
scripta (L.) Ach.—On holly, Hayburn Wyke (F.C.R.).

GRAPHINA Mueller-Argau
anguina (Mont.) Muell.-Arg.—On holly, Hayburn Wyke (F.C.R.).

CONIOCARPALES
SPHAEROPHORACEAE

SPHAEROPHORUS Persoon
globosus (Huds.) Wain.—On grit boulders, Staindale, Ravenscar (W.E.L.W.).

PYRENOCARPALES
VERRUCARIACEAE

VERRUCARIA Persoon
maura Wahl.—Common all along the coast.
mucosa Wahl.—Not uncommon between tide marks, Cornelian Bay, Hayburn Wyke, etc. (F.C.R.).
microspora Nyl.—Not uncommon near H.W.M., Cornelian Bay, Hayburn Wyke (F.C.R.).
var. laetevirens Wedd.—Cayton Bay (F.C.R.).
elaeomelaena Massal.—W. E. L. Wattam’s record of V. hydrela from stones in a stream at Ellerburn is probably referable here (W.W., L.Y., p. 56).
viridula (Schrad.) Ach.—On stone wall, Pickering (W.E.L.W.).
nigrescens Pers.—Common on stone walls.
glaucina (Ach.) Hepp.—Pickering (W.W.) ; Hutton Buscel, etc.

maculiformis Kremp.—On calcareous rock, Suffield (F.C.R.).
mutabilis Borr.—On siliceous rock, Langdale End (F.C.R.).
muralis Ach.—Not uncommon on stone walls, mortar, etc.
var. submuralis (Nyl.) Oliv., form minor B. de Lesd.—Suffield
rupestris Schrad.—On chalk cliff, Bempton (W.E.L.W.) ; Pickering
(integra) Nyl.) Carr.—Locally common on limestone, mortar, etc.,
helwath Beck, Suffield, Pickering.
incavatum (Nyl.) Mudd—On limestone, Hutton Buscel (F.C.R.).

THELIDIACEAE

NORMANDINA Nylander
pulchella (Borr.) Cromb.—Occasional among moss, Hayburn Wyke,
hackney (F.C.R.)

THELIDIUM Massalonga
immersum (Leight.) Mudd—On limestone, Yedmandale (F.C.R.).
incavatum (Nyl.) Mudd (T. auruntii, wrongly)—On limestone, Hutton
buscel (F.C.R.).

ARTHOPYRENIACEAE

ARTHOPYRENIA Massalonga
analepta (Ach.) Massal.—On young ash, Hackness (F.C.R.).
sublitoralis (Leight.) Arn. (A. litoralis B. de Lesd.)—On shells,
Robin Hood’s Bay (E.M.H.).
foveolata Sm., A. L.—On shells, Robin Hood’s Bay (E.M.H.). This
species is better included in the preceding, as many intermediates
occur (W.W., L.Y., p. 60).

PORINACEAE

PORINA Acharius
carpinea (Pers.) Zahlbr.—Pickering (W.W.).
chlorotica (Ach.) Muell.-Arg.—Pickering (W.W.) ; Yedmandale
(f.c.r.)

PYRENULACEAE

PYRENULA Acharius
nitida (Weig.) Ach.—On ash, Hackness (F.C.R.).

INCERTAE SEDIS

Botrydina vulgaris Bréb.—Pickering (W.W.).
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HEPATICAE - LIVERWORTS

Joyce Robertson

The arrangement of species follows that used in "The Student's Handbook of British Hepatics", S. M. MacVicar, 1926, with the nomenclature brought up to date by Mr. E. C. Wallace, who has given us most useful help with the classification and nomenclature.

Abbreviations:

- Ing. Herb.—Ingham Herbarium.
- J. Bot.—Journal of Botany.
- Nat.—The Naturalist.
- Y.N.U. Trans.—Yorkshire Naturalists' Union Transactions.

W.H.B.—W. H. Bellerby
H.B.—H. Britten, Fil.
W.I.—W. Ingham
R.A.L.—R. A. Leefe
R.L.—R. Lewis

F.C.R.—F. C. Rimington
J.R.—J. Robertson
M.B.S.—M. B. Slater
R.S.—R. Spruce
G.W.—G. Webster

Order MARCHANTIALES

CONOCEPHALUM Weber

conicum (L.) Dum.—Fairly common; Danes Dyke (R.S.); Scalby Beck, 1920 (W.H.B.); Derwent Banks, 1950 (J.R.).

LUNULARIA Adanson


PREISSIA Corda

quadrata (Scop.) Nees—Goathland and Saltergate Becks (B.N.Y.); Mallyan Spout, Goathland (W.I.).

MARCHANTIA Linnaeus

polymorpha L.—Common.

Order JUNGERMANNIALES

RICCARDIA Gray, S. F.

multifida (L.) Gray, S. F.—Forge Valley, Robin Hood's Bay (B.N.Y.).

sinuata (Dicks.) Trev.—Not common; Robin Hood's Bay (Nat., 1888, p. 240); Forge Valley, 1947 (R.A.L.).

latifrons Lindb.—Mallyan Spout (Ing. Herb.); Filey (Nat., 1903, p. 248).

METZGERIA Raddi
  furcata (L.) Dum.—Common on trees, Danes Dyke (R.S.); Beedale
  (Nat., 1901, p. 298); Forge Valley, 1950 (J.R.).
  pubescens Raddi—Goathland Beck (B.N.Y.).

PALLAVICINIA Gray, S. F.
  lyellii (Hook.) Gray, S. F.—Rare; Saltergate Beck (B.N.Y.).

PELLIA Raddi
  epiphylla (L.) Corda—Very common.
  fabbroniana Raddi—By streams; Goathland, Scarborough South
  Cliff, Robin Hood’s Bay (B.N.Y.); Forge Valley, 1950 (J.R.).

BLASIA Linnaeus
  pusilla L.—Thornton-le-Dale (Nat., 1922, p. 292); Filey (J. Bot.,
  1903, p. 126).

FOSSOMBRONIA Raddi
  pusilla (L.) Dum.—Near Scarborough, 1895 (G.W.).

MARSUPELLA Dumortier
  emarginata (Ehrh.) Dum.—Goathland, abundant (B.N.Y.).
  aquatica (Lind.) Schifffn.—Goathland (B.N.Y.).

NARDIA Gray, S. F.
  compressa (Hook.) Gray, S. F.—Goathland (B.N.Y.).
  scalaris (Schrad.) Gray, S. F.—Seamer Moor, Goathland (B.N.Y.);
  Levisham, 1934 (H.B.).
  geoscypha (De Not.) Lindb.—Scarborough (Y.N.U. Trans., 1946).

PLETOCOLEA Mitten
  obovata (Nees) Mitt.—Saltergate (B.N.Y.); Robin Hood’s Bay
  (Nat., 1889, p. 231); Mallyan Spout (Ing. Herb.).
  hyalina (Lyell) Mitt.—Hayburn Wyke (Y.N.U. Circ.); Mallyan
  Spout (B.N.Y.); Newton Dale (Nat., 1895, p. 210).

SOLENOSTOMA Mitten
  pumilum (With.) Mull., K.—Goathland (B.N.Y.).
  triste (Nees) Mull., K.—Saltergate Beck, Robin Hood’s Bay
  (B.N.Y.); Hayburn Wyke (Nat., 1891, p. 290).
  crenulatum (Sm.) Mitt.—Goathland (B.N.Y.); Hayburn Wyke
  (Nat., 1891, p. 290).
  sphaerocarpum (Hook.) Steph.—Goathland, Saltergate (B.N.Y.).

GYMNOCOLEA Dumortier
  inflata (Huds.) Dum.—Mallyan Spout, Seamer Moor (B.N.Y.);
  Robin Hood’s Bay (Nat., 1889, p. 231).

LEIOCOLEA (Mull., K.) Buch
  turbinata (Raddi)—Filey (Nat., 1903, p. 248).

LOPHOZIA Dumortier
  ventricosa (Dicks.) Dum.—Thornton-le-Dale (Nat., 1922, p. 192);
  porphyroleuca (Nees) Schifffn.—Hayburn Wyke (B.N.Y.).
excisa (Dicks.) Dum.—Hayburn Wyke (Nat., 1891, p. 290); Troutsdale, 1852 (M.B.S.).

incisa (Schrad.) Dum.—Mallyan Spout (B.N.Y.).

dum.—Hole of Horcum, 1934 (H.B.).


incisa (Schrad.) Dum.—Mallyan Spout (B.N.Y.).

barbata (Schmid.) Dum.—Saltergate Beck (B.N.Y.).


TRITOMARIA Schifffner

exsectiformis (Breidl.) Schiffn.—Goathland, Ravenscar (Nat., 1924, p. 277).

SPHENOLOBUS (Lindberg) Stephani

minutus (Crantz) Steph.—Goathland (B.N.Y.).

PLAGIOCHILA Dumortier

asplenioides (L.) Dum.—Common.

var. major Nees—Frequent (J.R.).

PEDINOPHYLLUM Lindberg

interruptum (Nees) Pears.—Rare; Goathland (B.N.Y.).

MYLIA Gray, S. F.

taylori (Hook.) Gray, S. F.—Robin Hood’s Bay (Nat., 1924, p. 276); Goathland (Ing. Herb.).

anomala (Hook.) Gray, S. F.—Goathland (B.N.Y.).

LOPHOCOLEA Dumortier

bidentata (L.) Dum.—One of our commonest hepatics.

cuspidata (Nees) Limpr.—Hawkness (B.N.Y.); Robin Hood’s Bay (Nat., 1889, p. 231); Thornton-le-Dale (Nat., 1922, p. 292).

heterophylla (Schrad.) Dum.—Many records.

CHILOSCYPHUS Corda

polyanthus (L.) Corda—Frequent by clear streams and springs.

Mallyan Spout (Nat., 1903, p. 302), Ellerbeck (Ing. Herb.).

HARPANTHUS Nees von Essenbeck

scutatus (Web. et Mohr) Spruce—Rare; Goathland (Nat., 1903, p. 302).

CEPHALOZIA Dumortier

bicuspidata (L.) Dum.—Seamer Moor, Goathland (B.N.Y.).

connivens (Dicks.) Lindb.—Robin Hood’s Bay (Nat., 1924, p. 277); Goathland Moor (J. Bot., 1925, p. 129).

media Lindb.—Goathland (B.N.Y.); Harwood Dale (Nat., 1904, p. 186).

macrostachya Kaal—Rare; Robin Hood’s Bay moors (Nat., 1924, p. 277).

catenulata (Hub.) Spruce—Goathland (B.N.Y.).

CLADOPODIELLA Buch

fluitans (Nees) Joerg.—Goathland (B.N.Y.); Harwood Dale (Nat., 1904, p. 186).
NOWELLIA Mitten
curvifolia (Dicks.) Mitt.—Goathland, Hackness (B.N.Y.); Harwood Dale (Nat., 1904, p. 186).

CEPHALOZIELLA (Spruce) Schiffner
starkei (Funck.) Schiffn.—Ravenscar, 1934 (H.B.).
hampeana (Nees) Schiffn.—Robin Hood’s Bay (Nat., 1924, p. 277).

HYGROBIELLA Spruce
laxifolia (Hook.) Spruce—Goathland (B.N.Y.).

ODONTOSCHISMA Dumortier
sphagni (Dicks.) Dum.—Fen Bog, Goathland (Ing. Herb.).
denudatum (Nees) Dum.—Goathland (B.N.Y.).

CALYPOGEIA Raddi
trichomanis (L.) Corda—Frequent; Filey (Nat., 1903, p. 248); Raincliffe Wood, 1950 (R.L.).
fissa Raddi—Falling Foss (Ing. Herb.).
submersa (Arnell.) Warnst.—Rare; Newton Dale (Nat., 1903, p. 291).
arguta Nees et Mont.—Scarborough, Goathland, Newton Dale (B.N.Y.); Ravenscar (Nat., 1924, p. 277); Forge Valley, 1950 (J.R.).

BAZZANIA Gray, S. F.

LEPIDOZIA Dumortier
reptans (L.) Dum.—Frequent in shady woods on heaths and on stones among moss; Hole of Horcum, 1934 (H.B.); Forge Valley, 1950 (J.R.).

MICROLEPIDOZIA (Spruce) Joergensen
setacea (Web.) Joerg.—Goathland, Saltergate (B.N.Y.).
trichoclados (Mull., K.) Joerg.—Goathland (B.N.Y.).

BLEPHAROSTOMA Dumortier
trichophyllum (L.) Dum.—Goathland Beck, 1884 (R.S., B.N.Y.).

PTILIDIUM Nees von Essenbeck
ciliare (L.) Hampe—Saltergate Beck, Seamer Moor (B.N.Y.).

TRICHOCOLEA Dumortier
tomentella (Ehrh.) Dum.—Saltergate (B.N.Y.).

DIPLOPHYLLUM Dumortier
albicans (L.) Dum.—Very common and variable.

SCAPANIA Dumortier
compacta (Roth) Dum.—Ravenscar (Ing. Herb.), MacVicar gave doubtful assent.
aequiloba (Schwaegr.) Dum.—Rare; Newton Dale (B.N.Y.).
gracilis (Lindb.) Kaal—Goathland (B.N.Y.).
undulata (L.) Dum.—Saltergate Beck, Newton Dale (B.N.Y.).
dentata Dum.—Hayburn Wyke (Y.N.U. Circ. 92); Robin Hood’s Bay (Nat., 1889, p. 239); Goathland (Nat., 1903, p. 302); Thornton-le-Dale (Nat., 1932, p. 292).
uliginosa (Schwartz) Dum.—Saltergate Beck (B.N.Y.).
irrigua (Nees) Dum.—Saltergate Beck (B.N.Y.); Thornton-le-Dale (Nat., 1922, p. 292).
curta (Mart.) Dum.—Saltergate Beck (B.N.Y.); Levisham, 1934 (H.B.).
umbrosa (Schrad.) Dum.—Newton Dale, Goathland, Staintondale (B.N.Y.); Raincliffe Wood, 1950 (R.L.).

RADIULA Dumortier

PORELLA Linnaeus
platyphylla (L.) Lindb.—Newton Dale, Scarborough Castle Hill (B.N.Y.); Forge Valley, 1949 (J.R.).

LEJEUNEA Libert
patens Lindb.—Saltergate Beck (B.N.Y.); L. cavifolia (Ehrh.) Lindb. probably occurs but has been overlooked.

MICROLEJEUNEA (Spruce) Stephani
ulicina (Tayl.) Evans—Saltergate Beck (B.N.Y.).

FRULLANIA Raddi
dilatata (L.) Dum.—Hayburn Wyke (Nat., 1891, p. 290); Filey (Nat., 1903, p. 248); Helwath Beck, 1949 (F.C.R.).

Order ANTHOCEROTALES

ANTHOCEROS Linnaeus
punctatus L.—Rare or overlooked; Saltergate (Nat., 1922, p. 292).

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MUSCI - MOSSES
Joyce Robertson.

In 1895 D. W. Bevan made the first moss record for the Scarborough Field Naturalists' Society. Since that time intermittent recording has resulted in a list of some 300 species and varieties, about half the British total. The reason the proportion is not higher is partly due to the sandy and therefore porous nature of a large part of our moorlands, the dry nature of our chalk wolds, a low rainfall because of our position on the East coast with resultant dryness of the atmosphere, and the prevalence in the Spring of drying Easterly and North-Easterly winds.

The moorland hills can be divided into two types in that the ecological distribution of their mosses, particularly the sphagna, is quite different.

On the one hand are the tabular hills, producing as a result of their geological structure, frequent springs on their sides. Because of the Southerly dip of the rock strata these springs occur much nearer the hill-tops on the steep Northern side than on the usually more gentle incline to the South, and it is here, where the heat of the sun is rarely destructive, that great pendulous masses of Sphagnum, notably S. nemoreum, are found. On the summit of such hills however, Sphagnum is not nearly so common, being found in any quantity only in some artificially dug trench or pond, and on this dry leached surface we find Polytrichum piliferum and P. juniperinum well represented, frequently most spectacular with their erect mass of hooded sporophytes. The more robust Polytrichum commune is abundant in damper situations, commonly in moist hollows on the higher reaches of the hillsides.

Lower down, where scattered conifers and birches are able to obtain a footing in the deeper soil, the denizens of moister, more acid soils appear, such as Pleurozium schreberi, Plagiothecium undulatum, Dicranum majus, and Leucobryum glaucum. Leucobryum is also common amongst Sphagnum on the lower heathland, where the water-content is adequate, forming mounds ranging from a few inches to one-and-a-half feet in height. Richard Spruce, observing the rate of growth in this species, found that only the very smallest increase in size could be noted in seven years. If this is the case, some of the larger mounds must be of a considerable age.

If, however, dense coniferous woods are planted on these slopes (as is commonly being done by the Forestry Commission), the vast majority of the mosses are destroyed, except on their outskirts, where a few species such as Plagiothecium denticulatum persist. The striking bareness of the ground under evergreen conifers can be due only to a combination of adverse soil conditions (excessive acidity from the decaying leaves and possibly drainage effected by root growth), and lack of direct light throughout the year. It is interesting to compare an evergreen pine or spruce wood with a wood of the deciduous larch. Larch needles produce a much less acid humus than pine, and in addition, these trees are bare
at the time of peak vegetative activity in the moss world. Thus it is quite common to find mosses distributed throughout a whole larch wood, although not nearly as thickly as in a broad-leaved deciduous wood, and I have found a frequenter of rich humus, such as Mnium undulatum, together with Rhytidiadelphus squarrosus, in considerable quantity in such habitats, though these specimens did not attain the same robust appearance as they might have done in a more favourable environment.

Further to the North, on the Fylingdales Moors, we have the other type of hill, often reaching a higher altitude, but with a gently rounded contour. Here varieties of Sphagnum nemoreum, papillosum, recurvum and plumulosum are abundant and cover large areas of the moist sloping hillsides, as seen typically south of Goathland and on May Moss. The dry crowns of such hills support for the most part heather and lichens with an occasional patch of one of the genus Polytrichum, and, where the heather has been burnt, the quickly-spreading Funaria hygrometrica and Campylopus fragilis.

Some of our rarer species have been recorded in this region of peaty, water-logged soil, including Hypnum imponens, Sphagnum holtii (a first record for Yorkshire), S. auriculatum and S. bavaricum, both discovered in this area for the first time in Britain.

Peat beds are widespread over the moors, some being of considerable depth and great age. The sterile quality of this material, due (in peat of sphagnum origin) to the presence of tannin and gallic acid, is well illustrated at Harwood Dale, where excavations in old peat beds have revealed the preserved stumps of very ancient trees, probably the victims of some local subsidence.

This range of hills is intersected, particularly to the South, by deep valleys of erosion as seen in Forge Valley and Troutsdale, through which run streams originating in peat bogs on the moorlands and augmented by springs draining the tabular hills. These valleys support deciduous woods producing rich humus conditions, dear to such species as Mnium undulatum and Atrichum undulatum. Here too are found arboreal types such as Ulota crispa, Orthotrichum diaphanum, O. lyellii and Homalia trichomanoides. In the higher reaches of the woods where the soil is drier and peaty, Tetrachis pellucida, Isothecium myosuroides, Eurhynchium striatum and Rhytidiadelphus loreus are frequent.

The streams contain their own particular aquatic species, usually firmly rooted between the cracks of the rocky bed, and in some species such as Fontinalis antipyretica I have measured stems three and a half feet long. Such lengths would be a disadvantage in the higher reaches of the becks, as these are usually shallow, rocky and turbulent, and the few moss specimens I have encountered have been very short in comparison; Fontinalis squamosa is more likely in such a habitat. Other aquatic species include the many varieties of Drepanoclados aduncus and D. fluitans, commonly found in bogs (the latter particularly on peaty soil), Dichodontium pellucidum, Dicranella squarrosa, Acrocladium cordifolium, Brachythecium rivulare (partially or fully submerged) and Hyocomium flagellare.
These streams are frequently bordered by rocks of a calcareous nature, many of them dripping continuously with water seeping down from the surrounding land. This is yet another environment with its due complement of limestone-frequencing mosses, among which can be found *Eucladium verticillatum*, *Barbula tophacea*, *Cratoneuron commutatum* (occasionally with lime-incrusted stems), *C. filicinum* and *Ctenidium molluscum*.

As we travel further south we leave the moorland with its sharply incised valleys, and enter the Vale of Pickering. The subsoil here is clay, sometimes intermixed with pockets of sand, especially near the coast, with a superficial layer of peat in most places. This area produces such species as *Fissidens incurvus*, *F. taxifolius* and *Bryum pallens*.

A characteristic feature of the North Riding is its stone walls of oolitic rock (being predominantly limestone) and frequently mud-capped. Here we find representatives of the *Pottiaceae*, *Grimmia pulvinata*, *G. apocarpa*, *Bryum capillare* which is very common, and *Ceratodon purpureus* var. *conicus*. These all prefer to grow on the mud capping of the wall or perhaps in small, dust-filled niches near the top, whilst down at the bottom, particularly if the wall abuts on to a concrete or hard pavement, *Bryum argenteum*, with its silvery imbricated leaves, often together with *Ceratodon purpureus*, is usually to be seen, finding a seemingly precarious foot-hold in the accumulated silt and dust.

The southern boundary of the Vale of Pickering is formed by chalk wolds, running out to sea at Flamborough Head, on which can be found the rare species *Selerigia calcarea* and *S. paucifolia*.

On the coast the only specifically maritime species we have found are *Pottia heimi* and *Grimmia maritima*, the latter being found on rocks at sea level.

A further genus which is worthy of mention, if only because of its unusual habitat, is *Splachnum*, which grows on the excrement of cattle. *S. ampullaceum*, found in the Vale of Pickering, grows on comparatively low ground, whereas *S. ovatum* prefers a more mountainous environment and has been found on Saltergate Moor, an increase of altitude of some six hundred feet.

Despite the limitations imposed upon our moss flora by our geological and geographical position, it will be seen that all but three of the orders are represented in our area. Of these three the *Andreaeaceae* are not likely to occur as we do not possess any extensive siliceous or quartzose formations (superficially at any rate), on which they are generally found, and, like the *Timmiaeae*, another order not represented, they usually inhabit more mountainous regions. *Schistostega pennata*, the only species of its order, is usually found in holes in sandy hedgebanks, and it is possible that it may exist on some of the impure forms of sandstone that occur in the district, although it has not so far been recorded.

I should like to acknowledge most gratefully the willing and authoritative help I have received in compiling the following list from Mr. C. A. Cheetham, Mr. A. Thompson, and Mr. H. Walsh, all of the
Yorkshire Naturalists’ Union; and also the guidance and advice on classification and nomenclature received from Mr. E. C. Wallace of the British Bryological Society.

Abbreviations:
B.N.Y.—Baker’s “North Yorkshire” (2nd ed.).
Y.N.U. Excn.—Yorkshire Naturalists’ Union Excursion.
Nat.—“The Naturalist.”
V.C.H.—Victoria County History.
Ing. Herb.—Ingham Herbarium.


S. SPHAGNALES

S. SPHAGNUM Linnaeus

S. INOPHLOEA (Russow) Andrews
palustre L.—Frequent in the Saltergate area and on the Whitby moors.
magellanicum Brid.—Rare, Fen Bog (W.I., E.C.H.).
papillosum Lindb.—Goathland (B.N.Y.).

S. LITOPHLOEA (Russow) Andrews
compactum DC.—Harwood Dale (W.I.); near Flask Inn (E.C.H.).
var. imbricatum Warnst.—Frequent on the moors.
var. squarrosum Russ.—Seamer Moor and Goathland (B.N.Y.).
var. subsquarrosum Warnst.—Sleights Moor (A.T.).
teres (Schimp.) Angstr., var. imbricatum Warnst.—Not common;
East Saltergate Bog, Goathland (B.N.Y.); Ellerbeck (W.I.).
squarrosum Pers ex Crome—Goathland (B.N.Y.).
recurvum Beauv., P.—Saltergate (B.N.Y.); Harwood Dale, Raven-
scar (E.C.H.).
var. majus Angst.—Common.
var. parvulum Warnst.—Ellerbeck, Goathland Moor, Fen Bog (W.I.).
var. robustum Breidl.—Goathland (W.B.); Ravenscar (W.I.); Ellerbeck and Blakey Topping (A.T.).

amblyphyllum Russ.—Abundant south of Goathland, partly submerged (B.N.Y.).
var. macrophyllum Warnst.—Fylingdales Moor (A.T.).
var. mesophyllum Warnst.—Fen Bog (W.I.); near Ellerbeck (A.T.).

var. parvifolium Warnst.—Very rare; Ellerbeck, 1917 (W.I.).
pulchrum (Lindb.) Warnst.—Near Goathland (B.N.Y.); Fen Bog (W.I.).
tenellum Pers.—Fen Bog, Harwood Dale, Ravenscar (W.I.); Newtondale (Barnes & Slater).
cuspidatum Ehrh. ex Hoffm., var. falcatum Russ.—Lilla Cross (E.C.H.); Ravenscar (W.I.); Ellerbeck (A.T.).
var. plumosum Bryol.—germ.—Staintondale, Robin Hood’s Bay (W.B.); Fylingdales Moor (A.T.).
var. serratum Lesq. et James—Robin Hood’s Bay (W.B.).
fallax Klinggr., var plumosum Warnst.—Goathland Moor (A.T.).
var. schultzii Warnst.—Near West Beck, Goathland (A.T.).
contortum Schultz—Goathland (B.N.Y.).
subsecundum Nees—Not common; near Goathland, Seamer Moor (B.N.Y.).

var. intermedium Warnst.—Hole of Horcum and Fylingdales Moor (A.T.); Ellerbeck (G.F.H.).
a. inundatum (Russ.) Jens., C., emend. Aberg.—Goathland Moor (W.B.).
var. densum Sherr.—Ellerbeck (A.T.).
var. lancifolium Warnst.—Ellerbeck (A.T.).
var. robustum Sherr.—Fen Bog and Fylingdales Moor (A.T.).
b. bavaricum (Wanst.) Aberg.—Ellerbeck, 1907, First British record (W.B., conf. Dr. Warnstorf).
c. auriculatum (Schimp.) Lindb. emend. Aberg.—South of Goathland (W.I.).
var. laxifolium Warnst.—Fen Bog (W.I.); Ellerbeck (G.F.H.).
var. ovatum Warnst.—Goathland, Falling Foss, Ravenscar (W.I.); Ellerbeck (G.F.H.).
var. submersum Warnst.—Fylingdales Moor (A.T.).
var. tenellum Warnst.—Above Ravenscar (W.I.), First British record.
d. crassicladum Warnst.—Goathland Moor (W.B.); Ellerbeck (G.F.H.).
var. diversifolium Warnst.—Goathland and Falling Foss (W.I.).
var. intermedium Warnst.—Goathland (W.I.).
var. magnifolium Warnst.—Staintondale and Goathland (W.B.); Fylingdales Moor (A.T.).
e. obesum Warnst., var. canovirens Warnst.—Fylingdales Moor (A.T.).
f. holtii Warnst.—Rare; only record for Yorkshire, Blakey Topping, 1948 (A.T.).
fimbriatum Wils., var. laxifolium Warnst.—Ellerbeck (A.T.).
  var. robustum Braithw.—Ellerbeck (W.B.); Falling Foss and
  Saltergate Beck (W.I.).
  var. tenue Grav.—Saltergate Beck (B.N.Y.); Falling Foss (W.B.).
  var. validius Card., forma compactum Warnst.—Saltergate Beck
  (E.C.H.).
girgensohni Russ.—Uncommon; Saltergate Beck (B.N.Y.); Ringing
russowii Warnst.—Saltergate Beck (Anderson).
  var. girgensohnoides Russ—Blueberry Hill, Goathland (Slater &
  Beesley).
warnstorfanum Du Rietz—Goathland Moor and Fen Bog (A.T.).
rubellum Wils.—Fen Bog, Saltergate, Fylingdales Moor (A.T.).
emoreum Scop. (= S. acutifolium Ehrh.)—Abundant on the Goath-
land Moors.
quincefarium (Lindb.) Warnst.—Cross Cliff, Beedale, Ellerbeck
(W.I.).
plumulosum Roell—Common on the moors near Goathland and Salte-
gate Beck.
molle Sull.—Not common; Darnholme, Goathland and Wheeldale
Beck (B.N.Y.).
  var. molluscoides Muell.. C.—Falling Foss and Ellerbeck (W.I.);
  Fylingdales Moor (A.T.).

BRYALES
POLYTRICHACEAE

ATRICHUM Beauvois, P.
  undulatum (Hedw.) Beauv., P.—Common in woodland.

POLYTRICHUM Hedwig
  nanum Hedw.—Not common; Scalby Moor (B.N.Y.).
aloides Hedw.—Fairly common in dry places on peat; Tar Beck,
  Ravenscar (F.B.); Broxa (T.B.R., J.R., 1950).
alpinum Hedw.—Saltergate (B.N.Y.).
piliferum Hedw.—Fairly common; Dalby Warren, Seamer Moor
  (B.K., J.R., 1950).
juniperinum Hedw.—Common on the moors.
gracile Smith—Newton Dale (B.N.Y.); Givendale (B.K.).
formosum Hedw.—Fairly frequent in dry places; Willerby Carrs
  (T.B.R.); Hackness (B.N.Y.); Raincliffe Wood, 1950 (J.R.).
commune Hedw.—Very common near moorland bogs, widely distri-
buted.
Mosses

Fissidentaceae

Fissidens Hedwig

viridulus (Web. et Mohr) Wahl., var. lylei Wils.—Rare; Flamborough (Nat., 1906, p. 248).
pusillus Wils. ex Milde—Robin Hood’s Bay (Ing. Herb.); Dalby, 1951 (J.R.).
bryoides Hedw.—Fairly frequent in shade; Cayton Bay (F.B.); Wheatcroft (H.I.T.B.), etc.
exilis Hedw.—Not common; Robin Hood’s Bay (C. A. Coop.); Newton Dale (B.N.Y.).
osmundoides Hedw.—Saltergate (Ing. Herb.).
taxifolius Hedw.—Frequent; Cayton Bay (F.B.); Wheatcroft Woods (H.I.T.B.); Forge Valley (J.R.).
adianthoides Hedw.—Common on boggy land.
cristatus Wils.—On limestone ridge, Forge Valley, 1951 (J.R.).

Dicranaceae

Pleuridium Bridel

acuminatum Lindb.—Hackness, 1897, Ravenscar, 1903 (Ing. Herb.).

Ditrichum Hampe

flexicaule (Schleich.) Hampe—Fairly frequent; Filey (Nat., 1903, p. 248); Troutsdale and Saltergate (B.N.Y.); Thornton-le-Dale, 1950 (J.R.).

Distichium Bruch et Schimper

capillaceum (Hedw.) B. et S.—On moist rocks, Saltergate (B.N.Y.).

Ceratodon Bridel

purpureus (Hedw.) Brid.—Very common.
var. conicus (Hampe) Hag.—Rare; fruiting on bare ground, Hackness (W.I.); Cayton Bay (B.N.Y.).

Brachydontium Bruch

trichodes (Web. fil.) Bruch—Not common; Hayburn Wyke Cliffs (B.N.Y.).

Selligeria Bruch et Schimper

pusilla (Hedw.) B. et S.—Not common; Raincliffe Wood and Forge Valley (B.N.Y.).
paucifolia (Dicks.) Carr.—Rare; Danes’ Dyke (Nat., 1900, p. 237).
calcarea (Hedw.) B. et S.—Danes Dyke (Nat., 1900, p. 237).
recurvata (Hedw.) B. et S.—Not common; Saltergate Bank top and Troutsdale B.N.Y.).

Blindia Bruch et Schimper

acuta (Hedw.) B. et S.—Robin Hood’s Bay in moorland marsh (Y.N.U. Excn., 1933).

Pseudephemerum (Lindberg) Hagen

nitidum (Hedw.) Jens., C. (=Pleuridium axillare (Dicks.) Lindb.)—Uncommon; Scarborough Racecourse (B.N.Y.).
DICRANELLA Schimper
  squarrosa (Starke) Schimp.—Robin Hood’s Bay in peaty water
  varia (Hedw.) Schimp.—Fairly common ; Forge Valley and Cornelian
  Bay (C.H.W.).
  heteromalla (Hedw.) Schimp.—Very common.

CYNODONTIUM Schimper
  bruntonii (Sm.) B. et S.—Uncommon ; in stubble at head of Newton
  Dale and at Pickering (B.N.Y.).

DICHODONTIUM Schimper
  pellucidum (Hedw.) Schimp.—In bed of stream, Robin Hood’s Bay
  (Y.N.U. Excn., 1933) ; Hackness (B.N.Y.).
  var. flavescens (Turn.) Jens., C.—Saltergate Beck (B.N.Y.).

DICRANOWEISSIA Lindberg
  cirrata (Hedw.) Lindb.—Goathland (B.N.Y.) ; Helwath Beck
  (E.C.H.).

DICRANUM Hedwig
  fuscescens Turn.—Staintondale, Cross Cliff, Pickering (Nat., 1929,
  p. 279).
  majus Turn.—Raincliffe Wood (C.H.W.) ; Harwood Dale, frequent,
  1950 (J.R.).
  bonjeani de Not.—Goathland (Ing. Herb.).
  var. calcareum Braithw.—Rare ; Goathland (Ing. Herb.).
  var. rugifolium Bosw.—Saltergate (M.E.C.Rep., 1912, p. 45).
  scoparium Hedw.—Wykeham (W.I.), frequent, 1950 (J.R.).
  var. spadiceum (Zett.) Boul.—Uncommon ; Raincliffe Wood, 1928
  (C.H.W.).
  var. orthophyllum Brid.—Saltergate (Ing. Herb.).

CAMPYLOPUS Bridel
  fragilis (Turn.) B. et S.—Lady Edith’s Drive (B.K., 1923, J.R., 1950).
  piriformis (Schultz) Brid.—Robin Hood’s Bay (C. A. Coop.).
  flexuosus (Hedw.) Brid.—Seamer Moor (B.N.Y.).
  var. uliginosus Ren.—Seamer Moor on marshy ground (B.N.Y.).
  atrovirens de Not.—Sleights Moor (B.N.Y.).

LEUCOBRYUM Hampe
  glaucum (Hedw.) Schimp.—Common on damp moorland and on
  leached woodland ; Silpho Moor, fruiting, 1948 (J.R.).

ENCALYPTACEAE

ENCALYPTA Hedwig
  streptocarpa Hedw.—Suffield Moor, 1933 (C.H.W.) ; Yedmandale
  (Nat., 1901, p. 297) ; Givendale, 1950 (J.R.).

POTTIACEAE

TORTULA Hedwig
  ruralis (Hedw.) Crome—Silpho on wall, 1948 (J.R.).
  intermedia (Brid.) Berk.—Hull Ness, 1927 (C.H.W.) ; East Ayton,
  1951 (J.R.).
laevipila (Brid.) Schwaegr., var. laevipiliformis (de Not.) Limpr.—Helwath Beck on trunk of ash, 1949 (J.R.).
muralis Hedw.—Very common on walls and stones.
  var. rupestris Schultz—Rare; Scalby on damp rocks (B.N.Y.).
marginata (Bry. Eur.) Spruce—Ebberston (B.N.Y.).

ALOINA Kindberg
rigida (Hedw.) Kindb.—Scalby on mud caps on limestone walls (B.N.Y.).

PTERYGONEURUM Juratzka
ovatum (Hedw.) Dix.—Pickering and Snainton (B.N.Y.).
POTTIA Fuernrohr
lanceolata (Hedw.) C.M.—Frequent on walls.
heimii (Hedw.) Fuernr.—Scarborough Marine Drive, 1928 (C.H.W.).
truncata (Hedw.) Fuernr.—Wheatcroft Cliff top, 1937 (C.H.W.).
davalliana (Sm.) Jens., C. (= P. minutula (Schleich.) Fuernr.)—In a field near Pickering (B.N.Y.).

PHASCUM Hedwig
floerkeanum Web. et Mohr—Rare; near Pickering (B.N.Y.).
cuspidatum Hedw.—Probably occurs, but no specific records.

ACAULON Mueller, C.
muticum (Brid.) Muell., C.—On bare soil; Thornton-le-Dale, 1951 (J.R.).

BARBULA Hedwig
convoluta Hedw.—Yedmandale (W.I., Y.N.U., Excn., 1901).
unguiculata Hedw.—Common.
revoluta Brid.—Hackness on limestone wall, 1927 (C.H.W.).
hornschuchiana Schultz—Forge Valley on tree trunk, 1950 (J.R.).
fallax Hedw.—Scarborough Marine Drive, 1928 (C.H.W.).
spadicea Mitt.—Not common; Robin Hood’s Bay (Y.N.U. Excn., 1933).
rigidula (Hedw.) Mitt.—Frequent; Cumboots (C.H.W.); Scalby Mills (B.N.Y.).
trifaria (Hedw.) Mitt.—Flamborough (Nat., 1906, p. 248).
topheacea (Brid.) Mitt.—Common on wet limestone rocks.
cylindrica (Tavl.) Schimp.—Silpho Moor, 1928 (C.H.W.).
recurvirostris (Hedw.) Dix. (= B. rubella (Hoffm.) Lindb.)—Robin Hood’s Bay (C. A. Coop.); Forge Valley, 1950 (J.R.).

GYMNOSTOMUM Hedwig
aeruginosum Sm.—Saltergate Beck on wet limestone rocks (B.N.Y.).
recurvirostrum Hedw.—Newton Dale, east side (B.N.Y.).

GYROWEISSIA Schimper
tenuis (Hedw.) Schimp.—Uncommon; Hackness (Ing. Herb.).
EUCLADIUM Bruch et Schimper
verticillatum (With.) B. et S.—Hackness on wet rocks (B.N.Y.); Forge Valley, 1950 (J.R.).

TORTELLA (Mueller, C.) Limpricht
tortuosa (Hedw.) Limpr.—Newton Dale (B.N.Y.); Forge Valley, 1950 (J.R.).
nitida (Lindb.) Broth.—Rare; near Robin Hood’s Bay (B.N.Y.).

TRICHOSTOMUM Bruch
crispulum Bruch—Scalby (B.N.Y.); Robin Hood’s Bay (Y.N.U. Excn., 1933).

WEISSIA Hedwig
controversa Hedw.—Scarborough North Bay, 1928 (C.H.W.); Forge Valley, 1950 (J.R.).
rutilans (Hedw.) Lindb. (= W. mucronata Bruch)—Rare; Hackness (B.N.Y.); Ravenscar (Nat., 1906, p. 187).

LEPTODONTIUM Hampe
flexifolium (Smith) Hampe—Uncommon; Bickley Moor on peat, 1939 (C.H.W.).

GRIMMIACEAE

GRIMMIA Hedwig
maritima Turn.—Rare; Scarborough, on rocks near Spa (B.N.Y.).
apocarpa Hedw.—Frequent on stone walls.
pulvinata (Hedw.) Smith—Very common on walls and rocks.
deciiensis (Schultz) Lindb.—Uncommon; near Robin Hood’s Bay (B.N.Y., G.M.).

RHACOMITRIUM Bridel
canescens (Hedw.) Brid.—On stony ground, Thornton-le-Dale, 1951 (J.R.).
lanuginosum (Hedw.) Brid.—Robin Hood’s Bay (C. A. Coop.).

FUNARIACEAE

FUNARIA Hedwig
hygrometrica Hedw.—Common; especially on dry heaths and banks.
muehlenbergii Turn. (= F. calcarea Wahl.)—Rare; Brocka Beck Bridge, Whitby-Pickering road (B.N.Y.).
attenuata (Dicks.) Lindb. (= F. templetoni Smith)—On damp rocks, Scarborough-Whitby road (B.N.Y.).
obtusa (Dicks.) Lindb. (= F. ericetorum (Bals. et de Not) Dix.)—Saltergate Moor (B.N.Y.); Robin Hood’s Bay (Y.N.U. Excn., 1933).

PHYSCOMITRIUM Bridel
pyriforme (Hedw.) Brid—Willerby Carrs (T.B.R., F.B.); Langdale End, 1952 (J.R.).

SPLACHNACEAE

SPLACHNUM Hedwig
ampullaceum Hedw.—Vale of Pickering (W.I., Y.N.U. Excn., 1902); Thornton-le-Dale, 1951 (J.R.).
ovatum Hedw.—Saltergate Moor (B.N.Y.).

TETRAPHIDACEAE

TETRAPHIS Hedwig
pellucida Hedw.—Raincliffe Wood, plentiful (C.H.W.); Saltergate Beck (B.N.Y.); Cockrah Wood, plentiful, 1950 (J.R.).
browniana (Dicks.) Grev.—Not common; Goathland (W.I.); Robin Hood’s Bay (Y.N.U. Excn., 1933).

BRYACEAE

ORTHODONTIUM Schwaegrichen
lineare Schwaegr.—Row Brow, Scarborough, plentiful on peaty soil (Y.N.U. Excn., 1943).

POHLIA Hedwig
cruda Hedw.—Seamer Moor (G.M.).
nutans (Hedw.) Lindb.—Raincliffe Wood, 1927 (C.H.W.); Dalby, 1951 (J.R.).
albicans (Wahl.) Lindb.—Scarborough, foot of Racecourse Hill, in water, Flixton Carr, 1938 (B.K.).
delicatula (Hedw.) Grout (= Webera carnea Schimp.)—Goathland Beck (Braithw.).

BRYUM Hedwig
inclinatum (Brid.) Bland.—Saltergate (Y.N.U. Excn., 1895).
uliginosum (Bruch ex Brid.) B. et S.—Rare; mouth of Scalby Beck (B.N.Y.).
pallens (Brid.) Roehl—Frequent; Flixton Carrs, Saltergate Beck (B.N.Y.); Robin Hood’s Bay (C. A. Coop.).
pseudotriquetrum (Hedw.) Schwaegr.—Saltergate (Y.N.U. Excn., 1895); Filey Cliffs (W.I.).
bimum Brid.—Upper end of Yedmandale, 1901 (W.I.); Thornton-le-Dale, 1949 (J.R.).
intermedium (Ludw.) Brid.—Filey (Ing. Herb.).
caespiticium Hedw.—Widespread in the district.
argentum Hedw.—Abundant on roadsides, roofs, cinders, etc.
alpinum With., var. meridionale Schimp.—Base of Peck Cliff, Robin Hood’s Bay, 1889 (M.S.).
capillare Hedw.—Common.
RHODOBRYUM (Schimper) Limpricht
roseum (Hedw.) Limpr.—Uncommon; Saltergate Beck (B.N.Y.).

MNIACEAE

MNIUM Hedwig
hornum Hedw.—Common in many and varied habitats.
marginatum (With.) Brid. ex Beauv., P.—Not common; Goathland (Ing. Herb.).
affine Bland., var. elatum B. et S.—Uncommon; Saltergate Beck (B.N.Y.).
undulatum Hedw.—Very common, particularly in Raincliffe Wood.
punctatum Hedw.—Hayburn Wyke (F.B.); Yedmandale, etc. Frequent.
var. elatum Schimp.—Goathland (B.N.Y.).
pseudopunctatum B. et S.—Rare; Goathland Dale, Foul Syke, on Whitby Moors (Y.N.U. Excn., 1933).

AULACOMNIACEAE

AULACOMNIUM Schwaegrichen
palustre (Hedw.) Schwaegr.—Near Saltergate Beck, abundant (B.N.Y.); Seamer Moor, on boggy land, 1928 (C.H.W.); Allerton Moor in bog, 1950 (J.R.).
androgynum (Hedw.) Schwaegr.—Cloughton, 1952 (J.R.).

BARTRAMIACEAE

BARTRAMIA Hedwig
pomiformis Hedw.—Near Saltergate Beck (B.N.Y.).

PHILONOTIS Bridel
fontana (Hedw.) Brid.—Fairly frequent in moorland streams; Goathland (M.E.C. Rep., 1903); Wrench Green, 1949 (J.R.).
caespitosa Wils. ex Mild.—Rare; Saltergate Beck (Nat., 1917, p. 45).
capillaris Lindb.—Rare; limestone spring, Langdale End, 1949 (J.R.).
calcarea (B. et S.) Schimp.—Troutsdale (B.N.Y.).

BREUTELIA Schimper
chrysocoma (Dicks.) Lindb.—Bloody Beck (Ing. Herb.).

PTYCHOMITRIACEAE

CAMPYLOSTELIUM Bruch et Schimper
saxicola (Web. et Mohr) B. et S.—Merrick’s Gill near Hackness, 1842; Falling Foss (B.N.Y.).

ORTHOTRICHACEAE

ZYGODON Hooker et Taylor
viridissimus (Dicks.) Brown, R.—Filey Cliffs (W.I.).
ORTHOTRICHUM Hedwig
anomalum Hedw.—Ayton on limestone (F.B., E.C.H., J.R., 1951); Saltergate Moors (B.N.Y.).
affine Brid.—Raincliffe Wood on trees, 1927 (C.H.W.); Hackness (Ing. Herb.).
lyellii Hook. et Tayl.—Hackness on trees (B.N.Y.).
pulchellum Brunt.—Harwood Dale (B.N.Y.); Robin Hood’s Bay (Nat., 1907, p. 252).

ULOTA Bridel
phyllantha Brid.—Forge Valley (B.N.Y.).
crispa (Hedw.) Brid.—Usually on trees; Hackness (B.N.Y.); Forge Valley, 1950 (J.R.).
crispula Bruch—Rare; Forge Valley (B.N.Y.).
bruchii Hornsch.—Robin Hood’s Bay (C. A. Coop.).
drummondii (Hook. et Grev.) Brid.—Rare; Hackness, 1843 (R. Spruce).

FONTINALIS Hedwig
squamosa Hedw.—Saltergate Beck (B.N.Y.).

CLIMACIUM Weber et Mohr
dendroides (Hedw.) Web. et Mohr—Hackness, fruiting, rare (B.N.Y.); Yedmandale (F.B.); Thornton-le-Dale, 1951 (J.R.).

CRYPHAEAEAE

CRYPHAEA Mohr
heteromalla (Hedw.) Mohr—Uncommon; Flamborough (Y.N.U. Circ., 84).

LEUCODONTACEAE

LEUCODON Schwaegrichen
sciuroides (Hedw.) Schwaegr.—Swang Plantation, Cumboots, 1927 (C.H.W.).

NECKERACEAE

NEUCKERA Hedwig
complanata (Hedw.) Hueben.—Frequent; Forge Valley and Seamer Moor (C.H.W., J.R., 1950).

HOMALIA (Bridel) Bruch et Schimper
trichomanoides (Hedw.) B. et S.—Forge Valley on tree trunk, fruiting, and on roadside (C.H.W., 1939, J.R., 1950).

THAMNION Bruch et Schimper
alopecurum (Hedw.) B. et S.—Robin Hood’s Bay (C. A. Coop.); Forge Valley (C.H.W.); both on wet rocks.
HOOKERIACEAE

HOOKERIA Smith
lucens (Hedw.) Smith—Frequent; Forge Valley (C.H.W.); Hackness (Y.N.U. Excn., 1937); Robin Hood’s Bay (C. A. Coop.); near Thro xenby Mere, 1949 (J.R.).

LESKEACEAE

LESKEA Hedwig
polyarpa Hedw.—Falling Foss, 1924 (W.B.).

THUIDIACEAE

HETEROCLODIUM Bruch et Schimper
heteropterum (Bruch) B. et S.—Robin Hood’s Bay in mill stream (Y.N.U. Excn., 1933).

ANOMODON Hooker et Taylor

THUIDIUM Bruch et Schimper
tamariscinum (Hedw.) B. et S.—Common, many habitats in the district.
philiberti Limpr.—Very rare; Rillington (Nat., 1916, p. 44).

HYPNACEAE

CRATONEURON (Sullivant) Roth
filiarum (Hedw.) Roth—Frequent on wet stones, damp ground or near streams.

commutatum (Hedw.) Roth—Frequent; Wheatcroft Woods and Mere Road, Scarborough (H.I.T.B.) ; Thro xenby Mere (B.K.), etc.
var. falcatum (Brid.) Moenk.—Saltergate Beck (B.N.Y.) ; Mallyan Spout (W.I.) ; Burniston Cliffs, 1950 (J.R.).
var. virescens (Schimp.) Rich. et Wall.—Filey (Nat., 1903, p. 248) ; Ebberston Beck, 1950 (J.R.).
decipiens (de Not.) Loeske—Rare; Cross Cliff, Langdale End (G.M., B.N.Y.).

CAMPYLIUM (Sullivant) Mitten
stellatum (Hedw.) Lange et Jens., C.—Har wood Dale (W.I.) ; Thornton-la-Dale, 1951 (J.R.).
protensum (Brid.) Kindb.—Not common; Scarborough Castle Hill (W.I.) ; Newton Dale, Salter gate (B.N.Y., C.H.W., 1928) ; Forge Valley, 1950 (J.R.).

chrysophyllum (Brid.) Bryhn—Hole of Horcum (B.N.Y.) ; Scar borough Castle Hill, 1928 (C.H.W.).

LEPTODICTYUM (Schimper) Warnstorf
riparium (Hedw.) Warnst.—Harwood Dale (W.I.) ; Scarborough, 1904 (Ing. Herb.).
AMBLYSTEGIUM Bruch et Schimper
serpens (Hedw.) B. et S.—Cayton Bay, Yedmandale (F.B.); Troutsdale, 1950 (J.R.).
juratckanum Schimp.—Oliver’s Mount, Scarborough, 1951 (J.R.).
varium (Hedw.) Lindb.—Near Cayton Bay (B.N.Y.).

AMBLYSTEGIELLA Loeske
sprucei (Bruch) Loeske—Rare; on stones by Goathland Beck (B.N.Y.).

DREPANOCLADUS (Mueller, C.) Roth
aduncus (Hedw.) Warnst.—Hackness, Saltergate Hills (B.N.Y.); Silpho Moor, 1950 (J.R.).
fluitans (Hedw.) Warnst.—Harwood Dale (W.I.); Wrench Green, 1950 (J.R.).
var. jeanbernati Ren.—Harwood Dale (W.I.).
revolvens (Sm.) Warnst.—Moors near Robin Hood’s Bay (Y.N.U. Excn., 1933, J.R., 1949); bog in Thornton Dale, 1950 (J.R.).
var. intermedius (Lindb.) Rich. et Wall.—In bog near Goathland (M.E.C.Rep., 1905).
uncinatus (Hedw.) Warnst.—Hackness (W.I.).

HYGROHYPNUM Lindberg
ochraceum (Turn. ex Wils.) Loeske—Saltergate Beck (B.N.Y.).
luridum (Hedw.) Jenn.—On damp rocks, Harwood Dale (W.I.); Robin Hood’s Bay (Y.N.U. Excn., 1907).
eugyrium (B. et S.) Loeske—Seamer Moor (H.I.T.B.); Troutsdale (B.N.Y.).

ACROCLADIUM Mitten
cordifolium (Hedw.) Rich. et Wall.—Not common; Thro xenby Mere (B.K., C. A. Coop., 1923, J.R., 1949); Ravenscar, 1951 (J.R.).
cuspidatum (Hedw.) Lindb.—Very common in damp situations.

ISOTHECIUM Bridel
myurum (Brid.) Brid.—Forge Valley, Newton Dale, 1938 (C.H.W.); Dalby, 1950 (J.R.).
myosuroides Brid.—Seamer Moor (H.I.T.B.); Troutsdale (B.N.Y.).

CAMPTOTHECIUM Bruch et Schimper
sericeum (Hedw.) Kindb.—Thro xenby, Hutton Buscel (H.I.T.B., C. A. Coop., 1938); frequent on walls (J.R.).
lutescens (Hedw.) Brid.—Givendale (H.I.T.B., C. A. Coop., 1923); in quarry, Ayton, 1950 (J.R.).

BRACHYTHECIUM Bruch et Schimper
albicans (Hedw.) B. et S.—Filey Cliffs (W.I.); Staxton, 1950 (J.R.).
glareosum (Bruch) B. et S.—Thornton-le-Dale, 1951 (J.R.).
rutabulum (Hedw.) B. et S.—Very common.
var. robustum B. et S.—Filey Cliffs (W.I.).
rivulare (Bruch) B. et S.—Filey Cliffs (W.I.); Saltergate (M.S.); Forge Valley, 1951 (J.R.).
velutinum (Hedw.) B. et S.—Scarborough, Jacob's Ladder and Hay Brow (F.B., C. A. Coop.).
plumosum (Hedw.) B. et S.—Hayburn Wyke (Y.N.U. Excn., 1895).

CIRRIPHYLLUM Grout
piliferum (Hedw.) Grout—Raincliff Wood (D.W.B.); Cornelian Bay, 1939 (C.H.W.); Goathland Beck (B.N.Y.).
crassinervium (Tayl.) Loeske et Fleisch.—Uncommon; Saltergate (M.S., 1895).

EURHYNCHIUM Bruch et Schimper
striatum (Hedw.) Schimp. em. Storm.—Raincliff Wood (D.W.B., J.R., 1950); Hackness (B.N.Y.); Robin Hood's Bay (Nat., 188, p. 240).
praelongum (Hedw.) Hobk.—Common on clay soil in hedgerows, grass, etc.
swartzii (Turn.) Curn.—Hackness (B.N.Y.); Yedmandale on ground (W.I.); Forge Valley, 1950 (J.R.).
schleicheri (Hedw. fil.) Lor. (=E. abbreviatum (Turn.) Schimp.)—Rare; Falling Foss (Ing. Herb.).
murale (Hedw.) Milde—Harwood Dale (W.I., Y.N.U. Excn., 1904); Forge Valley, 1950 (J.R.).
confertum (Dicks.) Milde—Frequent; Scarborough Museum gardens, Raincliff Wood, etc. (C.H.W.).

RHYNCHOSTEGIELLA Limpricht
pallidirostra (Br. A.) Loeske—Rare; Goathland Beck (B.N.Y.).

ENTODON Mueller, C.
orthocarpus (La Pyl.) Lindb. (Cylindrothecium concinnum (de Not.) Schimp.)—Uncommon; Newton Dale, Pickering (B.N.Y.).

PSEUDOSCLEROPODIUM (Limpricht) Fleischer
purum (Hedw.) Fleisch.—Frequent.

PLEUROZIUM Mitten
schreberi (Brid.) Mitt.—Common in woods and on moorland.

ISOPTERYGIUM Mitten
depressum (Bruch) Mitt.—Not common; Wykeham (Y.N.U. Excn., 1945); Sawdon Dale (W.I.).
pulchellum (Hedw.) Jaeg. et Sauerb.—Near Saltergate (B.N.Y.).
elegans (Hook.) Lindb.—Raincliff Wood (C.H.W.); Cloughton Bank, 1948 (J.R.).

PLAGIOTHECIUM Bruch et Schimper
latebricola (Wils.) B. et S.—Blueberry Hill, Goathland (B.N.Y.).
denticulatum (Hedw.) B. et S.—Frequent; woods at Hayburn Wyke and Wheatcroft (C. A. Coop.); Seamer Moor (H.I.T.B., J.R., 1950).
silvaticum (Brid.) B. et S.—Troutsdale, 1928 (C.H.W.).
undulatum (Hedw.) B. et S.—Frequent; Raincliffe Wood (H.I.T.B.);
Silpho Moor (F.B.); Troutsdale (J.R.), etc.

**HYPNUM** Hedwig
cupressiforme Hedw.—Very common.
var. resupinatum (Wils.) Schimp.—Staintondale (B.N.Y.); Rain-
cliff Wood, 1928 (C.H.W.); Throxenby, 1950 (J.R.).
var. filiforme Brid.—Harwood Dale (W.I.).
var. ericetorum B. et S.—Abundant in heather, Robin Hood’s Bay
(C.A.Ch., Y.N.U. Excn., 1946).
var. tectorum Brid.—Staxton, 1951 (J.R.).

**HYPNUM** Hedwig

**CTENIDIUM** (Schimper) Mitten
molluscum (Hedw.) Mitt.—Scalby Beck (F.B.); Cloughton Cliff
(C.H.W.); Forge Valley, 1949 (J.R.).

**HYOCOMIUM** Bruch et Schimper
flagellare B. et S.—Robin Hood’s Bay in stream (Y.N.U. Excn.,
1933); Blueberry Hill, Goathland (B.N.Y.).

**RHYTIDIADELPHUS** (Lindberg) Warmstorf
triquetrus (Hedw.) Warnst.—Common.
squarrosus (Hedw.) Warnst.—Very common.
loreus (Hedw.) Warnst.—Hackness, Saltergate (B.N.Y.); Langdale
End (C.H.W.); Silpho Moor, 1950 (J.R.).

**HYLOCOMIUM** Bruch et Schimper
splendens (Hedw.) B. et S.—Hackness, 1928 (H.I.T.B.); frequent,
1950 (J.R.).

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VASCULAR PLANTS
Harold Rowntree

INTRODUCTION
W. A. Sledge, Ph.D., B.Sc.

Much of the attraction for visitors to the Scarborough district lies in
the wide variety and charm of its scenery. Within easy access excursions may be made to elevated moorlands, richly wooded valleys, alluvial flats, chalk wolds and sea cliffs. The geology is as varied as the topography. Lias clays in the north about Robin Hood’s Bay give way to grits, sandstones and shales which underlie most of the area north and north-west of Scarborough. These are succeeded by Oxford clays and calcareous oolitic rocks which constitute the subsoil as far south as Seamer, Pickering and Kirbymoorside. The alluvial pastures of the Derwent plain overlie Kimmeridge Clays, and as the ground rises again further south these are replaced either by the chalk grasslands which form the northern fringe of the East Yorkshire Wolds country or, towards the coast, by superimposed glacial clays. The varied character and geology of the country are reflected in an equally varied vegetation which, both for ecological range and richness in species, is of outstanding interest. Only in its maritime vegetation is the flora poor; for high cliffs fringe the coast throughout the area and the consequent lack of sand-dunes, shingle-beaches or salt-marshes severely limits the number of maritime species.

A large part of the country to the west and north of Scarborough is covered with moorlands rising on Fylingdales Moor to an altitude of 959 ft. These upland regions and their vegetation are well described in F. Elgee’s The Moorlands of North-Eastern Yorkshire (1912). The peat formed over the grit and sandstone rocks is mostly heather-covered and over considerable areas of these moors the vegetation consists almost exclusively of Calluna. Other moorland plants commonly associated with heather all occur in varying quantity, e.g., bilberry (Vaccinium myrtillus), cowberry (V. vitis-idaea), bell heather (Erica cinerea), cross-leaved heath (E. tetralix), crowberry (Empetrum nigrum), cotton-sedge (Eriophorum angustifolium and E. vaginatum), deer-sedge (Scirpus caespitosus), purple moor-grass (Molinia caerulea) and mat-grass (Nardus stricta), and one or other of these may preponderate where-ever local conditions are favourable as on the dry gritty outcrops of the Cross Cliff escarpment where bilberry is dominant, or on the wetter peats of May Moss on Allerston High Moor and Harwood Dale Moss where heather becomes subordinate to cross-leaved heath and cotton-sedge.
The streams which flow from the high moorlands have excavated valleys and ravines the slopes of which in the lower reaches are either wooded or have been reclaimed almost to the moor edge; but in the higher parts of the gills the vegetation is open and treeless. On these slopes heather is usually of minor importance, bracken (Pteridium aquilinum) clothing great areas, with bilberry (Vaccinium myrtillus) as a secondary dominant. Bog-myrtle (Myrica gale) is an abundant and characteristic species in the swampy bottoms of many gills, e.g., Jugger Howe, Bloody Beck and upper Newton Dale.

The rarer plants of the moorlands and gills include several interesting species. Of these the dwarf cornel (Cornus suecica) and the few-flowered sedge (Carex pauciflora) are the most noteworthy. Both reach their southernmost limit in Britain on the moorlands of North-east Yorkshire. The illustration of the dwarf cornel, dated March 1st, 1796, in the first edition of Sowerby's English Botany, was drawn from a specimen which "Mr. William Travis of Scarborough, gathered . . . on the side of a valley in that neighbourhood called the Hole of Horcum, where this alpine plant grows abundantly." It is still plentiful on the north-facing bracken-clad slopes of this imposing locality and also at the upper edge of the Cross Cliff escarpment. In both localities it is associated with chickweed wintergreen (Trientalis europaea), which grows in many places on moorlands and wooded slopes between Scarborough and Whitby. Carex pauciflora is also still plentiful in bogs near the source of the River Derwent, below Lilla Cross. On Silpho Moor two species of wintergreen (Pyrola minor and P. media) are to be found, and Linnaea borealis—perhaps introduced with planted trees—was once gathered here but has never been refound. Other notable species include the long-leaved sundew (Drosera anglica), bog rosemary (Andromeda polifolia), dwarf tway-blade (Listera cordata) and Leucorchis alibida, the last-named forming hybrids with the fragrant orchid (Gymnadenia conopsea) at the Hole of Horcum.

The numerous dales which intersect the moorlands are well wooded. These woodlands represent remains of the forest which formerly covered all the lower ground and extended over all or nearly all the now treeless slopes of the upper reaches of the dales and gills as is indicated by the remains of trees, principally birch, in the peat, and the occasional occurrence of scrub and solitary trees on these slopes. On the sandstones, grits and non-calcareous soils of the northern and central part of the district, e.g., Goathland, Newton Dale, Cross Cliff and Langdale, birch, oak, mountain ash, holly and hawthorn predominate. The flora on the acidic soils of these woodlands is relatively poor in species; moorland plants such as heather (Calluna), bilberry (Vaccinium myrtillus) and wavy hair-grass (Deschampsia flexuosa), typical of birch and oak woods on well-leached and shallow soils, are here widespread and abundant. On deeper and damper soils especially with a northern aspect as in Raincliffe Wood, the undergrowth often consists largely of ferns (Dryopteris filix-mas, D. dilatata, Athyrium filix-femina and Blechnum spicant) and mosses. In addition to these semi-natural
woodlands there has been extensive afforestation of the drier moorland peat soils with conifer plantations.

The transition from the siliceous soils to the calcareous sandstones and the oolitic limestones of the southern part of the moorlands is reflected in changes in the woodlands, oak, ash and beech prevailing with varying admixture of elm (Ulmus glabra) and sycamore (Acer pseudo-platanus). The flora of the woodlands on the more basic soils, as at Thornton-le-Dale, Yedmandale and Forge Valley, is far richer in species. Cumbine (Aquilegia vulgaris), herb christopher (Actaea spicata), spindle tree (Euonymus europaeus), stone bramble (Rubus saxatilis), lily-of-the-valley (Convallaria majalis) and herb paris (Paris quadrifolia), are all plentiful in several localities. Other uncommon plants include mountain St. John’s wort (Hypericum montanum), fly orchid (Ophrys insectifera) and yellow star-of-Bethlehem (Gagea lutea). The beautiful wooded glacial channel of Forge Valley is a particularly interesting area. Here, in addition to most of the species already mentioned, may be found green hellebore (Helleborus viridis), wood vetch (Vicia sylvatica), Cephalanthera longifolia and the sedges Carex strigosa and C. pendula. Higher up the valley towards Hackness the may lily (Maianthemum bifolium) still maintains a somewhat precarious existence in its only indigenous British station on the north-facing rim of the valley; whilst the fern Dryopteris aemula grows in one of its very few Yorkshire stations not far away, accompanied by a profusion of chickweed wintergreen (Trientalis europaea). Under beeches both at Forge Valley and Thornton-le-Dale the yellow bird’s nest (Monotropa hypopitys) and the bird’s nest orchid (Neottia nidus-avis) have been found.

Much of the country between Pickering and Scarborough is grassland and the open, dry limestone slopes furnish many interesting plants in addition to the more widely distributed species typical of calcareous grasslands. Good examples of these pastures may be seen on the treeless slopes of Dalby Warren near Thornton-le-Dale and the hill sides above Hutton Buscel, Ayton and Seamer. Rock-rose (Helianthemum nummularium), salad burnet (Poterium sanguisorba) and wild thyme (Thymus serpyllum) are abundant in such places, sometimes accompanied by burnet rose (Rosa spinosissima), ploughman’s spikenard (Inula conyzae), hawkweed oxtongue (Picris hieracioides), woolly-headed thistle (Cirsium eriophorum), pyramid orchid (Anacamptis pyramidalis) and burnt tip orchid (Orchis ustulata). On one dry bank near Seamer yellow with rock-rose may be seen in addition, English flax (Linum anglicum), purple milk vetch (Astragalus danicus), dropwort (Filipendula hexapetala), yellow bedstraw (Galium verum), clustered bellflower (Campanula glomerata), hoary plantain (Plantago media) and the grasses Koeleria gracilis and Helictotrichon pratense. Further variety is given to the flora by the marshes flanking stream sides and the limy flushes on the hill slopes, e.g., at Thornton-le-Dale. Such marly bog soils yield a vegetation in which meadow thistle (Cirsium dissectum), grass-of-parnassus (Parnassia palustris), marsh helleborine (Epipactis palustris), black bog rush (Schoenus nigricans), sedges (Blysmus com-
pressus, Scirpus pauciflorus, Carex dioica and C. lepidocarpa) and club-moss (Selaginella selaginoides) occur.

South of a line running from Pickering eastwards to Seamer and Cayton the rich agricultural land of the flat, low-lying, alluvial plain of the Derwent affords fewer areas of interest to the botanist. The swampy carrs which formerly existed here have been drained and the remnants of the marsh flora are now largely confined to the river banks and the dyke sides of the Hertford River and Sherburn Cut. As the ground rises again to the northern edge of the East Yorkshire wolds, beds of sand underlying the chalk are exposed about Flixton and Staxton and the sandy fields and sand pits in this neighbourhood provide a distinctive flora which contrasts markedly with that in any other part of the region. Numerous species, rare or absent elsewhere in the Scarborough district, may be seen here. A perennial segregate of the wild pansy (Viola lepida) is abundant about Flixton sand-pits and the rare grass Apera interrupta also occurs here with wild alyssum (Alyssum calycinum), hare’s-foot trefoil (Trifolium arvense), soft knotted trefoil (T. striatum), bird’s foot (Ornithopus perpusillus), basil thyme (Acinos arvensis) and many other plants characteristic of sandy, well-drained soils. The cornfield weeds also include many species which are rarely, if ever, met with elsewhere in the area. One such field near Staxton yielded small-flowered fumitory (Fumaria parviflora), corn cockle (Agrostemma githago), sainfoin (Onobrychis vicifolia), corn Venus’s looking-glass (Specularia hybrida) and henbit (Lamium amplexicaule).

Chalk grasslands clothe much of the higher ground to the southern boundary of the district with arable cultivation on the overlying glacial clays nearer the coast. The grasslands are for the most part too heavily grazed to furnish ground equal in botanical interest to the limestones north of the Derwent valley though some interesting species such as the broomrape (Orobanche elatior) may be found in the scattered chalk pits on the northern edge of the wolds. The withdrawal from cultivation and grazing afforded by the sea cliffs also accounts for the occurrence here of some species, including the bloody cranesbill (Geranium sanguineum), rare or absent in other parts of the area.

As regards Scarborough itself and its immediate vicinity, the Castle Hill and Scarborough and Thro xenby Meres provide the best ground for the botanist. On the Castle Hill, composed of an outlying mass of the hard calcareous rocks of the middle oolite, alexanders (Smyrnium olusatrum) is abundant with clary (Salvia horminoides), spotted and toothed medick (Medicago arabica and M. denticulata) and a few of the commoner maritime species such as the two sea plantains (Plantago maritima and P. coronopus). Scarborough Mere is now converted into a pleasure garden and greatly altered from its original sedge-fringed condition though a few of the rarities at one time to be found here still linger. Of these the great spearwort (Ranunculus lingua), sea dock (Rumex maritimus) and flowering rush (Butomus umbellatus) have all been seen in recent years. Thro xenby Mere is less spoilt, and about its reedy margin of horsetail (Equisetum limosum), yellow flag (Iris
pseudacorus), reedmace (Typha latifolia) and sedge (Carex rostrata), 
other marsh plants including bog-bean (Menyanthes trifoliata), marsh 
cinquefoil (Comarum palustre) and marsh stitchwort (Stellaria palustris) 
may be seen.

FOREWORD

Harold Rowntree

The nomenclature used in this list is that found in the "Check list 
of British Vascular Plants," compiled by Professor A. R. Clapham 
(Journal of Ecology, Vol. 33, pp. 308-347, 1946), with synonyms 
omitted for the sake of brevity. The English names used are taken 
from the "Index of British Plants according to the London Catalogue" 

The list has been prepared from the records of the Scarborough Field 
Naturalists' Society (with recent additions by the compiler) : from the 
records contained in J. G. Baker's "Flora of North Yorkshire," 1906, 
in F. Arnold Lees' "Supplement to the Yorkshire Floras," and in "The 
Naturalist"; from the Horrell Herbarium, through the kindness of Dr. 
W. A. Sledge, Ph.D., B.Sc., ; from the records of Miss C. M. Rob, 

The compiler's grateful thanks are accorded to Dr. Sledge and to 
Miss Rob, for their help, also to Mr. H. Britten (late of Whitby), 
Mr. R. D. Meikle, of Kew, Mr. G. W. Temperley and Mr. S. Max Walters 
of Cambridge.

The Society has been fortunate in the long list of botanists who have 
contributed to its records ; such names as the following come readily to 
mind : D. W. Bevan, A. I. Burnley, R. Gilchrist, E. C. Horrell, 
E. B. Lotherington, T. N. Roberts and T. B. Roe. Others, who have left 
the district, are G. W. Temperley and H. E. Bentham, and we are glad 
still to have with us E. R. Cross whose first records appear under the 
year 1884 and his latest in 1948, and whom we look upon as "The Grand 
Old Man" of local botany.

When of interest, the date of the first known record of a species is 
given ; the great majority still occur, except where it is stated that they 
have not been found recently.
FLOWERING PLANTS

Abbreviations

S/C.A.—Surg./Commdr. Arrathoon
B.E.C.—Botanical Exchange Club
H.B.—H. Britten fil.
W.B.—W. Bean
C.C.B.—C. C. Babington
A.I.B.—A. I. Burnley
J.G.B.—J. G. Baker
D.W.B.—D. W. Bevan
H.E.B.—H. E. Bentham
H.J.B.—H. J. Burkhill
J.F.G.C.—J. F. G. Chapple
E.R.C.—E. R. Cross
H.D.—Hilda Drabble
G.C.D.—G. Claridge-Druce
R.J.F.—R. J. Flintoff
W.F.—W. Foggitt
W.J.F.—W. J. Fordham
A.G.—Alan Garton
J.G.—James Green
T.G.—Theakston’s Guide to Scarborough, 1854
Hb.—Herbarium
P.M.H.—P. M. Hall
J.C.—J. Cryer

x—Hybrid xx—Intergeneric Hybrid *—Alien

PHANEROGAMS — FLOWERING PLANTS
DICOTYLEDONES
RANUNCULACEAE

CLEMATIS Linnaeus
*vitalba L.—TRAVELLER’S JOY, CLEMATIS, OLD MAN’S BEARD. Rare; Sawdon Dale, 1901 (W.F.); Hackness, 1939 (E.R.C.).

THALICTRUM Linnaeus

ANEMONE Linnaeus
nemorosa L.—WOOD ANEMONE. Abundant in Forge Valley, etc.
RANUNCULUS Linnaeus
drouetii Schultz, F.—WATER CROWFOOT. Rare; Flamborough (Y.N.U. Excn., 1906).
heterophyllus Web.—WATER CROWFOOT. Uncommon; pond at top of Hay Brow, 1941 (H.R.).
peltatus Schrank (incl. R. floribundus Bab. and R. penicillatus Bab.) Common in ponds, etc.
baudottii Godr.—Pond at Suffield, 1934 (C.M.R.).
lenormandi Schultz, F.—Rare; Harwood Dale, 1946 (A.G.).
hederaceus L.—IVY-LEAVED WATER CROWFOOT. Uncommon; near Staintondale, 1894 (W.F.); Hagg House Farm, Pickering, 1939 (H.R.); Cloughton, 1898 (E.R.C.).
sceleratus L.—CELERY-LEAFED CROWFOOT. Uncommon; Ganton Carrs, 1915 (E.C.H.); Scarborough Mere and Cayton, 1912 (H.R.); Seamer, 1896 (W.F.).
flammula L.—LESSER SPEARWORT. Scarborough and Throxnby Meres, plentiful, 1913 (E.C.H.); Seamer Moor, 1914 (E.C.H.); Staintondale, 1906 (W.F.).
lingua L.—GREATER SPEARWORT. Rare; Scarborough Mere, 1940 (H.R.); pond near Cayton Station, 1914 (G.W.T.); Filey, 1914 (A.I.B.); Cayton Carrs, 1916 (E.C.H.).
auricomus L.—WOOD CROWFOOT, GOLDILOCKS. Common; Forge Valley, Lady Edith's Drive, etc.
acris L.—COMMON BUTTERCUP. Abundant.
repens L.—CREEPING BUTTERCUP. Abundant.
bulbosus L.—BULBOUS BUTTERCUP. Abundant.
parviflorus L.—SMALL-FLOWERED CROWFOOT. Rare; Thornton-le-Dale, 1922 (R.J.F., J.G.); Filey, 1948 (Miss R. Kilby teste W.A.S.).
arvensis L.—CORN CROWFOOT. Uncommon; Cayton Carrs, 1914 (G.W.T.); Thornton-le-Dale and Robin Hood's Bay, 1939 (H.R.).
ficaria L.—LESSER CELANDINE. Abundant.

CALTHA Linnaeus
palustris L.—MARSH MARIGOLD. Common in wet places; Forge Valley, Raincliffe Wood, etc.

TROLLIUS Linnaeus
europaeus L.—GLOBE FLOWER. Local; Levisham, 1912 (A.I.B.).

HELLEBORUS Linnaeus
viridis L.—GREEN HELLEBORE. Uncommon; Goathland, 1869 (A.S.S.); Beck Hole, 1928 (W.A.S.); West Ayton Castle, Lowdales, Ellerburn (H.R.).
*foetidus L.—STINKING HELLEBORE. Rare; West Heslerton, 1884 (W.G.). Now found only in cultivation.
ERANTHIS Salisbury
*hymalis (L.) Salisbury—WINTER ACONITE. Uncommon; naturalised at Brompton, West Flotmanby and Foxholes (H.R.).

AQUILEGIA Linnaeus
vulgaris L.—COLUMBINE. Uncommon; Forge Valley, 1914 (G.W.T.); Dalby Nut Wood, 1912 (A.I.B.); between Levisham and Pickering, 1908 (W.F.).

ACONITUM Linnaeus
*anglicum Stapf.—MONKSHOOD. Rare; Ellerburn, 1914 (H.R.); Newton House, Falling Foss, 1912 (E.R.C.); only as a garden escape.

ACTAEA Linnaeus
spicata L.—BANEBERRY, HERB CHRISTOPHER. Rare; Thornton-le-Dale, 1914 (G.W.T.); Yedmandale, 1915 (E.C.H.); Forge Valley and Givendale (H.R.).

BERBERIDACEAE

BERBERIS Linnaeus
vulgaris L.—BARBERRY. Rare; West Ayton Castle and Wilton, 1912 (E.R.C.).

MAHONIA Nuttall
aquifolium (Pursh) Nutt.—HOLLY-LEAVED BARBERRY. Uncommon; Forge Valley and Cloughton Bank, probably planted as cover for game (H.R.).

NYMPHAEACEAE

NUPHAR Smith, Sir J. E.
lutea (L.) Sm.—YELLOW WATER-LILY. Uncommon; Scarborough Mere, 1891 (E.R.C.); River Derwent at Ayton, 1912 (H.R.).

NYMPHAEA Linnaeus
alba L.—WHITE WATER LILY. Rare; Scarborough Mere, 1885 (E.R.C.); Beastcliff Undercliff, 1904 (E.R.C.).

PAPAVERACEAE

PAPAVER Linnaeus
*somniferum L.—OPIUM POPPY. Rare; Scarborough (J.G.B.), probably a garden escape.
rhoeas L.—FIELD POPPY. Plentiful.
dubium L.—LONG SMOOTH-HEADED POPPY. Common in waste places.
argemone L.—LONG PRICKLY-HEADED or PALE POPPY. Uncommon; Flixton, 1915 et seq. (G.W.T.); Beedale, 1945 (C.M.R.).
MECONOPSIS Viguier
*cambrica (L.) Vig.—YELLOW WELSH POPPY. Rare; Fylingdales (J.G.B.); Thornton-le-Dale and East Ayton (H.R.); probably a garden escape.

CHELIDONIUM Linnaeus
*majus L.—CELANDINE. Common in hedges near villages; East Ayton, Snainton, Ebberston, etc.

FUMARIACEAE

CORYDALIS Medikus
*lutea (L.) DC.—YELLOW CORYDALIS. Plentiful on village walls, particularly at Thornton-le-Dale.
claviculata (L.) DC.—CLIMBING CORYDALIS. Uncommon; Hayburn Wyke, 1941 (H.R.); Cloughton, 1915 et seq. (G.W.T.).

FUMARIA Linnaeus
capreolata L.—RAMPANT FUMITORY. Uncommon; Everley and Burniston, 1914 et seq. (G.W.T.); roadside near Newby, 1914 (T.B.R.); Cloughton, 1896 (W.F.).
officinalis L.—COMMON FUMITORY. Abundant in dry fields and on roadsides.
vaillantii Lois.—Rare; quarry near Seamer Station, plentiful, 1897 (W.F.).
parviflora Lam.—Rare, Staxton (Y.N.U. Excn., 1943); Thornton-le-Dale, 1944 (H.R.); Forge Valley, 1948 (H.R. texte C.M.R.); quarry near Seamer Station, plentiful, 1897 (W.F.).

CRUCIFERAE

CHEIRANTHUS Linnaeus
*cheiri L.—WALLFLOWER. Uncommon; Scarborough Castle Hill, well established (H.R.).

NASTURTIIUM Brown, R.
officinale Brown, R.—COMMON WATER-CRESS. Common in becks.

RORIPPA Scopoli
sylvestris (L.) Bess.—CREEPING YELLOW-CRESS. Rare; Scarborough Mere, 1940 (H.R.).
islandica (Oeder) Borb.—MARSH YELLOW-CRESS. Uncommon; Scarborough Mere, 1914 (E.C.H.).
amphibia (L.) Bess.—GREAT YELLOW-CRESS. Rare; banks of River Derwent at Yedingham, 1947 (H.R.); Forge Valley, 1916 (W.F.).
FLOWERING PLANTS

BARBAREA Ehrhart, B.

vulgāris Brown, R.—YELLOW ROCKET. Common; Cloughton Newlands, Stone Haggs, etc.


ARABIS Linnaeus

hirsuta (L.) Scop.—HAIRY ROCK-CRESS. Uncommon; Forge Valley, Flixton, Ellerburn (H.R.).

CARDAMINE Linnaeus

amara L.—LARGE-FLOWERED BITTER-CRESS. Rare; Forge Valley, 1914 (G.W.T.).

pratensis L.—LADY’S SMOCK, CUCKOO-FLOWER. Abundant in meadows. A double-flowered variety grows at Thornton-le-Dale (H.R.).

hirsuta L.—HAIRY BITTER-CRESS. Common.

flexuosa With.—WAVY HAIRY BITTER-CRESS. Commoner than C. hirsuta; Forge Valley, etc.

*latifolia Vahl.—Church Becks, Scalby, well established, 1949. Native of the Pyrenees; an addition to the British List (H.R., det. J. E. Lousley).

DENTARIA Linnaeus

*bulbifera L.—BULBIFEROUS CORALWORT. Rare; Scalby Churchyard, 1946 et seq. (H.R.).

ALYSSUM Linnaeus

*alyssoides (L.) L.—ALYSSUM. Rare; Staxton sandpits, 1942 et seq. (E.R.C., H.R.).

LOBULARIA Desvaux

*maritima (L.) Desv.—SWEET ALYSSUM. Rare; Scalby, 1914 (E.C.H.); 1915 (A.I.B.); probably a garden escape.

EROPHILA De Candolle

verna (L.) Chev.—WHITLOW GRASS. Common on old walls, etc.

COCHLEARIA Linnaeus

officinalis L.—SCURVY-GRASS. Common; Marine Drive, Castle Hill, Cloughton Wyke, Filey, etc.

danica L.—HASTATE-LEAVED SCURVY-GRASS. Bempton Cliffs, 1947 (Dr. M. Ealing, teste W.A.S.); Ravenscar, 1948 (H.R., teste C.M.R.).

ARMORACIA Gilibert

*lapathifolia Gil.—HORSE RADISH. Common; probably only as an escape from cultivation.
MALCOLMIA Brown, R.

*maritima (L.) Brown, R.—VIRGINIAN STOCK. Rare; Scarborough Mere, waste ground, 1916 (E.C.H., det. G.C.D.).

HESPERIS Linnaeus

*matronalis L.—DAME’S VIOLET. Uncommon; waste places near habitation, Langdale End, 1915 (E.C.H.); Thornton-le-Dale, Pickering, etc. (H.R.).

ARABIDOPSIS Heynhold

thaliana (L.) Heynh.—THALE CRESS. Rare; Hackness, 1914 (A.I.B.); Thornton-le-Dale, 1944 (H.R.).

SISYMBRIUM Linnaeus

officinale (L.) Scop.—HEDGE MUSTARD. Abundant.

*altissimum L.—Rare and casual; Thornton-le-Dale, 1922 (R.J.F., J.G.).

*orientale L.—Rare and casual; Thornton-le-dale, 1922 (R.J.F., J.G.).

DESCURAINIA Webb et Berthelot

sophia (L.) Prantl—FLIXWEED. Rare; Scarborough, (J.G.B.); not seen in recent years.

ALLIARIA Ehrhart, B.

petiolata (Bieb.) Cav. et Grande—GARLIC MUSTARD, JACK BY THE HEDGE. Abundant.

ERYSIMUM Linnaeus

cheiranthoides L.—TREACLE MUSTARD. Rare; Stepney Road and Seamer Lime Works, 1940 (H.R.); not seen since 1941; waste ground Scarborough Cemetery, 1899 (W.F.); Pickering, 1945 (M.E.P.).

CONRINGIA Adanson

*orientalis (L.) Dum.—HARE’S EAR. Rare and casual; Thornton-le-Dale Mill, 1945 (H.R., teste W.A.S.).

CAMELINA Crantz

*sativa (L.) Crantz—GOLD OF PLEASURE. Occasional; Scalby, 1886 (E.R.C.); Scarborough Mere, 1916 (E.C.H.); Staxton and Thornton-le-Dale, 1941 (H.R.).

*alyssum (Mill.) Thell.—Rare and casual; Thornton-le-Dale, 1946 (H.R., teste W.A.S.).

BRASSICA Linnaeus

oleracea L.—SEA CABBAGE. Robin Hood’s Bay, 1884 (E.R.C.).

*napus L.—WILD RAPE. Uncommon; Scarborough Castle Hill, 1912 (A.I.B.).
*campestris* L. (inc. *B. rapa* L.)—FIELD CABBAGE. Common.
*nigra* (L.) Koch—BLACK MUSTARD. Uncommon; Robin Hood’s Bay (Hb. E.C.H.).

**SINAPIS** Linnaeus

*arvensis* L.—WILD MUSTARD, CHARLOCK. Abundant.

**DIPLOTAXIS** De Candolle

tenuifolia (L.) DC.—WALL ROCKET. Rare; Scarborough Mere, waste land, 1939 et seq. (H.R.); near Seamer Station, 1901 (W.F.).
muralis (L.) DC.—SAND ROCKET, WALL MUSTARD. Rare; Wykeham Abbey, 1902 (W.F.).

**CAPSELLA** Medikus

*bursa-pastoris* (L.) Med.—SHEPHERD’S PURSE. Abundant.

**CORONOPUS** Boehmer

*squamatus* (Forsk.) Asch.—WART-CRESS. Rare; Seamer Carrs, 1915 (T.B.R.); Woodlands Farm, 1947 (H.R.).
didymus (L.) Sm.—LESSER WART-CRESS. Rare; Scarborough (J.G.B.); not seen in recent years.

**LEPIDIUM** Linnaeus

*latifolium* L.—BROAD-LEAVED PEPPERWORT or CRESS. Rare; Robin Hood’s Bay (B.R.).
*ruderale* L.—NARROW-LEAVED PEPPERWORT. Very rare; Scarborough Old Pier, 1854 (T.G.).
campestre (L.) Brown, R.—FIELD PEPPERWORT. Rare; Robin Hood’s Bay (B.R.).
smithii Hook.—GREY PEPPERWORT. Rare; Sleights (B.R.).

None of the above pepperworts has been recorded in recent years.

**CARDARIA** Desvaux

*draba* (L.) Desv.—HOARY CRESS. Uncommon; Marine Drive, Scarborough Mere, Thornton-le-Dale (H.R.).

**THLASPI** Linnaeus


**IBERIS** Linnaeus

*amara* L.—CANDYTUFT. Rare; Scarborough Mere and Yedmandale, 1916 (E.C.H.); an outcast from gardens.

**BUNIAS** Linnaeus

*erucago* L.—Rare; Hutton Buscel, 1945, 1947 (H.R., det. W.A.S.).
CAKILE Miller

maritima Scop.—SEA-ROCKET. Local; Cayton Bay, 1904 (E.R.C.); one plant, 1916 (A.I.B.); none seen in 1940 (E.R.C.); appeared again in 1947 (H.R.); abundant under barbed-wire defences on Foreshore Road, Scarborough, in 1942, declined the following year and has now disappeared.

RAPHANUS Linnaeus

raphanistrum L.—WILD RADISH. Common; Seamer Moor (E.C.H.); Hackness (G.W.T.); Thornton-le-Dale (H.R.).

RESEDA Linnaeus

alba L.—UPRIGHT or WHITE MIGNONETTE. Rare; near Seamer Station, 1894 (W.F.).
lutea L.—WILD MIGNONETTE. Not uncommon; Stone Haggs, 1913 (T.B.R.); Yedmandale Quarry, 1914 (E.C.H.); Pexton Moor. Thornton-le-Dale (H.R.).
stricta Pers.—SPIKE MIGNONETTE. Rare; Grosmont (B.R.).
luteola L.—WELD, DYER’S ROCKET. Local; plentiful on Castle Hill, Scarborough, 1914 (E.C.H.).

CISTACEAE

HELIANTHEMUM Miller

nummularium (L.) Mill.—ROCK-ROSE. Common; Yedmandale, Forge Valley, Thornton-le-Dale, etc.

VIOLACEAE

VIOLA Linnaeus

odorata L.—SWEET VIOLET. Common.
var. dumetorum (Jord.) Rouy. et Fouc.—WHITE SWEET VIOLET. Common.
var. subcarnea Jord.—FLESH COLOURED SWEET VIOLET. Rare; Thornton-le-Dale, 1949 (H.R., det. S.M.W.).
hirta L.—HAIRY VIOLET. Uncommon; Yedmandale, 1914 (E.C.H.); Forge Valley, 1912 (A.I.B.).
hirta L. x odorata L. (x V. sepincola Jord.)—Forge Valley (A.I.B., teste G.C.D.); Ellerburn, 1915 (A.I.B.).
palustris L.—MARSH VIOLET. Uncommon; Bickley, 1913 (G.W.T.); near Falcon Inn, 1940 (H.R.).
reichenbachiana Bor.—WOOD VIOLET. Occasional.
riviniana Reich.—DOG VIOLET. Common.
segetalis Jord.—Yedmandale Seamer Carrs (E.C.H., teste C. Drabble).
deseglisei Bor.—Seamer Moor (E.C.H., teste C. Drabble).
tricolor agg.—HEARTSEASE. Abundant.
lejeunii Jord.—Cayton Carrs (E.C.H., teste C. Drabble).
lepidia Jord.—Plentiful at Flixton and Staxton (H.R.).
lutea Huds.—YELLOW MOUNTAIN PANSY. Seamer Moor, very rare, 1854 (T.G.).

POLYGALACEAE

POLYGALA Linnaeus

vulgaris L.—MILKWORT. Considerably less common than P. serpyllifolia, Whisperdales, 1913 (Hb. É.C.H.).
oxypetra Reich.—Speeton (Y.N.U. Excn., 1910); Silpho Moor, a doubtful record, 1914 (T.B.R.).
seryllifolia Hose—HEATH MILKWORT. Common on heaths.

CARYOPHYLLACEAE

SAPONARIA Linnaeus

*officinalis L.—SOAPWORT. Rare; Fylingdales (C. C. Babington); Castle Hill, Scarborough (J.G.B.); not seen in recent years.

SILENE Linnaeus

cucubalus Wib.—BLADDER CAMPION. Common.
gallica agg.—SMALL-FLOWERED CATCHFLY. Rare; Cayton Carrs and Thornton-le-Dale, 1940 (H.R.).
anglica L.—ENGLISH CATCHFLY. Rare; corn-field, Forge Valley, 1915 (E.C.H.); Staxton sand-pits, 1940 (E.R.C.).
*dichotoma Ehrh.—Rare and casual; Staxton sand-pits, 1943 (W.A.S.).

MELANDRIUM Roehling

noctiflorum (L.) Fr.—NIGHT-FLOWERING CATCHFLY. Common.
album (Mill.) Garcke—WHITE CAMPION. Common on roadsides, Ganton, Sherburn, Ayton, Seamer, etc.
album x dioicum—Seamer Carrs, 1915 (E.C.H.).
dioicum (L.) Coss. et Germ.—RED CAMPION. Abundant.

LYCHNIS Linnaeus

flos-cuculi L.—RAGGED ROBIN. Common; Scarborough and Thro xen by Meres, Hackness, Ellerburn, etc.

AGROSTEMMA Linnaeus

githago L.—CORN-COCKLE. Rare; Ayton, 1913 (T.B.R.); Flix ton and Yedmandale, 1916 (E.C.H.); Staxton, 1940 (H.R.).

CERASTIUM Linnaeus

tetrandrum Curt.—SEA MOUSE-EAR CHICKWEED. Rare; Flamb orough (Y.N.U. Excn., 1923).
viscosum L.—NARROW-LEAVED MOUSE-EAR CHICKWEED. Common in dry places.
vulgatum L.—MOUSE-EAR CHICKWEED. Abundant.


STEELLARIA Linnaeus

media (L.) Vill.—CHICKWEED. Abundant.
holostea L.—GREATER STITCHWORT. Abundant.
palustris Retz.—MARSH STITCHWORT. Uncommon; Cayton Carrs, 1916 (E.C.H.); Throxford Mere, 1916 (A.I.B.); Newtondale (S.C.A.).
graminea L.—LESSER STITCHWORT. Common in damp grassy places; Throxford Mere, Raincliffe Wood, etc.
alsine Grimm.—BOG STITCHWORT. Common in wet places; Forge Valley, Troutsdale, etc.

ARENARIA Linnaeus

trinervia L.—THREE-NERVED SANDWORT. Common; Langdale End, Hackness, etc.
seryllifolia L.—THYME-LEAVED SANDWORT. Common in dry places.

var. macrocarpa Lloyd—Rare; Scarborough Castle Hill (J.G.B.);
not seen in recent years.
leptoclados (Reich.) Guss.—SANDWORT. Rare; High Fordon, 1946 (E.R.C., H.R. det. C.M.R.).
peploides L.—SEA-PURSLANE. Rare; Scalby Mills and Cayton Bay, 1914, but not there in 1916 (A.I.B.); Scarborough (J.G.B.);
not seen in recent years.

SAGINA Linnaeus

apetala Ard.—ANNUAL PEARLWORT. Common on dry banks, walls, etc.
ciliata Fr.—CILIATED PEARLWORT. Scarborough (J.G.B.);
not seen recently.
procumbens L.—PROCUMBENT PEARLWORT. Common in dry places.
nodosa (L.) Fenzl.—KNOTTED SPURREY. Uncommon, in damp places; Langdale End, 1916 (A.I.B.); Flixton, Dalby Dale, 1943 (H.R.).

SPERGULA Linnaeus

arvensis L.—CORN SPURREY. Common in cornfields.
sativa Boenn.—Rare; Hutton Buscel Moor, 1916 (E.C.H.).
FLOWERING PLANTS

SPERGULARIA Presl., J. et C.

rubra (L.) Presl., J. et C.—SANDWORT SPURREY. Rare; Cloughton Quarry, 1915 (A.I.B.).

marginata (DC.) Kitt.—GREATER SANDWORT SPURREY. Rare; Scarborough North Shore (J.G.B.); not seen recently.

PORTULACACEAE

CLAYTONIA Linnaeus

*alsinoides Sims—CLAYTONIA. Introduced in 1947 at Thornton-le-Dale from the Lake District (C. Green).

MONTIA Linnaeus

fontana L.—WATER BLINKS. Uncommon; Cloughton Hulleys, Hole of Horcum, 1940 (H.R.).

TAMARICACEAE

TAMARIX Lirmaeus

*gallica L.—TAMARISK. Uncommon; naturalised on the cliffs at Scarborough, 1940 (H.R.).

HYPERICACEAE

HYPERICUM Linnaeus

androsaemum L.—TUTSAN. Rare; White Nab and cliffs south of Scarborough, 1941 (H.R.).

*calycinum L.—LARGE-FLOWERED ST. JOHN’S WORT. Uncommon; naturalised at Scarborough Mere, 1940 (H.R.).

perforatum L.—ST. JOHN’S-WORT. Common; Scalby Wyke, Thornton-le-Dale, Silpho Moor, etc.

quadrangulum L.—ST. PETER’S-WORT. Common; Seamer Carrs, Nab Gate Springs, Raincliffe Wood, etc.


pulchrum L.—SLENDER ST. JOHN’S-WORT. Common.

hirsutum L.—HAIRY ST. JOHN’S-WORT. Common; Forge Valley, Thornton-le-Dale, etc.


elodes L.—MARSH ST. JOHN’S-WORT. Rare; near Falcon Inn, 1940 (E.R.C., H.R.).

MALVACEAE

MALVA Linnaeus

moschata L.—MUSK MALLOW. Uncommon; Pexton Moor, Langdale End, 1915 (E.C.H.); pink and white forms occur.
sylvestris L.—COMMON MALLOW. Common; Scarborough Castle Hill, Yedmandale, etc.
neglecta Wallr.—DWARF MALLOW. Uncommon; Ayton, 1895 (W.F.); Ganton, 1915 (E.C.H.); Hutton Buscel, Folkton, Brompton (H.R.).
*verticillata L.—ERECT MALLOW. Rare; single plant, Scarborough, 1899 (W.F.).

TILIACEAE

TILIA Linnaeus

*platyphyllos Scop.—LARGE-LEAVED DOWNY LIME. Forge Valley, 1914, planted (Hb. E.C.H.); planted, Wykeham (W.F.).
*vulgaris Hayne—COMMON LIME. Frequently planted, as in Lady Edith’s Drive, etc.
cordata Mill.—SMALL-LEAVED LIME. Rare; High Langdale End, 1915 (A.I.B.).

LINACEAE

LINUM Linnaeus

catharticum L.—PURGING FLAX. Common in pastures.
anglicum Mill.—PERENNIAL BLUE FLAX. Rare; Ruston Cow Pasture, 1908 (D.W.B.); Harper’s Lane, 1898 (E.R.C.).
bienne Mill.—NARROW-LEAVED FLAX. Rare; Goosedale, Cloughton, 1919 (H.E.W.).
*usitatissimum L.—COMMON FLAX. Uncommon; only as an escape; waste ground, Scarborough Mere, 1915 (E.C.H.); during the 1939-45 war it grew plentifully on the roadside when linseed was being carted between Hull and Scarborough.

GERANIACEAE

GERANIUM Linnaeus

sanguineum L.—BLOODY CRANE’S-BILL or GERANIUM. Local; abundant at Primrose Valley, Filey, 1914 (E.C.H.); High Fordon, 1947 (H.R.).
*versicolor L.—STRIPED CRANE’S-BILL. Rare; Stepney Road, Scarborough, 1886, 1901, 1912 (E.R.C.).
*phaeum L.—DUSKY CRANE’S-BILL. Rare; Hackness, 1907 (E. T. Hardy); Ebberston, 1933 (D.W.B.).
*var. lividum (l’Hérît.) Pers.—Red Scar Lane, Newby, 1916 (A.I.B.).
pratense L.—BLUE MEADOW CRANE’S-BILL. Abundant in meadows.
pyrenaicum Burm. f.—MOUNTAIN CRANE’S-BILL. Rare; above Allerston, 1941 (H.R.).
molle L.—DOVE’S-FOOT CRANE’S-BILL. Abundant in waste places.
dissectum L.—CUT-LEAVED CRANE’S-BILL. Common; Yedmandale, Seamer Carrs (E.C.H.); Sawdon Dale, Whisperdales, etc. (H.E.B.).
lucidum L.—SHINING CRANE’S-BILL. Rare; Holbeck Gardens, Scarborough, 1944 et seq. (H.R.).
robertianum L.—HERB ROBERT. Abundant in waste places, etc.

ERODIUM l’Héritier de Brutelle
cicutarium (L.) Ait.—HEMLOCK STORK’S-BILL. Common in waste places.
pimpinellifolium (Cav.) Sibth.—Uncommon; Ellerburn, 1945 (H.R.).
moschatum (L.) Ait.—MUSKY STORK’S-BILL. Rare; Falsgrave, 1854 (T.G.); not seen in recent years.

OXALIS Linnaeus
acetosella L.—WOOD SORREL. Abundant.
var. subpurpurascens DC.—Rare; Silpho Moor under birch, 1932 (H.E.B.).
*comiculata L.—YELLOW WOOD SORREL. Rare; Ellerburn, 1922 (J.G., R.J.F.).

BALSAMINACEAE

IMPATIENS Linnaeus
*glandulifera Royle—INDIAN BALSAM. Waste ground, Scarborough Mere, 1915 (E.C.H.); spreading along the banks of the river Derwent, 1947 (H.R.).

AQUIFOLIACEAE

ILEX Linnaeus
aquifolium L.—HOLLY. Common.

CELASTRACEAE

EUONYMUS Linnaeus

RHAMNACEAE

RHAMNUS Linnaeus
catharticus L.—PURGING BUCKTHORN. Uncommon; Forge Valley, 1914 (Miss E. M. le Tall); Ayton, 1914 (T.B.R.); Ellerburn, 1912 (G.W.T.).
ACERACEAE

ACER Linnaeus
*pseudo-platanus L.—SYCAMORE. Common.
campestre L.—COMMON MAPLE. Common.

HIPPOCASTANACEAE

AESCULUS Linnaeus
*hippocastanum L.—HORSE-CHESTNUT. Common.

LEGUMINOSAE

GENISTA Linnaeus
tinctoria L.—DYER'S GREENWEED. Rare; Saltwick Nab, 1912 (A.I.B.); Cloughton Cliffs, 1947 (S.R.).

ULEX Linnaeus
europaeus L.—FURZE, WHIN, GORSE. Abundant.
minor Roth.—DWARF FURZE. Rare; Thornton-le-Dale, 1914 (R.J.F.).

SAROTHAMNUS Wimmer
scoparius (L.) Koch.—COMMON BROOM. Common.

ONONIS Linnaeus
repens L.—REST-HARROW. Abundant.

MEDICAGO Linnaeus
*sativa L.—LUCERNE, PURPLE MEDICK. Uncommon; Thornton-le-Dale, Scarborough Castle Hill, 1940 (H.R.).
*falcata L.—YELLOW MEDICK. Rare; Grosmont (B.R.).
lupulina L.—BLACK MEDICK. Common in waste places.
*denticala Willd.—RETICULATED MEDICK. Rare; Scarborough Castle Hill, 1896 (E.R.C.); J. G. Baker says, "This is the most northern indigenous station for the plant known in Britain."
arabica (L.)—Huds.—SPOTTED MEDICK. Uncommon; Scarborough Castle Hill, 1865 (A. E. Smith).

MELILOTUS Miller
*altissima Thuill.—MELILOT. Rare; Scalby Beck, 1914 (E.C.H.).
alba Med.—WHITE MELILOT. Rare; Staxton sand-pits, 1940 (E.R.C., H.R.).
*officinalis (L.) Lam.—COMMON MELILOT. Common; Scarborough Mere, Staxton sand-pits, Thornton-le-Dale, etc.
FLOWERING PLANTS

*indica (L.) All.—SMALL MELILOT. Rare; Thornton-le-Dale Mill, 1916 (A.I.B.); 1948 (H.R.); waste ground, Scarborough Mere, 1916 (E.C.H.).

**TRIFOLIUM** Linnaeus

pratense L.—RED CLOVER. Abundant.

*incarnatum L.—CRIMSON CLOVER. Rare and casual; High Fordon, 1915 (G.W.T., A.I.B.).

medium L.—ZIG-ZAG CLOVER. Common.


scabrum L.—HARD-KNOTTED TREFOIL. Rare; Scarborough Castle Hill (J.G.B.); not seen in recent years.

*hybridum L.—ALSIKE CLOVER. Common.

repens L.—WHITE or DUTCH CLOVER. Abundant.

fragiferum L.—STRAWBERRY-LEAVED TREFOIL. Rare; Thornton-le-Dale, 1922 (R.J.F., J.G.).

*aegrarium L.—LARGE HOP TREFOIL. Uncommon; Staxton, 1940 (H.R.).

campestre Schreb.—HOP TREFOIL. Common.

dubium Sibth.—LESSER YELLOW TREFOIL. Very common.

**ANTHyllis** Linnaeus

vulneraria L.—KIDNEY VETCH, LADY’S FINGERS. Common in dry pastures.

var. maritima Schweigg.—Saltwick Nab, 1901 (F.A.L.).

**LOTUS** Linnaeus

corniculatus L.—BIRD’-FOOT TREFOIL. Abundant.

tenuis Willd.—SLENDER BIRD’S-FOOT TREFOIL. Rare; Thornton-le-Dale, 1922 (R.J.F., J.G.).

uliginosus Schkuhr—NARROW-LEAVED BIRD’S-FOOT TREFOIL. Common in moist meadows; Throvenby Mere, Raincliffe Wood, Forge Valley, etc.

**ASTRAGALUS** Linnaeus

danicus Retz.—PURPLE MOUNTAIN MILK-VETCH. Uncommon; Stone Haggs (T.B.R.); Ruston Cow-pasture, 1884 (E.R.C.); Harper’s Lane, 1941 (H.R.).

glycophyllus L.—SWEET MILK-VETCH. Rare; Cornelian Bay, 1916 (A.I.B.); one plant still there in 1941, which just escaped destruction by incendiary bombs (H.R.).

**ORNITHOPUS** Linnaeus

ONOBRYCHIS Miller


VICIA Linnaeus

hirsuta (L.) Gray, S. F.—HAIRY TARE. Common in waste places.
cracca L.—TUFTED VETCH. Abundant.
sylvatica L.—WOOD VETCH. Uncommon; Cloughton and Hayburn Wyke Cliffs, Forge Valley, 1912 (E.R.C.); Wilson’s Wood, now part of Peasholm Glen, 1914 (E.C.H.).

sepium L.—BUSH VETCH. Abundant.

f. ochroleuca Bast.—Queen Margaret’s Road, Scarborough, 1941 (E.R.C., H.R.).

*lutea L.—ROUGH-PODDED YELLOW VETCH. Rare; Thornton-le-Dale, 1922 (R.J.F., J.G.); Ravenscar, 1948 (Miss R. Kilby).

*sativa L.—COMMON VETCH. Common.

angustifolia L.—NARROW-LEAVED CRIMSON VETCH. Commoner than the last.


*bithynica (L.) L.—ROUGH-PODDED PURPLE VETCH. Rare; Hayburn Wyke (G.M.); not seen in recent years.

LATHYRUS Linnaeus

*aphaca L.—YELLOW VETCHLING. Rare; Ravenscar growing with Vicia lutea, 1948 (Miss R. Kilby).

*hirsutus L.—HAIRY VETCHLING. Rare; Thornton-le-Dale, 1922 (R.J.F., J.G.); not seen in recent years.

pratensis L.—YELLOW MEADOW VETCHLING. Abundant.

*tuberosus L.—TUBEROUS VETCHLING, CRIMSON PEA. Rare; High Fordon, 1947 (E.R.C., H.R., teste C.M.R.).

sylvestris L.—NARROW-LEAVED EVERLASTING PEA. Rare; Wilson’s Wood. 1896 (E.R.C.); 1914 (Miss Grays); 1916 (A.I.B.); gone in 1940 (H.R.).

montanus Bernh.—TUBEROUS BITTER VETCH. Common in copses and thickets.


ROSACEAE

PRUNUS Linnaeus

spinosa L.—BLACKTHORN, SLOE. Abundant.

insititia L.—BULLACE. Common.

*domestica L.—WILD PLUM. Uncommon; Allerston, Wilton, 1941 (H.R.).

avium L.—WILD CHERRY, GEAN. Uncommon; Langdale End, Ebberston, 1939 (H.R.).
FLOWERING PLANTS

padus L.—BIRD CHERRY. Uncommon; Langdale End, 1915 (E.C.H.); Levisham, 1939 (H.R.); Hayburn Wyke, 1919 (G.B.W.).

SPIRAEA Linnaeus


FILIPENDULA Ehrhart, B.

ulmaria (L.) Max.—MEADOW-SWEET. Abundant.
hexapetala Gil.—DROPWORT. Uncommon; Seamer Carrs, 1913 (T.B.R.); Ayton, 1915 (T.B.R.); Primrose Valley, 1906 (W.J.F.); Forge Valley, Fordon, etc. (H.R.).

RUBUS Linnaeus

saxatilis L.—STONE BRAMBLE. Uncommon; Thornton-le-Dale, Forge Valley, 1940 (H.R.).
aeus L.—RASPBERRY. Common and widely distributed.
caeius L.—DEWBERRY. Uncommon; Scalby, 1914 (E.C.H.); Brompton, Hayburn Wyke, 1939 (H.R.).
fruticosus L. agg.—COMMON BRAMBLE. Abundant.
fissus Lindl.—Crosscliff ("Nat.", 1935, p. 67).
calvatus Ed. Lees ex Blox.—Levisham Station (J.G.B.).
dasyphyllus Rog.—Fylingdales (J.G.B.).
vestitus W. & N.—Staintondale and Newtondale (W.F.).

GEUM Linnaeus

urbanum L.—HERB BENNET, WOOD AVENS. Abundant.
rivale L.—WATER AVENS. Common in marshy places.
rivale L. x urbanum I. (x intermedium Ehrh.)—INTERMEDIATE AVENS. Uncommon; Forge Valley and Lady Edith’s Drive, 1942 (H.R.).

FRAGARIA Linnaeus

vesca L.—WILD STRAWBERRY Common.
*moschata Duch.—HAUTBOY STRAWBERRY. Rare; Langdale End and Lindhead, 1940 (H.R.).

POTENTILLA Linnaeus

sterilis (L.) Garcke—BARREN STRAWBERRY. Abundant.
erecta (L.) Rausch—TORMENTIL. Abundant.
procumbens Sibth.—CREEPING TORMENTIL. Rare; Goathland (B.R.).
reptans L.—CREEPING CINQUEFOIL. Common in meadows and waysides.
anserina L.—SILVER-WEED. Abundant.
*intermedia L.—HOARY CINQUEFOIL. Rare; waste ground, Scarborough Mere, 1914 (A.I.B., E.C.H.).
COMARUM Linnaeus
   palustre L.—MARSH CINQUEFOIL. Uncommon; Throxenby Mere, 1913 (E.C.H.); Hilla Green, 1946 (H.R.).

ALCHEMILLA Linnaeus
   arvensis (L.) Scop.—PARSLEY PIERT. Abundant.
   vulgaris L., sp. agg.—LADY’S MANTLE. Abundant.
   vestita (Bus.) Raunk.—Uncommon; Forge Valley, 1932 (W.A.S.).

AGRIMONIA Linnaeus
   eupatoria L.—COMMON AGRIMONY. Abundant.
   odorata (Gouan) Mill.—FRAGRANT AGRIMONY. Rare; Forge Valley, 1890 (W.W.R.).

POTERIUM Linnaeus
   sanguisorba L.—SALAD BURNET. Common; Cayton Bay, Spital Corner, Cornelian Bay, etc.

SANGUISORBA Linnaeus

ROSA Linnaeus
   arvensis Huds.—TRAILING ROSE. Uncommon; Cloughton Quarries, 1915 (E.R.C.).
   var. gallicoides (Bak.) Crep.—Uncommon; Thornton-le-Dale, 1946 (H.R. det. C.M.R.).
   canina L. agg.—DOG ROSE. Common in hedges.
   var. lutetiana (Lem.) Bak.—Rare; Robin Hood’s Bay (J.G.B.).
   villosa L., agg. (incl. R. mollis Sm.)—DOWNY ROSE. Common; Seamer Moor, Langdale End, etc.
   var. glandulosa W., Dod.—Occasional; Ayton Moor, etc.
   sherardi Dav., agg. (incl. R. omissa Déségl.)—Filey, 1922 (Y.N.U. Excn.).
   rubiginosa L., agg.—SWEET BRIAR. Rare; High Fordon, 1916 (G.W.T.).

SORBUS Linnaeus
   aucuparia L.—MOUNTAIN ASH, ROWAN. Common and widely distributed.
   aria (L.) Crantz—COMMON WHITEBEAM. Not uncommon; generally planted.
   *torminalis (L.) Crantz—SERVICE TREE. Uncommon; always planted.
FLOWERING PLANTS

MALUS Miller
pumila Mill.—CRAB APPLE. Common.

MESPILUS Linnaeus
*germanica L.—WILD MEDLAR. Rare; Thornton-le-Dale, 1922 (R.J.F., J.G.).

CRATAEGUS Linnaeus
oxyacanthoides Thuill.—HAWTHORN. Abundant.

SAXIFRAGACEAE

SAXIFRAGA Linnaeus
*umbrosa L.—LONDON PRIDE. Uncommon; Hayburn Wyke and Sawdondale, a garden outcast.
tridactylites L.—RUE-LEAVED SAXIFRAGE. Common; Yedmandale, Flixton, etc.
granulata L.—WHITE MEADOW SAXIFRAGE. Common; Ruston Cow-pasture, Lady Edith’s Drive, etc.
hypnoides L.—CUT-LEAVED SAXIFRAGE. Rare; Hole of Horcum (Y.N.U. Excn., 1895).

CHRYSOSPLENIUM Linnaeus
oppositifolium L.—OPPOSITE-LEAVED GOLDEN SAXIFRAGE. Common; Forge Valley, etc.
alternifolium L.—ALTERNATE-LEAVED GOLDEN SAXIFRAGE. Uncommon; Forge Valley, 1886 (E.R.C.).

PARNASSIACEAE

PARNASSIA Linnaeus
palustris L.—GRASS OF PARNASSUS. Not uncommon; Cornelian Bay, 1913 (T.B.R.) ; Scalby Wyke, 1914 (E.C.H.) ; Cayton Bay, 1913 (J.G.) ; Filey, South Cliffs (W.A.S.) ; Dalby Dale, Bloody Beck (H.R.).

GROSSULARIACEAE

RIBES Linnaeus
*alpinum L.—MOUNTAIN CURRANT. Uncommon; planted in Hackness Woods (H.R.).
rubrum L.—RED CURRANT. Common.
nigrum L.—BLACK CURRANT. Uncommon; Ellerburn, 1940 (H.R.).
CRASSULACEAE

SEDUM Linnaeus
roseum (L.) Scop.—ROSE-ROOT. Rare; Thornton-le-Dale, 1922 (R.J.F., J.G.).
telephium L.—ORPINE, LIVE-LONG. Rare; Langdale End, 1914 (A.I.B.), probably an outcast.
*anglicum Huds.—ENGLISH STONECROP. Rare; Scarborough Castle Hill (J.G.B.).
acre L.—BITING STONECROP. Common; Scarborough Castle Hill, Flixton, etc.
*sexangulare L.—TASTELESS STONECROP. Rare; Scarborough (J.G.B.).
*reflexum L.—CROOKED YELLOW STONECROP. Uncommon; Hutton Buscel and Burniston, 1914 (A.I.B.), probably an outcast.

SEMPERVIVUM Linnaeus
*tectorum L.—HOUSE-LEEK. Uncommon; Sawdon, Hackness, 1939 (H.E.B.).

DROSERACEAE

DROSERA Linnaeus
rotundifolia L.—ROUND-LEAVED SUNDEW. Common in bogs on the moors.
anglica Huds.—LONG-LEAVED SUNDEW. Rare; Dalby Bog, decreasing rapidly owing to the depredations of collectors; an improvement in 1947 (H.R.).

HALORAGACEAE

HIPPURIS Linnaeus
vulgaris L.—MARE’S-TAIL. Uncommon; Ganton Carrs, 1915 (E.C.H.); Brompton, 1940 (H.R.).

MYRIOPHYLLUM Linnaeus
verticillatum L.—WHORLED WATER MILFOIL. Rare; Hilla Green, Hackness, 1946 (H.R.).
alterniflorum DC.—ALTERNATE-FLOWERED WATER MILFOIL. Uncommon; Hilla Green, 1912 (A.I.B.).

CALLITRICHACEAE

CALLITRICHE Linnaeus
stagnalis Scop.—LARGE-FRUITED STAR-WORT. Common in ditches.
intermedia Hoffm.—HOOKED STAR-WORT. Rare; Forge Valley, 1880 (G. Webster); Brompton Mill-pond, 1947 (E.R.C., H.R. teste C.M.R.).
FLOWERING PLANTS 231

LYTHRACEAE

PEPLIS Linnaeus

portula L.—WATER PURSLANE. Uncommon; in wet places on the moors, 1940 (E.R.C.).

LYTHRUM Linnaeus

salicaria L.—PURPLE LOOSESTRIFE. Common; Thro xenby Mere, Seamer Carrs, Hilla Green, etc.

ONAGRACEAE

CHAMAENERION Adanson

angustifolium (L.) Scop.—ROSE-BAY WILLOW-HERB. Abun-
dant; has now become a tiresome weed in the district.

EPILOBIIUM Linnaeus

hirsutum L.—GREAT HAIRY WILLOW-HERB. Abundant in watery places.


parviflorum Schreb.—HOARY WILLOW-HERB. Common; Scar-
borough Mere, etc.

montanum L.—BROAD-LEAVED WILLOW-HERB. Abundant on banks and walls.

roseum Schreb.—PALE SMOOTH-LEAVED WILLOW-HERB. Com-
mon; Cayton, Mowthorpe, etc.

obscurum Schreb.—SHORT-PODDED SQUARE-STALKED WIL-
LOW-HERB. Very common.

palustre L.—NARROW-LEAVED MARSH WILLOW-HERB. Un-
common; Forge Valley, 1914 (E.C.H.); Langdale End and near Falcon Inn, 1940 (H.R.); Hayburn Wyke (W.F.).

*pedunculare Cunn., A.—Rare; Hackness and Scarborough South Cliff, 1939 (H.R.).

CIRCAEA Linnaeus

lutetiana L.—ENCHANTER’S NIGHTSHADE. Common in damp woods.

CUCURBITACEAE

BRYONIA Linnaeus

dioica Jacq.—WHITE BRYONY. Uncommon; Ellerburn, Nabgate, 1907 (D.W.B.).

UMBELLIFERAE

HYDROCOTYLE Linnaeus

vulgaris L.—MARSH PENNYWORT Common; Cloughton Hulleys, Thro xenby Mere, Ring ing Keld Bog, etc.
SANICULA Linnaeus
  *europaea* L.—WOOD SANICLE. Abundant.

CONIUM Linnaeus
  *maculatum* L.—COMMON HEMLOCK. Common and increasing rapidly, 1947 (H.R.).

SMYRNIUM Linnaeus
  *oolusatrum* L.—ALEXANDERS. Locally common; the prevailing plant on Scarborough Castle Hill.

APIUM Linnaeus
  *nodiflorum* (L.) Lag.—PROCUMBENT WATER-PARSNIP. Common; Scarborough Mere, Brompton, Scalby, Lady Edith's Drive, etc.
  *inundatum* (L.) Reich. f.—LEAST WATER-PARSNIP. Rare; Filey (Y.N.U. Excn., 1914); Cayton Bay, 1948 (H.R. teste C.M.R.).

AMMI Linnaeus

CARUM Linnaeus
  *carvi* L.—CARAWAY. Rare; Yedmandale, 1914 (E.C.H.); Thornton-le-Dale, 1945 et seq. (H.R. teste C.M.R.).

PETROSELINUM Hill
  *crispum* (Mill.) Nym.—PARSLEY. Rare; Scarborough Mere and Yedmandale, 1914 (E.C.H.); Cayton Carrs, 1916 (E.C.H.); Flamborough (Y.N.U. Excn., 1923).

SIUM Linnaeus
  *erectum* Huds.—NARROW-LEAVED WATER-PARSNIP. Common; Scarborough Mere, Brompton, Seamer Carrs, Ayton, etc.

AEGOPODIUM Linnaeus
  *podagraria* L.—BISHOP-WEED, GOUT-WEED. Abundant and increasing rapidly, 1947.

PIMPINELLA Linnaeus
  *saxifraga* L.—COMMON BURNET SAXIFRAGE. Common in dry pastures.
    *major* (L.) Huds.—GREATER BURNET SAXIFRAGE. Rare; Stone Haggs, one plant, 1945 et seq. (H.R.).

CONOPODIUM Koch
  *majus* (Gouan) Lor. et Barr.—EARTH or PIG NUT. Abundant.
FLOWERING PLANTS

MYRRHIS Miller
odorata (L.) Scop. — SWEET CICELY. Common; Silpho, Ellerburn, Ruston, etc.

CHAEROPHYLLUM Linnaeus
temulum L. — ROUGH CHERVIL. Abundant on waysides.

SCANDIX Linnaeus
pecten-veneris L. — SHEPHERD’S NEEDLE. Common; Seamer Carrs, Cloughton, Thornton-le-Dale, etc.

ANTHRISCUS Persoon
sylvestris (L.) Hoffm. — COW PARSLEY, KECK. Abundant on waysides.

FOENICULUM Miller
*vulgare Mill. — FENNEL. Rare; Scarborough Mere 1914 (G.W.T.), a garden escape.

OENANTHE Linnaeus
fistulosa L. — COMMON WATER DROPWORT. Rare; Thornton Marishes, 1915 (G.W.T., A.I.B.); refound, 1947 (E.R.C., H.R.); Cayton Carrs, 1916 (E.C.H.).
crocata L. — HEMLOCK WATER DROPWORT. Rare; Ayton Mill-pond, 1912 (E.R.C.).
aquatica (L.) Poir. — FINE-LEAVED WATER DROP-WORT. Rare; Scarborough Mere, 1914 (A.I.B.); still there, 1947 (H.R.).

AETHUSA Linnaeus
var. agrestis Wallr. — Common in waste places.

SILAUM Miller
silaus (L.) Schinz et Thell. — PEPPER SAXIFRAGE. Uncommon; Snainton, 1940 (H.R.).

ANGELICA Linnaeus
sylvestris L. — WILD ANGELICA. Common in moist woods; Forge Valley, etc.

PEUCEDANUM Linnaeus
*ostruthium (L.) Koch — MASTERWORT. Rare Cloughton Newlands, 1913 (A.I.B.); not seen 1940 but appeared again 1942 (H.R.); Goathland, 1932 (R.J.F., G.B.W.).
PASTINACA Linnaeus
*sativa L.—WILD PARSNIP. Uncommon, only as a throw-out from cultivation.

HERACLEUM Linnaeus
sphondylium L.—COW PARSNIP. Abundant in waste places.
var. angustifolium Huds.—NARROW-LEAVED COW PARSNIP. Rare; Thornton-le-Dale, 1922 (R.J.F., J.G.).
*mantegazzianum Somm. et Lev.—Uncommon; Scalby, a garden escape, 1901 (E.R.C.).

DAUCUS Linnaeus
*carota L.—WILD CARROT. Uncommon; Cayton Bay, Staxton, 1912 (A.I.B.).
gingidium L.—SEA-CARROT. Rare; Speeton, Cloughton Wyke, 1914 (G.W.T.).

TORILIS Adanson
*anthriscus (L.) Gmel., C. C.—HEDGE PARSLEY. Common.
nodosa (L.) Gaertn.—KNOTTED HEDGE PARSLEY.—Uncommon; Yedmandale, 1915 (E.C.H.); Brompton, Staxton, 1940 (H.R.); Beedale, Hutton Buscel, 1944 (C.M.R.).

ARALIACEAE

HEDERA Linnaeus
*helix L.—IVY. Common.

CORNACEAE

CORNUS Linnaeus
*suecica L.—DWARF CORNEL. Rare; Cross Cliff, 1835 (Brown & Williamson); Hole of Horcum, 1795 (William Travis); the former is the most southerly station for this plant in the British Isles.
sanguinea L.—DOG-WOOD. Common; Ellerburn, Forge Valley, Yedmandale, etc.

ADOXACEAE

ADOXA Linnaeus
*moschatellina L.—TUBEROUS MOSCHATEL. Common; Forge Valley, Troutsdale, etc.

CAPRIFOLIACEAE

SAMBUCUS Linnaeus
*nigra L.—COMMON ELDER. Abundant.
*var. laciniata L.—CUT-LEAVED ELDER. Rare; Scarborough Castle Holmes, 1915 (A.I.B.), probably planted.
*ebulus L.—DANEWORT. Rare; Thornton-le-Dale water-works, 1939 (H.R.); now gone from Castle Dykes, Scarborough.
DWARF CORNEL (Cornus suecica L.)

Photograph: J. P. Best

facing page 234
FLOWERING PLANTS

VIBURNUM Linnaeus

*opulus L.—GUELDER ROSE. Common in woods, etc.

*lantana L.—WAYFARING TREE. Rare; one bush, Thornton-le-Dale, 1940 (H.R.); planted in Hackness Woods.

SYMPHORICARPUS Duhamel

*albus (L.) Blake, S.F.—SNOWBERRY. Common; planted and perhaps bird-sown.

LINNAEA Linnaeus

*borealis L.—TWO-FLOWERED LINNAEA. Very rare; Silpho Moor, 1863 (J. Tissiman), specimen in B.M. Herbarium; not seen since.

LONICERA Linnaeus

*periclymenum L.—HONEYSUCKLE. Common in hedges and woods.

*xylosteum L.—UPRIGHT FLY HONEYSUCKLE. Rare; Filey, 1913 (A.I.B.); Sledmere (E.R.C.).

RUBIACEAE

GALIUM Linnaeus

*cruciata (L.) Scop.—CROSSWORT. Abundant by waysides.

*verum L.—LADY’S BEDSTRAW. Abundant on banks, etc.


*saxatile L.—SMOOTH HEATH BEDSTRAW. Common on heaths and upland pastures.

*palustre L.—MARSH BEDSTRAW. Common; Scarborough and Throxsenby Meres, Scalby, Cayton Carrs, etc.


*vaillantii DC.—HISPID-FRUITED CORN BEDSTRAW. Rare and casual; Seamer Junction (W.F.).

*aparine L.—GOOSE-GRASS, CLEAVERS. Abundant.

ASPERULA Linnaeus

*odorata L.—WOODRUFF. Common in shady woods.

SHERARDIA Linnaeus

*arvensis L.—FIELD MADDER. Abundant as a weed of cultivated ground.

VALERIANACEAE

VALERIANA Linnaeus

*dioica L.—MARSH VALERIAN. Common in wet meadows, etc.

*officinalis L.—WILD VALERIAN. Common in moist woods.
CENTRANTHUS De Candolle
*ruber* (L.) DC.—RED VALERIAN. Rare; Scarborough Castle Hill, 1914 (A.I.B.).

VALERIANELLA Miller
locusta L.—CORN SALAD. Common in cornfields.

DIPSACACEAE

DIPSACUS Linnaeus
fullonum L.—WILD TEASEL. Rare; Hutton Buscel, 1916 (E.C.H.); Yedmandale, 1940 (H.R.).

KNAUTIA Linnaeus
arvensis (L.) Coult.—FIELD SCABIOUS. Common.

SUCCISA Moench
pratensis Moench—DEVIL’S-BIT SCABIOUS. Common; Thornton-le-Dale, Silpho, Forge Valley, etc.

SCABIOSA Linnaeus
columbaria L.—SMALL SCABIOUS. Uncommon; Ayton, 1914 (E.C.H.); Cayton Bay, 1940 (H.R.); Thornton-le-Dale, 1915 (G.W.T.).

COMPOSITAE

EUPATORIUM Linnaeus
cannabinum L.—HEMP AGRIMONY. Common; Cornelian Bay, etc.

SOLIDAGO Linnaeus
virgaurea L.—GOLDEN ROD. Common; Forge Valley, Cloughton Quarries, etc.

BELLIS Linnaeus
perennis L.—DAISY. Abundant Status discoideus, a form without ray-florets, Flamborough (J. F. Pickard).

ERIGERON Linnaeus
acris L.—BLUE FLEA-BANE. Rare; Flixton Wold, 1915 (A.I.B., G.W.T.); Thornton-le-Dale, 1922 (R.J.F., J.G.); Grosmont, 1945 (H.R.).

FILAGO Linnaeus
germanica (L.) L.—COMMON CUDWEED. Common on dry pastures and banks.
var. axillaris Dr.—Rare; Grosmont (B.R.).
FLOWERING PLANTS

minima (Sm.) Pers.—LEAST CUDWEED. Rare; Flixton sand-pits, 1940 (E.R.C., H.R.).
apiculata G. E. Sm.—RED TIPPED CUDWEED. Rare; limestone quarry, Seamer, 1897 (W.F.).

ANTENNARIA Gaertner
dioica (L.) Gaertn.—MOUNTAIN EVERLASTING. Rare; Cockmoor Hall, 1886, not seen there since 1909; High Fordon, 1911-12 (A.I.B.); Nab Gate, Dalby Dale, 1944 (H.R.).

ANAPHALIS De Candolle
*margaritacea (L.) Benth.—PEARLY EVERLASTING. Rare; coast cliffs, three miles south of Scarborough (J.G.B.); not seen in recent years.

GNAPHALIUM Linnaeus
uliginosum L.—MARSH CUDWEED. Uncommon; Silpho Moor, 1913 (E.C.H.); Langdale End, 1916 (E.C.H.); Raincliffe Wood and West Ayton (H.R.).
sylvaticum L.—HEATH or WOOD CUDWEED. Uncommon; Seamer Moor, 1914, Seamer Carrs. 1915, Silpho Moor, 1916 (E.C.H.); Hutton Buscel, 1940 (H.R.); Dalby Nut Wood, 1932 (R.J.F.).

INULA Linnaeus
*helium L.—ELECAMPANE. Rare; Hayburn Wyke, once abundant, only five plants in 1946 (S.R.).
conyza DC.—PLOUGHMAN’S SPIKENARD. Uncommon; Pexton Moor, Thornton-le-Dale, Fordon (H.R.).

PULICARIA Gaertner
dysenterica (L.) Bernh.—GREATER FLEA-BANE. Common and increasing, 1947.

BIDENS Linnaeus
cernua L.—NODDING BUR-MARIGOLD. Rare; Cayton Carr (J.G.B.).
tripartita L.—TRIPARTITE BUR-MARIGOLD. Rare; Raincliffe Wood (J.G.B.).
Neither of the above has been seen in recent years.

ACHILLEA Linnaeus
millefolium L.—YARROW. Abundant on waysides.
ptarmica L.—SNEEZEWORT. Common in damp places; Dalby Dale, Mowthorpe Cut, Throxenby Mere, etc.

ANTHEMIS Linnaeus
*tinctoria L.—YELLOW CHAMOMILE. Rare; Yedmandale, 1914 (E.C.H.); Staxton sand-pits, plentiful, 1942 (E.R.C., H.R.).
arvensis L.—CORN CHAMOMILE. Local; Yedmandale (Hb. E.C.H.).
nobilis L.—COMMON CHAMOMILE. Rare; Scalby Wyke, 1914 (E.C.H.).

CHRYSANTHEMUM Linnaeus
segetum L.—CORN MARIGOLD. Uncommon; Seamer Carrs, 1915 (E.C.H.); plentiful on roadsides between Snainton and Thornton-le-Dale (along with Calendula) in 1946; both almost entirely absent in 1947 (H.R.).
leucanthemum L.—WHITE OX-EYE. Abundant.
*parthenium (L.) Bernh.—FEVERFEW. Common on hedge-banks, etc.

MATRICARIA Linnaeus
maritima L.—Rare; Flamborough (Y.N.U Excn., 1906); Scarborough North Side, 1914 (E.C.H.).
inodora L.—SCENTLESS MAYWEED, CORN FEVERFEW. Common in fields, etc.
chamomilla L.—WILD CHAMOMILE. Common in fields.
*matricarioides (Less.) Port.—RAYLESS MAYWEED. Abundant in waste places.

TANACETUM Linnaeus
vulgare L.—TANSY. Uncommon; banks of river Derwent, Scalby Cut, Cloughton, Yedingham.

ARTEMISIA Linnaeus
absinthium L.—WORMWOOD, ABSINTHE. Uncommon; Troutsdale, Seamer Limeworks (H.R.).
vulgaris L.—MUGWORT. Common in waste places.

TUSSILAGO Linnaeus
farfara L.—COLTSFOOT. Abundant.

PETASITES Miller
*fragrans (Vill.) Presl., C.—SWEET-SCENTED BUTTER-BUR, WINTER HELIOTROPE. Local; very abundant on the cliffs of Holbeck Gardens.
hybridus (L.) Gaertn., Mey. & Scherb.—BUTTER-BUR. Common in damp places; Forge Valley, Hackness, etc.
*albus (L.) Gaertn.—WHITE COLTSFOOT. Londesborough Lodge, Scarborough, planted.

DORONICUM Linnaeus
*pardalianches L.—GREAT LEOPARD’S-BANE. Uncommon; Ebberston, West Flotmanby, probably a garden escape.
FLOWERING PLANTS

SENECIO Linnaeus

vulgaris L.—GROUNDSEL. Abundant


viscosus L.—STINKING GROUNDSEL. Uncommon; waste ground, Scarborough Mere, 1915 (E.C.H.); Staintondale (W.F.).

var. lividus Sml.—Scarborough Mere, 1939 (E.R.C.).

*squalidus L.—OXFORD RAGWORT. Rare; one plant, Folkton on wall, 1947 (H.R. det. C.M.R.); greatly increased, 1948 (H.R.).

erucifolius L.—HOARY RAGWORT. Common; cliffs north and south of Scarborough (A.I.B.).

ericifolius Sml.—Scarborough Mere, 1939 (E.R.C.).

*Cirsium* Linnaeus

vulgaris (Savi) Ten.—SPEAR THISTLE. Abundant.

eriophorum (L.) Scop.—WOOLLY-HEADED THISTLE. Uncommon; Ayton, 1914 (E.C.H.); Ellerburn, Cayton Bay (H.R.);

Yedmandale, Newtondale, 1899 (W.F.).

palustre (L.) Scop.—MARSH THISTLE. Abundant.

dissectum (L.) Hill—MEADOW PLUME THISTLE. Uncommon; Eller’s Wood and Thro xenby Mere (H.R.).

*heterophyllum* (L.) Hill.—MELANCHOLY THISTLE. Rare; Harwood Dale, 1947 (H.R.).

arvense (L.) Scop.—CREEPING THISTLE Abundant.
ONOPORDUM Linnaeus
*acanthium L.—COTTON or SCOTCH THISTLE. Rare; Thornton-le-Dale, 1939 (H.R.), an escape.

SILYBUM Adanson
*marianum (L.) Gaertn.—MILK THISTLE. Rare; Scarborough Castle Hill (Hb. E.C.H., 1856 and E.C.H., 1914, one plant); East Ayton, 1941 (H.R.).

SERRATULA Linnaeus
tinctoria L.—SAW-WORT. Local; cliffs south of Filey, plentiful (W.A.S.); Newton Dale, 1915 (A.I.B.); Dalby Dale and High Fordon (H.R.).
var.integri folia Koch—Rare; Levisham, 1915 (A.I.B.).

CENTAUREA Linnaeus
nigra L.—BLACK KNAPEWED. Abundant.
*memorialis Jord.—Rare; High Fordon, 1947 (A.G.).
scabiosa L.—GREATER KNAPEWED. Common; Racecourse Hill and Staxton, etc.
cyano s L.—CORN FLOWER. Rare; waste ground Scarborough Mere, 1916 (E.C.H.).

CARTHAMUS Linnaeus
lanatus L.—Rare and casual; Thornton-le-Dale, 1949 (H.R., det. W.A.S.).

CICHERIUM Linnaeus
intybus L.—CHICORY. Uncommon; Snainton, 1914 (E. B. Cramp); Staxton sand-pits, 1940 (H.R.).

LAPSANA Linnaeus
communis L.—NIPPLEWORT. Common in waste places; Forge Valley, etc.

PICRIS Linnaeus
* hieracioides L.—HAWKWEED OX-TONGUE. Common in waste places on calcareous soils.
var. umbellata Schultz.—Rare; Thornton-le-Dale, 1922 (J.R.F., J.G.).
echioides L.—OX-TONGUE. Rare; Hayburn Wyke, Cornelian Bay and Thornton-le-Dale (H.R.).

CREPIS Linnaeus
* taraxacifolia Thuill.—BEAKED HAWK’S-BEARD. Uncommon; limestone quarry, Hutton Buscel (J.G.B.).
capillaris (L.) Wallr.—SMOOTH HAWK’S-BEARD. Common in fields and waste places.
*biennis L.—ROUGH HAWK’S-BEARD. Rare; Allerston, one plant, 1936 (R.J.F.).

HIERACIUM Linnaeus

pilosella L.—MOUSE-EAR HAWKWEED. Abundant.
murorum L.—WALL HAWKWEED. Common; Hackness, Oliver’s Mount, etc.

sabaudum L.—SAVOY HAWKWEED. Common; Oliver’s Mount, etc.
vulgatum (Fr.) Almq.—WOOD HAWKWEED. Uncommon; Raincliffe Wood, 1917 (G.W.T.).

In this critical genus the following microspecies have been recorded:—caesium Fr., Forge Valley (F. Reynolds); orarium Lindb., teste Ley; cacuminatum Dahlet.; sciphilum var. transiens Ley; diaphanoides Lindb.; scanicum Dahlst.; rigidum var. trichocaulon Dahlst. See “Supplement to the Yorkshire Floras,” pp. 69-70.

HYPOCHOERIS Linnaeus

glabra L.—SMOOTH CAT’S-EAR. Rare; Rillington, 1888 (J.G.B.).
radicata L.—LONG-ROOTED CAT’S-EAR. Abundant.

LEONTODON Linnaeus

leysseri (Wallr.) Beck—LESSER HAWKBIT. Uncommon; Cumboots, Ganton, Seamer Carrs (Hb. E.C.H.).
hispidus L.—COMMON HAWKBIT. Common in pastures.
autumnalis L.—AUTUMNAL HAWKBIT. Common in waste places.

TARAXACUM Wiggers

officinale Web.—DANDELION. Abundant.
palustre (Lyons) DC.—MARSH DANDELION. Uncommon; Bickley, 1916 (G.W.T.).

laevigatum (Willd.) DC.—Uncommon; Staintondale, 1942 (H.R.).

LACTUCA Linnaeus

virosa L.—WILD LETTUCE. Rare; Wilton Carrs, 1945 (H.R.).
muralis (L.) Fres.—WALL LETTUCE. Common on old walls, etc.
*macrophylla (Willd.) Gray, A.—Rare; Thornton-le-Dale, well established (H.R.).

SONCHUS Linnaeus

oleraceus L.—COMMON SOW-THISTLE. Abundant.
asper (L.) Hill—ROUGH SOW-THISTLE. Common; Thornton-le-Dale, etc.
arvensis L.—CORN SOW-THISTLE. Common on arable land and on the Marine Drive.
TRAGOPOGON Linnaeus

pratensis L.—YELLOW GOAT’S-BEARD. Common in waste places.

*porrifolius L.—SALSIFY. Rare; Cloughton Bank, in neglected garden, 1916 (E.C.H.); Scarborough (J.G.B.), probably now extinct.

CAMPANULACEAE

CAMPANULA Linnaeus

glomerata L.—CLUSTERED BELL-FLOWER. Common; Forge Valley, The Wolds, etc.


*rapunculoides L.—CREeping BELL-FLOWER. Rare; Forge Valley in mangold field, 1944 et seq. (H.R.); one plant only in 1947, none in 1948.

rotundifolia L.—HAREBELL. Abundant.

SPECULARIA Fabricius, P. C.

hybrida (L.) A. DC.—VENUS’S LOOKING-GLASS. Rare; Forge Valley and Yedmandale, 1914 (E.C.H.); Ellerburn, 1914 (G.W.T.); 1942 et seq. (H.R.).

VACCINIACEAE

VACCINIUM Linnaeus

vitis-idaea L.—COW-BERRY. Common; Barns Cliff, Wykeham Moor, Hole of Horcum, etc.

myrtillus L.—BILBERRY, WHORTLEBERRY. Abundant on the moors.

OXYCOCCUS Hill

quadripetalus Gil.—CRANBERRY. Uncommon; May Moss, Foul-syke, etc.

ERICACEAE

ARBUTUS Linnaeus

*unedo L.—STRAWBERRY TREE. Planted at Londesborough Lodge and in Scarborough Cemetery, where it ripens its fruit.

ANDROMEDA Linnaeus

polifolia L.—MARSH ANDROMEDA. Rare; May Moss, 1938 and 1947 (Mrs. R. A. Leefe).

CALLUNA Salisbury

vulgaris (L.) Hull—LING. Abundant.

var. pubescens Hull—Occurs sparingly with the type, Langdale End, 1915 (E.C.H.).
ERICA Linnaeus

tetralix L.—CROSS-LEAVED HEATH. Common.
cinerea L.—FINE-LEAVED HEATH, BELL HEATHER. Common.

PYROLACEAE

PYROLLA Linnaeus

rotundifolia L.—ROUND-LEAVED WINTERGREEN. Rare;
Hutton Buscel (J.G.B.), not seen in recent years.
media Sw.—INTERMEDIATE WINTERGREEN. Rare; Silpho
Moor, 1914-15 (E.C.H.), 1941 et seq. (H.R.); Lockton (S/C. A.).
minor L.—LESSER WINTERGREEN. Uncommon; Silpho Moor,
1913-16 (E.C.H.); Raincliffe Wood, Forge Valley, 1914 (G.W.T.).

MONOTROPACEAE

MONOTROPA Linnaeus

hypopithys L.—YELLOW BIRD’S-NEST. Rare; Thornton-le-Dale
under Fagus, 1914-15 (G.W.T.), 1946 (W.A.S.); Forge Valley,
1946 (W.A.S.), 1948 (H.R.).

PLUMBAGINACEAE

ARMERIA Willdenow

maritima Willd.—THRIFT, SEA PINK. Rare; Flamborough Head,
1884 (E.R.C.), 1914 (A.I.B.).

PRIMULACEAE

HUTTONIA Linnaeus

palustris L.—WATER VIOLET. Seamer Moor pond, 1884 (E.R.C.),
1912-14 (G.W.T.); has disappeared from the Carrs owing to
drainage.

PRIMULA Linnaeus

vulgaris Huds.—PRIMROSE. Abundant.
veris L.—COWSLIP. Common in meadows.
veris L. x vulgaris Huds. (P. variabilis Gouf.)—FALSE OXLIP.
Common.

LYSIMACHIA Linnaeus

vulgaris L.—YELLOW LOOSESTRIFE. Rare; near railway be-
tween Staintondale and Ravenscar, 1938 (H.R.).
ummularia L.—MONEYWORT. Rare; Hackness, 1912-16, but not
in recent years (A.I.B.); Thornton-le-Dale, 1947 (E.R.C., H.R.).
nemorum L.—YELLOW PIMPERNEL. Common in shady places.

TRIENTALIS Linnaeus

europaea L.—CHICKWEED WINTERGREEN. Uncommon;
Raincliffe Wood, Cross Cliff (G.W.T.); above Wrench Green, 1914
(T.B.R.); Hole of Horcum (W.A.S.).
Glaux Linnaeus

*maritima* L.—SEA MILKWORT. Uncommon; Filey, 1946 (E.R.C., H.R.); Cayton Bay (E.R.C.), but not in recent years.

ANAGALLIS Linnaeus

*arvensis* L.—SCARLET PIMPERNEL. Common in waste places.
*foemina* Mill.—Rare; Grosmont (B.R.).
*tenella* (L.) Murr.—BOG PIMPERNEL. Uncommon; Cumboots, 1913 (T.B.R.); Langdale End, 1916 (E.C.H.); Hole of Horcum, Jugger Howe Beck, etc. (H.R.).

SAMOLUS Linnaeus

*valerandi* L.—BROOKWEED. Rare; Seamer Carrs, 1912 (E.R.C.); Scarborough Mere, 1914 (E.C.H.), station now flooded to increase water area; sea-banks at Scarborough (J.G.B.); not seen recently in any of these stations.

Oleaceae

Fraxinus Linnaeus

*excelsior* L.—ASH. Common.

Ligustrum Linnaeus

*vulgare* L.—PRIVET. Uncommon; Ellerburn Woods (H.R.); Cayton Bay, 1914 (E.C.H.).

Apoecynaceae

Vinca Linnaeus

*minor* L.—LESSER PERIWINKLE. Rare; Staintondale Woods, 1916 (G.W.T.); probably an outcast.

Gentianaceae

Blackstonia Hudson

*perfoliata* (L.) Huds.—PERFOLIATE YELLOW-WORT. Rare; Burniston Cliffs, 1884 (E.R.C.), last seen 1940; Cloughton, 1914 (A.I.B.).

Centaurium Hill

*umbellatum* Gil.—CENTAURY. Common in dry pastures; Silpho Moor, Cayton Bay, Scalby Wyke, Cumboots.
*littorale* (Turn., D.) Gilm.—TUFTED CENTAURY. Uncommon; Filey Brigg, 1945 (E.R.C., H.R.).

Gentiana Linnaeus

*campestris* L.—FIELD GENTIAN. Rare; Silpho Moor, 1884 and up to 1916, found again 1945 (E.R.C.); Hole of Horcum, 1945 et seq. (H.R.); Langdale End, 1916 (E.C.H.).
*amarella* L.—FELWORT, AUTUMNAL GENTIAN. Common; Thornton-le-Dale, Silpho Moor, Ayton Quarry.
FLOWERING PLANTS

MENYANTHACEAE

MENYANTHES Linnaeus

*trifoliata* L.—BOGBEAN, BUCKBEAN. Common; nearly covers Throxenby Mere; Filey (E.C.H.).

POLEMONIACEAE

POLEMONIUM Linnaeus

*caeruleum* L.—JACOB’S LADDER. Rare; Silpho Moor, Thornton-le-Dale, Pexton Moor, but not seen for some years, 1939 (H.R.).

BORAGINACEAE

OMPHALODES Miller

*verna* Moench—BLUENAVELWORT. Rare; banks of river Derwent, Forge Valley, 1945 (E.R.C., H.R.); Pickering (A.I.B.).

CYNOGLOSSUM Linnaeus

*officinale* L.—HOUND’S TONGUE. Rare; Ellerburn (A.G. on Y.N.U. Excn.).

ASPERUGO Linnaeus

*procumbens* L.—MADWORT. Rare; Thornton-le-Dale rubbish-tip, 1940 (H.R.).

SYMPHYTUM Linnaeus

*officinale* L.—COMMON COMFREY. Common; increasing along roadsides in the district.

*tuberosum* L.—TUBEROUS COMFREY. Rare; Yedingham, Red Scar Lane, Newby, 1940 (H.R.).

ANCHUSA Linnaeus


IYCOPSIS Linnaeus

*arvensis* L.—SMALL BUGLOSS. Common; Ellerburn, Flixton, etc.

MYOSOTIS Linnaeus

*caespitosa* Schultz, K. F.—TUFTED WATER FORGET-ME-NOT. Common in wet places.

*scorpioides* L.—FORGET-ME-NOT. Common in wet places.

*secunda* Murr., A.—CREEPING WATER FORGET-ME-NOT. Rare; Ringing Keld Bog, 1912, disappeared by 1940 (E.R.C.); Beedale, 1945 (C.M.R.).

*brevifolia* Salmon, C. E.—Rare; Hole of Horcum, 1945 (H.R. det. C.M.R.).

*sylvatica* (Ehrh.) Hoffm.—WOOD FORGET-ME-NOT. Common.
arvensis (L.) Hill—FIELD FORGET-ME-NOT. Common in fields and waste places.
collina Hoffm.—EARLY FORGET-ME-NOT. Common on dry banks.
versicolor Sm.—CHANGEABLE FORGET-ME-NOT. Common.

LITHOSPERMUM Linnaeus

officinale L.—GROMWELL. Uncommon; Forge Valley, Newton Dale (H.R.).
arvense L.—CORN GROMWELL. Rare; Ellerburn, 1914 (G.W.T., D.W.B.); Seamer Carrs, 1914 (E.C.H.); Thornton-le-Dale as a casual, 1945 (H.R.); Scarborough Museum Garden, 1946 (H.R.).

ECHIUM Linnaeus

vulgare L.—VIPER'S BUGLOSS. Uncommon; Ellerburn, Pexton Moor, Flixton sand-pits (E.R.C., A.I.B.); Ayton, 1914 (E.C.H.).

CONVOLVULACEAE

CALYSTEGIA Brown, R.


CONVOLVULUS Linnaeus

arvensis L.—CORN BINDWEED. Abundant.

CUSCUTA Linnaeus

epithymum (L.) Murr.—LESSER DODDER. Rare; Pickering (E.C.H.); High Fordon (J.S.H.); Thornton-le-Dale (E.R.C., H.R.).

trifolii Bab.—CLOVER DODDER. Rare; quarry at Hunmanby, 1916 (T.B.R.).

SOLANACEAE

SOLANUM Linnaeus

dulcamara L.—WOODY NIGHTSHADE, BITTERSWEET. Common in hedges.


LYCIUM Linnaeus

chinense Mill.—TEA-PLANT. Uncommon; Cloughton Newlands, 1914 (E.C.H.); Seamer Carrs, 1915 (E.C.H.); Langdale End, 1940 (H.R.); Spital Corner (G.B.W.).

ATROPA Linnaeus

bella-donna L.—DEADLY NIGHTSHADE Rare; Dark Arch, Scarborough, 1946 (E.R.C.); Motor-coach Park, 1947 (H.R.); probably escapes from one-time herb-garden near by.
DATURA Linnaeus
*stramonium L.—THORN-APPLE. Rare; Corporation Allotments, 1911-12 (E.R.C.).
tata L.—Rare; High Fordon, 1946 (J.S.H. teste C.M.R.), specimen now in British Museum Herbarium.

HYOSCYAMUS Linnaeus
niger L.—HENBANE. Rare; Stone Haggs, 1910 (E.R.C.); Thornton-le-Dale, 1939, gone in 1940, reappeared in 1947 (H.R.).

SCROPHULARIACEAE

VERBASCUM Linnaeus
thapsus L.—GREAT MULLEIN. Uncommon; Dalby Dale, 1912 (A.I.B.).
nigrum L.—DARK MULLEIN. Rare; Hutton Buscel, 1916 (E.C.H.); Grosmont slag-heaps, 1934 (W.A.S.); occasionally on roadsides (H.R.).
virgatum Stokes—TWIGGY MULLEIN. Rare; Thornton-le-Dale, 1947-8 (H.R., teste W.A.S.).

LINARIA Miller
*cymbalaria (L.) Mill.—IVY-LEAVED TOAD-FLAX. Common on old walls; a white variety grows at Wykeham (H.R.).
elatine (L.) Mill.—SHARP-LEAVED FLUELLEN. Rare; “Like the following, a plant of cultivated fields and very rare; was reported from Scarborough by J. Williamson.” (J.G.B.).
spuria (L.) Mill.—ROUND-HEADED FLUELLEN. Rare; Scarborough (J.G.B.).
vulgaris Mill.—YELLOW TOAD-FLAX. Common along waysides.
var.latifolia Bab.—BROAD-LEAVED TOAD-FLAX. Rare; Thornton-le-Dale, 1922 (R.J.F., J.G.).
minor (L.) Desf.—LESSER TOAD-FLAX. Common in chalky cornfields and on railway ballast.

SCROPHULARIA Linnaeus
aquatica L.—WATER BETONY, WATER FIGWORT. Common in marshes, Scalby Beck, Forge Valley, etc.
nodosa L.—FIGWORT. Common in moist places, Forge Valley, etc.

MIMULUS Linnaeus
*guttatus DC.—MONKEY FLOWER. Uncommon; Thornton Beck, Mowthorpe (H.R.).

DIGITALIS Linnaeus
purpurea L.—FOXGLOVE. Common on banks and in open woods.
VERONICA Linnaeus

hederifolia L.—IVY-LEAVED SPEEDWELL. Common on cultivated ground.
polita Fr.—GREY FIELD SPEEDWELL. Uncommon; waste places.
agrestis L.—FIELD SPEEDWELL. Common in waste places.
persica Poir.—LARGE FIELD SPEEDWELL. Very common.
*filiformis Sm.—Rare; Hackness, 1947 (H.R.).
serpyllifolia L.—THYME-LEAVED SPEEDWELL. Common in moist waste places.
officinalis L.—COMMON SPEEDWELL. Common in dry places.
chamaedrys L.—GERMANDER SPEEDWELL. Abundant.
montana L.—MOUNTAIN SPEEDWELL. Common; Hackness, Forge Valley, Cloughton Quarries, etc.
scutellata L.—MARSH SPEEDWELL. Uncommon; Throenby Mere, 1916 (G.W.T.); Cloughton Hulley, 1940 (H.R.).
anagallis-aquatica L.—WATER SPEEDWELL. Uncommon; Seamer Carrs, 1914 (E.C.H.); Spital Corner, 1940 (H.R.).
beccabunga L.—BROOKLIME. Common in ditches.
forma submersa Glueck—Rare; Brompton (Nat., Jan., 1933).

EUPHRASIA Linnaeus

officinalis agg.—EYEBRIGHT.
   nema rosa (Pers.) Loehr.—The commonest Eyebright in the district.
   confusa Pugsl., f. albida Pugsl.—Goathland (G. Fisher).
   occidentalis Wettst., var. calvescens Pugsl.—Flamborough (E. Dees).
   pseudo-kerner i Pugsl.—Silpho Moor, 1912 (T.B.R.); Hayburn Wyke (Nat., 1909, p. 79).
   micrantha Rchb.—Silpho Moor, 1912 (T.B.R.); Bloody Beck, Langdale End (Hb. E.C.H.).
   brevipila Burn. et Gremli—Silpho Moor, 1912 (T.B.R.).
   borealis (Towns.) Wettst.—Fylingdales (H.W.P.).

ODONTITES Gilibert

rubra Gil.—RED BARTSIA. Common in waste places.
   var. verna Rchb.—Rare; the Carrs, 1914 (G.W.T.).

PEDICULARIS Linnaeus

palustris L.—MARSH LOUSEWORT. Common in marshes.
sylvatica L.—FIELD LOUSEWORT. Common in moist meadows.

RHINANTHUS Linnaeus

minor L.—COMMON YELLOW RATTLE. Common in damp pastures.
FLOWERING PLANTS

MELAMPYRUM Linnaeus

pratense L.—YELLOW COW-WHEAT. Uncommon; Ravenscar, 1948 (Miss P. M. Donson).

var. montanum Johnst.—Cross Cliff, 1915 (G.W.T.); Forge Valley, 1914 (E.C.H.); Hackness Hairpins, Wrench Green (H.R.).

OROBANCHACEAE

OROBANCHE Linnaeus

elatior Sutt.—TALL BROOM-RAPE. Local; fairly plentiful at Staxton (H.R.); abundant, Stone Haggs, 1920 (G.B.W.).

apiculata Wallr.—LESSER BROOM-RAPE. Rare; High Fordon, dried plant shown to E.R.C. and H.R., 1946; Staxton one plant, 1947 (E.R.C., H.R.).

LATHRAEA Linnaeus

squamarila L.—TOOTHWORT. Common on roots of Corylus, Forge Valley, etc.

LENTIBULARIACEAE

UTRICULARIA Linnaeus

vulgaris L.—BLADDERWORT. Rare; Scarborough Mere (J.G.B.), not seen in recent years.

PINGUICULA Linnaeus

vulgaris L.—COMMON BUTTERWORT. Common; Ringing Keld Bog, Levisham, Nab Gate Springs, cliffs south of Scarborough.

VERBENACEAE

VERBENA Linnaeus

officinalis L.—VERVAIN. Rare; Brompton, Thornton-le-Dale, 1896 (D.W.B.); Hutton Buscel, 1916 (E.C.H.).

LABIATAE

MENTHA Linnaeus

rotundifolia (L.) Huds.—ROUND-LEAVED MINT. Rare; roadside from Ganton station to Wykeham, 1914 (A.I.B.), 1915 (E.C.H.); Levisham, Forge Valley (W.F.).

*spicata L.—SPEARMINT. Uncommon; Troutsdale, 1940 (H.R.); Forge Valley (W.F.).


aquatica L.—WATER MINT. Common in marshes, Scarborough and Thro xenby Meres, etc.
verticillata L.—WHORLED MINT. Common; Mowthorpe Cut, 1913 (E.C.H.).
arvensis L.—CORN MINT. Abundant in cornfields.
*requienii Benth.—Rare; Holbeck Gardens, 1945 (H.R. teste W.A.S.).

LYCOPUS Linnaeus
europaeus L.—GIPSYWORT. Uncommon; Hilla Green, 1946 (E.R.C., H.R.); Langdale End, 1915-16 (G.W.T.).

ORIGANUM Linnaeus
vulgare L.—WILD MARJORAM. Common on dry uplands; Scarborough Castle Hill, Forge Valley, etc.

THYMUS Linnaeus
serpyllum L.—WILD THYME. Common on dry heaths.
glaber Mill.—Plentiful on limestone embankment, north end Cayton Bay (W.F.).

CLINOPODIUM Linnaeus
vulgare L.—WILD BASIL. Uncommon; Langdale End and Forge Valley (Hb. E.C.H.); Thornton-le-Dale, 1940 (H.R.); Allerston sand-pit, 1908 (R.J.F.).

ACINOS Miller
arvensis (Lam.) Dandy—BASIL THYME. Uncommon; Ayton, 1914, Staxton sand-pits, 1916 (E.C.H.); Thornton-le-Dale, 1940 (H.R.); Dalby Nut Wood, 1908 (R.J.F.).

CALAMINTHA Miller

SALVIA Linnaeus
horminoides Pourr.—CLARY. Rare; Scarborough Castle Hill, 1914 (E.C.H.).
*verticillata L.—WHORLED CLARY. Rare; Grosmont, 1939 (E.R.C.).

NEPETA Linnaeus
cataria L.—CATMINT. Rare; Stone Haggs, 1912-15 (A.I.B.), 1914 (E.C.H.); not seen in recent years.

GLECHOMA Linnaeus
hederacea L.—GROUND IVY. Abundant.

SCUTELLARIA Linnaeus
minor Huds.—LESSER SKULL-CAP. Rare; Scarborough Mere (W.B.); not seen in recent years.

PRUNELLA Linnaeus
vulgaris L.—SELF-HEAL. Abundant; a white variety is occasionally found.

MARRUBIUM Linnaeus
vulgare L.—WHITE HOREHOUND. Rare; Pexton Moor, one plant 1942-46. In the winter of 1946-7, a wall fell on this plant and it has not been seen in summers of 1947 or 1948 (H.R.); old quarry, Thornton-le-Dale (A.M.O.).

STACHYS Linnaeus
officinalis (L.) Trev.—WOOD BETONY. Common in copses; Langdale End, Dalby Dale, etc.
x ambiguus Sm.—Rare; Langdale End, 1915 (G.W.T., E.C.H.); Everley, 1916 (E.C.H.).
sylvatica L.—HEDGE WOUND-WORT. Abundant.
arvensis (L.) L.—CORN WOUND-WORT. Common in cornfields and waste places.
*annua (L.) L.—WOUND-WORT. Rare; Thornton-le-Dale (J.G., Nat., 1932, p. 19).

GALEOPSIS Linnaeus
angustifolia Hoffm.—RED HEMP NETTLE. Common in cornfields and waste places.
speciosa Mill.—BEE HEMP NETTLE. Local; Cayton Carrs, fairly plentiful (A.I.B.); Seamer Carrs, 1914, Ganton Carrs, 1915 (E.C.H.).
tetrahit L.—COMMON HEMP NETTLE. Common in cornfields and waste places.
var bifida (Boenn.) Lej. et Court.—High Flixton, near Fordon, 1913 (A.I.B.).

LAMIUM Linnaeus
amplexicaule L.—HENBIT DEAD NETTLE. Common in waste sandy places.
molucellifolium Fr.—INTERMEDIATE DEAD NETTLE. Rare; Cayton Village, 1946 (E.R.C., H.R.).
hybridum Vill.—CUT-LEAVED DEAD NETTLE. Rare; Staxton sand-pits, 1942 (H.R.).

purpureum L.—RED DEAD NETTLE. Abundant.
*maculatum L.—SPOTTED DEAD NETTLE. Rare; Osgodby Bank Top, 1939 (H.R.), only as an escape; a white variety flourishes at Broxa.
album L.—WHITE DEAD NETTLE. Abundant.
NATURAL HISTORY OF THE SCARBOROUGH DISTRICT

BALLOTA Linnaeus
  nigra L.—BLACK HOREHOUND. Common; plentiful on Scarborough Castle Hill and around Staxton.

TEUCRUM Linnaeus
  scorodonia L.—WOOD SAGE. Common in woods and on heaths; Oliver’s Mount, Whisperdales, etc.

AJUGA Linnaeus
  reptans L.—COMMON BUGLE. Abundant.

PLANTAGINACEAE

PLANTAGO Linnaeus
  coronopus L.—BUCK’S-HORN PLANTAIN. Local; plentiful on Scarborough Castle Hill; and Scarborough North Cliff, (E.C.H.).
  maritima L.—SEA PLANTAIN. Common near the sea.
  lanceolata L.—RIBWORT PLANTAIN. Abundant.
  media L.—HOARY PLANTAIN. Not uncommon on calcareous soil; Hackness, Snainton.
  major L.—GREAT PLANTAIN Common in pastures

LITTORELLA Bergius
  uniflora (L.) Asch.—SHORE-WEED. Rare; Scarborough Mere, 1914 (A.I.B.); not seen in recent years.

ILLECEBRACEAE

SCLERANTHUS Linnaeus
  annuus L.—ANNUAL KNAWEL. Rare; field adjoining Flixton sand-pit, 1915 (G.W.T., A.I.B.), and still there.

CHENOPODIACEAE

CHENOPODIUM Linnaeus
  album L.—WHITE GOOSE-FOOT, FAT HEN. Abundant.
  viride L. sec Aell.—GREEN GOOSE-FOOT. Rare; Thornton-le-Dale, 1922 (R.J.F., J.G.).
  *glaucum L.—GLAUCOUS GOOSE-FOOT. Rare; waste ground, Scarborough Mere, 1914 (E.C.H.).
  *bonius-henricus L.—GOOD KING HENRY. Common; West Ayton, Ellerburn, etc.

BETA Linnaeus
  *maritima L.—SEA BEET Uncommon; Scarborough Castle Hill, 1884 (E.R.C.).
FLOWERING PLANTS

ATRIPLEX Linnaeus

littoralis L.—GRASS-LEAVED SEA ORACHE. Rare; Scarborough North-sands (J.G.B.) ; not seen in recent years; north end Cayton Bay, 1891 (W.F.).

patula L.—NARROW-LEAVED ORACHE. Common in waste places.

hastata L.—HALBERD-LEAVED ORACHE. Rare; waste ground, Scarborough Mere, 1914 (E.C.H., G.W.T.).


SUAEDA Forskal

maritima (L.) Dum.—ANNUAL SEA-BLITE. Rare; Holbeck Gardens, Scarborough, 1942 (H.R.) ; decreasing yearly, none in 1948.

SALSOLA Linnaeus

kali L.—PRICKLY SALTWORT. Rare; one plant under barbed-wire defences on Scarborough foreshore, 1942 (H.R.) ; Cayton Bay, 1912 (A.I.B.) ; not seen there in recent years.

POLYGONACEAE

POLYGONUM Linnaeus

convolvulus L.—BLACK BINDWEED. Common as a weed of arable land.

var. subalatum Lej. & Court—Hutton Buscel, 1916 (E.C.H.) ; Seamer Moor, 1940 (D.W.B.).

aviculare agg.—KNOTGRASS. Abundant.

var. arenastrum Bor.—Sandy road-way, Scalby Wyke, 1914 (E.C.H.).

var. rurivagutn Bor.—Seamer Carrs, 1914 (E.C.H.).


mite Schrank—LAX-FLOWERED PERSICARIA. Rare; Hilla Green, 1948 (H.R. teste C.M.R.).

persicaria L.—SPOTTED PERSICARIA. Abundant.

lapathifolium L.—PALE PERSICARIA. Uncommon; Seamer Carrs, 1940 (H.R.).

var. incanum Lej. et Court—Scarborough Mere, 1914 ; Ganton, Seamer Carrs, 1915 (E.C.H.).

amphibium L.—WATER PERSICARIA. Common; Scarborough and Throbeny Meres.

var. terrestre Leers.—Rare; Thornton-le-Dale,1922 (R.J.F., J.G.) ; waste ground, Scarborough Mere, 1917 (E.C.H.).

bistorta L.—COMMON BISTORT. Uncommon; Ellerburn, Lowdales, Staintondale Woods (H.R.).
FAGOPYRUM Moench

RUMEX Linnaeus
conglomeratus Murr.—SHARP DOCK. Common in wet meadows and waste places.

golden Willd.—Abundant in woods, thickets and hedge-banks.

maritimus L.—GOLDEN DOCK. Rare; Scarborough Mere, abundant in 1853 (W.B.), now rare, but recorded in 1914 (E.C.H.), and 1940 to 1945 (H.R.); pond at top of Hay Brow, 1945 (H.R. det. C.M.R.).

pulcher L.—FIDDLE DOCK. Rare; Fylingdales, 1882 (C.C.B.).
obtusifolius L.—BROAD-LEAVED DOCK. Common in waste places.
crispus L.—CURLED DOCK. Common in waste places.

hydropapathum Huds.—GREAT WATER DOCK. Rare; Seamer Carrs, 1912 (A.I.B.).

acetosa L.—COMMON SORREL. Common in meadows.

ARISTOLOCHIACEAE

ARISTOLOCHIA Linnaeus
*clematitís L.—COMMON BIRTHWORT. Rare; Wykeham Abbey (J.G.B.); not seen in recent years.

DAPHNE Linnaeus

laureola L.—SPURGE LAUREL. Uncommon; Forge Valley, Ebberston (H.R.); near Seamer, 1937 (E.R.C.).

ELAEAGNACEAE

HIPPOPHAE Linnaeus
*rhamnoides L.—SEA BUCKTHORN. Uncommon; Cayton Bay, 1914 (E.C.H.); Holbeck Gardens, Cornelian Bay (H.R.); solitary tree in hedge on the Marishes near Wilton, 1937 (C.M.R.).

LORANTHACEAE

VISCUM Linnaeus
*album L.—MISTLETOE. Rare; Ebberston Vicarage garden on apple (H.R.).

EUPHORBIA Linnaeus
heioscopía L.—SUN SPURGE. Common in waste places.

platyphyllos L.—BROAD-LEAVED WARTED SPURGE. Rare; Thornton-le-Dale, as a garden weed (Nat., 1930, p. 30.).
FLOWERING PLANTS

*dulcis L.—Rare; Brompton, 1945 (H.R. teste W.A.S.).
*virgata Waldst et Kit.—Rare; Thornton-le-Dale, 1949 (H.R., det. C.M.R.).

peplus L.—PETTY SPURGE. Common in waste places.
exigua L.—DWARF SPURGE. Common in fields, etc.

*lathyrus L.—CAPER SPURGE. Rare; High Fordon in garden, 1911 (A.I.B.).

MERCURIALIS Linnaeus

perennis L.—DOG’S MERCURY. Abundant.

BUXACEAE

BUXUS Linnaeus

*s sempervirens L.—BOX TREE. Common; planted at Ebberston, Hackness, etc.

ULMACEAE

ULMUS Linnaeus
glabra Huds.—WYCH ELM. The commonest elm in the district.
procera Salisb—COMMON ELM. Common, but not so frequent as the former.

CANNABINACEAE

HUMULUS Linnaeus

lupulus L.—COMMON HOP. Rare; roadside near Ebberston, Wilton and Thornton-le-Dale, 1915 (A.I.B., G.W.T.); Holbeck Gardens, 1940 (H.R.); Pexton Moor (Y.N.U., Naturalist, 1941).

URTICACEAE

URTICA Linnaeus
dioica L.—COMMON NETTLE. Abundant.
urens L.—SMALL NETTLE. Common in waste places.

PARIETARIA Linnaeus
diffusa Mert. et Koch.—PELLITORY OF THE WALL. Uncommon; Scarborough Castle Hill, Thornton-le-Dale, Brompton (H.R.).

MYRICACEAE

MYRICA Linnaeus
gale L.—BOG MYRTLE, SWEET GALE. Common in bogs and on wet moors; Goathland, Jugger Howe Beck, Langdale End, Helwath Beck, etc.
BETULACEAE

BETULA Linnaeus

*pendula* Roth—BIRCH. Common in open woods and heaths.
*pubescens* Ehrh.—Probably widespread, but the only definite records are Dalby Dale (Y.N.U. Excn., 1922), and Levisham (Y.N.U. Excn., 1929).

ALNUS Miller

*glutinosa* (L.) Gaertn.—ALDER. Common in wet places; Forge Valley, Dalby Dale, etc.
*incana* (L.) Moench.—Rare; Beckhole (H.B.).

Corylaceae

CARPINUS Linnaeus

*betulus* L.—HORNBEAM. Rare; Hackness, about three trees, 1914 (A.I.B.).

CORYLUS Linnaeus

*avellana* L.—HAZEL. Common.

FAGACEAE

QUERCUS Linnaeus

*robur* L.—COMMON OAK. Common.
*petraea* (Matt.) Liebl.—SESSILE-FRUITED OAK. Probably widespread, but there is no definite record.

CASTANEA Miller

*sativa* Mill.—SWEET CHESTNUT. Occasional; Hackness, Thornton-le-Dale, etc.

FAGUS Linnaeus

*sylvatica* L.—COMMON BEECH. Common; Forge Valley, Thornton-le-Dale, etc.

SALICACEAE

SALIX Linnaeus

*pentandra* L.—BAY-LEAVED WILLOW. Uncommon; ThroxBY Mere, Spital Corner (H.R.); head of Troutsdale (G.B.W.).
*triandra* L.—SMOOTH WILLOW. Not uncommon on stream sides; Scarborough Mere (W.F.).
*fragilis* L.—CRACK WILLOW. Uncommon; Oliver’s Mount, 1941 (H.R.).
*alba* L.—WHITE WILLOW. Common on marshy ground.
*purpurea* L.—PURPLE WILLOW. Uncommon; near Falcon Inn, 1940 (H.R.).
*viminalis* L.—OSIER. Common in wet places; Forge Valley, etc.
caprea L.—GOAT WILLOW. Common in woods; Hayburn Wyke, Hay Brow, etc.

atrocinerea Brot.—COMMON WILLOW. Common.

var. ferruginea And.—FERRUGINOUS OSIER. Uncommon; Scarborough Mere, 1941 (H.R.).

atrocinerea Brot. x viminalis L. (x smithiana Willd.)—SILKY-LEAVED OSIER. Uncommon; Scarborough Mere, 1941 (H.R.).

repens L.—DWARF or CREEPING WILLOW. Common; Langdale End, Dalby Dale, Jugger Howe Beck, etc.

POPULUS Linnaeus

*alba L.—WHITE POPLAR. Uncommon; Langdale End, 1913 (A.I.B.).

tremula L.—ASPEN. Uncommon; Langdale End, 1915 (E.C.H.); Ebberston (H.R.); Sawdon Dale (A.I.B.); High Bridestones, 1948 (A.G.); Seamer Moor (G.B.W.).

*serotina Hart.—BLACK POPLAR. Not uncommon; Brompton, Hackness, East Ayton. P. nigra L. may occur.

*candicans Ait.—BALSAM POPLAR. Uncommon; Lady Edith’s Drive, planted (H.R.); Sawdon Dale and Staintondale, planted (W.F.).

EMPETRACEAE

EMPETRUM Linnaeus

nigrum L.—BLACK CROWBERRY. Uncommon; Silpho Moor, 1913 (E.C.H.); Saltwick Nab and moors near Falcon Inn (H.R.).

MONOCOTYLEDONES

HYDROCHARITACEAE

ELODEA Michaux

*canadensis Michx.—WATER THYME. Common in ditches and slow streams, Scarborough Mere, Mowthorpe Cut, River Derwent, etc.

HYDROCHARIS Linnaeus

morsus-ranae L.—FROGBIT. Rare; River Derwent above Malton (J.G.B.); not seen recently.

ORCHIDACEAE

NEOTTIA Richard, L. C.

LISTERA Brown, R.

cordata (L.) Br., R.—LESSER TWAYBLADE. Rare; plentiful on Silpho Moor in 1912 and 1913 (E.R.C., A.I.B., E.C.H.), but not seen there in recent years. Hole of Horcum, 1939 (E.R.C.).

ovata (L.) Br., R.—TWAYBLADE. Common in woods, etc.; Forge Valley, Ellerburn, Silpho Moor roadside (H.R.).

SPIRANTHES Richard, L. C.

spiralis (L.) Chev.—AUTUMN LADY’S TRESSES. Rare; Forge Valley (J.G.B.); Scalby Nabs, 1942 (H.R.).

CEPHALANTHERA Richard, L. C.

longifolia (L.) Fritsch—NARROW-LEAVED HELLEBORINE. Rare; Forge Valley and Beast Cliff, 1914 (A.I.B.).

EPIPACTIS Swartz

helleborine (L.) Crantz—BROAD-LEAVED HELLEBORINE. Rare; Cloughton Bank, 1940 (H.R.); Raincliffe Wood, 1915 (E.C.H.).

var. purpurea (Cel.)—Rare; Forge Valley, 1915 (H.R.).

palustris (L.) Crantz.—MARSH HELLEBORINE. Rare; Scarborough South Cliff, 1894 (E.R.C.); Dalby Dale, 1939 (E.G.H.).

ANACAMPTIS Richard, L. C.


ORCHIS Linnaeus

ustulata L.—DWARF or BURNT-TIP ORCHIS. Rare; Brompton, Snainton, Ruston Cow-pasture (H.R.).

morio L.—GREEN-WINGED ORCHIS. Common in meadows; Langdale End, Snainton, etc.

mascula (L.) L.—EARLY PURPLE ORCHIS. Common in pastures and woods.

latifolia L. sec Pugsl.—MARSH ORCHIS. Common in marshy ground.

purpurella Steph., T. & T. A.—Rare; Ringing Keld Bog, 1914 (T.B.R.), not seen recently; Cumboots, 1914 (E.C.H.).

ericetorum (Lint.) Marsh.—Not uncommon, predominantly on acid soils.

fuchsii Druce—SPOTTED ORCHIS. Common in meadows and on roadsides.

fuchsii Dr. x latifolia L. sec. Pugsl.—Rare; Helwath Beck (H.B.).

ericetorum (Lint.) Marsh. x fuchsii Dr. (x transiens Dr.)—Rare; Saltergate (H.B.).
OPHrys Linnaeus

apifera Huds.—BEE ORCHIS. Uncommon; Betton Farm, Given-dale Plantation, Allerston (H.R.); Forge Valley, 1884 (E.R.C.); cliffs south of Primrose Valley, Filey (G.B.W.).

insectifera L.—FLY ORCHIS. Uncommon; Forge Valley, Thornton-le-Dale (H.R.); Newton Dale (W.F.).

Gymnadenia Brown, R.

conopsea (L.) Br., R.—FRAGRANT ORCHIS. Common; cliffs north and south of Scarborough, Langdale End, Ayton, etc.

G. conopsea x L. albida (xx Leucadenia schweinfurthii Schlect.)—Rare; Hole of Horcum, 1937 (H.B.). H.B. writes:—"My record is the only English locality, all previous records being Scottish. I have deposited photographs in the Yorkshire Museum."

See also special report by P. M. Hall in "The South-Western Naturalist," Vol. XLIV, p. 28, "Hybrid Orchids of Great Britain."

G. conopsea x O. fuchsi (xx Orchigymnadenia legrandii Cam., G.) Rare; six miles up Thornton Dale (J.G.B., Nat., 1909, p. 342).

Leucorchis Meyer, E.

albida (L.) Schur.—SMALL WHITE ORCHIS. Rare; Hole of Horcum, 1922 (R.J.F.).

Coeloglossum Hartman

viride (L.) Hartm.—FROG ORCHIS. Not uncommon in dry hilly pastures; Cumboots, Cornelian Bay, Highdales, Dalby Dale, etc.

Platanthera Richard, L. C.

bifolia (L.) Rich., L. C.—LESSER BUTTERFLY ORCHIS. Un-

common; Cumboots, 1914 (E.C.H.); Langdale End, Hayburn Wyke, 1912 (A.I.B.).

chlorantha (Cust.) Rchb.—GREATER BUTTERFLY ORCHIS. Uncommon; Langdale End, 1913 (E.C.H.); Pickering Castle banks; Cross Cliff (H.R.).

Iridaceae

Irises Linnaeus

pseudacorus L.—YELLOW IRIS, FLAG. Common; Forge Valley, Scarborough and Throksenby Meres.

Amaryllidaceae

Narcissus Linnaeus


*majalis Curt.—PHEASANT’S EYE. "Is, or has been, sub-

spontaneous in the castle yard at Pickering."—W. Foggitt (J.G.B.).
GALANTHUS Linnaeus
*nivalis L.—SNOWDROP. Uncommon; Brompton, Lindhead, West Flotmanby, Staintondale; only as an escape from cultivation.

ALLIUM Linnaeus
vineale L.—CROW GARLIC. Rare; Hackness (B.R.).
ursinum L.—GARLIC, RAMSONS. Abundant in woods.

DIOSCOREACEAE

TAMUS Linnaeus
*communis L.—BLACK BRYONY. Common in hedges.

LILIACEAE

RUSCUS Linnaeus
*aculeatus L.—BUTCHER’S BROOM. Rare; only where planted, e.g., South Cliff Gardens.

POLYGONATUM Miller
*multiflorum (L.) All.—SOLOMON’S SEAL. Rare; Thornton-le-Dale, 1922 (R.J.F., J.G.); probably a garden escape.

MAIANTHEMUM Weber
*bifolium (L.) Schmidt—MAY LILY. Rare; Wrench Green, where since the conifers have been felled, the plants are flowering again abundantly, 1947 (H.R.). Found in 1857 by Messrs. Reynolds and Braby, this is the only British station where the plant is clearly indigenous (J.G.B.).

CONVALLARIA Linnaeus

SCILLA Linnaeus
*non-scripta (L.) Hoffmgg.et Link—BLUEBELL. Abundant.

ORNITHOGALUM Linnaeus
*umbellatum L.—STAR OF BETHLEHEM. Rare; Forge Valley (J.G.B.); not seen in recent years.

LILIUM Linnaeus
*martagon L.—MARTAGON LILY. Rare; Lowdales (W.A.S., Nat., 1936, p. 221).

FRITILLARIA Linnaeus
*meleagris L.—FRITILLARY. Rare; Flamborough Head (Y.N.U. Excn., June, 1886).
FLOWERING PLANTS

GAGEA Salisbury
   lutea (L.) Ker-Gawl.—YELLOW STAR OF BETHLEHEM. Rare; Yedmandale, 1894 (E.R.C.).

NARTHECIUM (L.) Hudson
   ossifragum (L.) Huds.—LANCASHIRE BOG ASPHODEL. Common on moors near Falcon Inn, Ringing Keld Bog.

PARIS Linnaeus
   quadrifolia L.—HERB PARIS. Uncommon; Yedmandale, 1913, Forge Valley, 1914 (E.C.H.); Ellerburn, 1940 (H.R.); Sawdondale, 1914 (G.W.T.); Newtontdale (W.F.).

JUNCACEAE

JUNCUS Linnaeus
   bufonius L.—TOAD RUSH. Common.
   squarrosum L.—HEATH RUSH. Common on moorlands.
   compressus Jacq.—ROUND-FRUITED RUSH. Rare; Cayton Bay, 1943 (H.R.).
   gerardii Lois.—MUD RUSH. Uncommon; cliffs north of Scarborough, 1945 (H.R.).
   inflexus L.—HARD RUSH. Common in wet places; Scalby, Ayton, Brompton, etc.
   effusus L.—SOFT RUSH. Abundant in wet places.
   conglomeratus L.—COMMON RUSH. Common in wet places.
   bulbosus L.—LESSER BOG JOINTED RUSH. Common.
   subnodulosus Schrank.—BLUNT-FLOWERED JOINTED RUSH. Rare; Thornton-le-Dale, 1938 (A.M.S.).
   articulatus L.—SHARP-FLOWERED JOINTED RUSH. Common in bogs.
   var. nigritellus Don.—Rare; Goathland (B.R.).
   acutiflorus Hoffm.—SHORT-FLOWERED RUSH. Common in marshy meadows.

LUZULA De Candolle
   pilosa (L.) Willd.—BROAD-LEAVED HAIRY WOOD-RUSH. Abundant in Forge Valley.
   sylvatica (Huds.) Gaud.—GREAT HAIRY WOOD-RUSH. Common in woods.
   campestris (L.) DC.—FIELD WOOD-RUSH. Abundant.
   multiflora (Retz.) Lej.—MANY-HEADED WOOD-RUSH. Almost as common as L. campestris.
   var. congesta (DC.) Reg.—Silpho Moor, 1946 (H.R., det. C.M.R.).

TYPHACEAE

TYPHA Linnaeus
   latifolia L.—REEDMACE. Uncommon; Cayton Carrs, 1916 (E.C.H.); Scarborough Mere, Crossgates (H.R.).
angustifolia L.—NARROW-LEAVED REEDMACE. Rare; Beast Cliff (Y.N.U. Excn., 1924).

SPARGANIACEAE

SPARGANIUM Linnaeus

erectum L.—BRANCHED BUR-REED. Common in ditches.

neglectum Beeby—Rare; Scalby Beck (Nat., 1895, p. 307).

simplex Huds.—UPRIGHT BUR-REED. Uncommon; Seamer Carrs, Mowthorpe Cut (E.R.C., H.R.).

minimum (Hartm.) Fr.—SMALL BUR-REED. Rare; Thornton-le-Dale, 1922 (R.J.F., J.G.).

ARACEAE

ARUM Linnaeus

maculatum L.—LORDS and LADIES, CUCKOO-PINT, WAKE-ROBIN. Common in hedge-rows, etc.

LEMNACEAE

LEMNA Linnaeus

trisulca L.—IVY-LEAVED DUCKWEED. Uncommon; Filey, 1947 (H.R. det. C.M.R.); pond near Cayton Station, 1914 (G.W.T.).

minor L.—LESSER DUCKWEED. Common in stagnant water.

polyrhiza L.—GREATER DUCKWEED. Rare; pond near Cayton Station, 1947 (H.R. det. C.M.R.).

ALISMATACEAE

ALISMA Linnaeus

plantago-aquatica L.—GREATER WATER-PLANTAIN. Common in ditches, etc.; Seamer Carrs, Scarborough and Throxenby Meres.

BALDELLIA Parlatorre

ranunculoides (L.) Parl.—LESSER WATER-PLANTAIN. Rare; Cayton Carrs, 1916 (E.C.H.); Seamer Carr (E.R.C., A.I.B.).

BUTOMACEAE

BUTOMUS Linnaeus

umbellatus L.—COMMON FLOWERING RUSH. Scarborough Mere, abundant in 1893-94, rare in 1896 and 1940 (E.R.C.); fifteen flowering spikes in 1947 (H.R.); Hertford River near Flixton. 1914 (E.C.H.).

JUNCAGINACEAE

TRIGLOCHIN Linnaeus

palustris L.—MARSH ARROW-GRASS. Uncommon; Cayton Bay, Cornelian Bay, Hole of Horcum (E.R.C.); Beast Cliff (W.F.).
maritima L.—SEA-SIDE ARROW-GRASS. Rare; “sparingly at Scarborough” (J.G.B.); said to grow at Cayton Bay, but this needs confirmation (E.R.C.).

POTAMOGETONACEAE

POTAMOGETON Linnaeus

natans L.—BROAD-LEAVED PONDWEED. Common.

polygonifolius Pourr.—OBLONG-LEAVED PONDWEED. Common.

lucens L.—SHINING PONDWEED. Scarborough Mere, 1914 (A.I.B.); now very rare and possibly extinct.

x zizii Roth.—Very rare and probably extinct; Scarborough Mere (J. A. Wheldon and H. T. Soppitt, 1881; T. E. Cotton, 1884).

gramineus L.—VARIOUS-LEAVED PONDWEED. Very rare and probably extinct; Scarborough Mere (H. Trimen, 1870).

alpinus Balb.—REDDISH PONDWEED. Local; pond near Scarborough (W.B.); Scarborough Mere (H. Moseley, 1840). Abundant in Newtondale Beck from the upper part of the dale as far as Levisham (J.G.B.).

obtusifolius Mert. et Koch—GRASSY PONDWEED. Rare; Scarborough Mere (H. Moseley, c. 1840); Valley Pond, Scarborough, 1914 (T.B.R. teste Dandy and Taylor).

becholdii Fieb.—SMALL PONDWEED. Not uncommon; Scalby, Forge Valley, Thornton-le-Dale. Cayton Bay, Cornelian Bay.

crispus L.—CURLED PONDWEED. Common; Cornelian Bay, Langdale End. Seamer Carrs, Forge Valley.

pectinatus L.—FENNEL-LEAVED PONDWEED. Rare; Scarborough Mere (G.W.T.).

densis L.—OPPOSITE-LEAVED PONDWEED. Common; Seamer Carrs, River Derwent (H.R.); Costa Beck, Pickering (G.B.W.).

ZANNICHELLIA Linnaeus

palustris L.—HORNED PONDWEED. Rare; River Derwent at Ayton, 1914 (T.B.R.); Brompton (E.R.C., A.G., H.R.).

ZANNICHELLIAECEAE

ELEOCHARIS Brown R.

acicularis (L.) Roem. et Schult.—SLENDER CLUB-RUSH. Rare; pond between Filey and Muston, 1947 (H.R. det. C.M.R.).

palustris (L.) Roem. et Schult.—MARSH CLUB-RUSH. Common; Scalby Beck, Scarborough and Throenby Meres.

multicaulis (Sm.) Sm.—MANY-STEMMED CLUB-RUSH. Rare; Ellerburn Marsh (Y.N.U. Excn., 1922).

SCIRPUS Linnaeus

pauciflorus Lightf.—FEW-FLOWERED CLUB-RUSH. Rare; Sleights Moor (J.G.B.).
caespitosus L.—TUFTED CLUB-RUSH. Common on the moors.
fluitans L.—FLOATING CLUB-RUSH. Rare; Cayton Carrs, 1916 (E.C.H.); Flixton Carrs (Y.N.U. Excn., 1945).
lacustris L.—LAKE CLUB-RUSH. Uncommon; Scarborough Mere, 1914 (E.C.H.); pond on Beast Cliff (W.F.).

BLYSMUS Schultes
compressus (L.) Link—BROAD-LEAVED BLYSMUS. Rare; Sand-dale and Eller’s Bog, Thornton-le-Dale, 1916 (A.I.B.).

ERIOPHORUM Linnaeus
vaginatum L.—SHEATHING COTTON-GRASS. Common on boggy moors.
angustifolium Honck.—NARROW-LEAVED COTTON-GRASS. Abundant on wet moors.
latifolium Hoppe—DOWNY-STALKED BROAD-LEAVED COTTON-GRASS. Uncommon; Filey Undercliff (J.F.R.).

RHYNCHOSPORA Vahl
alba (L.) Vahl—WHITE-BEAK SEDGE. Rare; Lilla Cross (Nat., 1933, p. 44); Fen Bog, May Moss (S/G.A.).

SCHOENUS Linnaeus
nigricans L.—BOG-RUSH. Rare; Langdale End, 1915 (E.C.H.); Nab Gate Springs, 1940 (H.R.); Hipperley Beck, 1915 (G.W.T.).

CAREX Linnaeus
dioica L.—DIOECIOUS SEDGE. Frequent in bogs and on moorlands; Langdale Rigg, Mowthorpe, etc.
pulicaris L.—FLEA SEDGE. Common in bogs; Langdale End, Mowthorpe, etc.
pauciflora Lightf.—FEW-FLOWERED SEDGE. Rare; long known at Lilla Cross, and still there (W.A.S.).
disticha Huds.—SOFT BROWN SEDGE. Rare; Cayton Carrs, 1916 (A.I.B., E.C.H.).
echinata Murr.—STAR-HEADED SEDGE. Common in marshes.
remota L.—REMOTE-FLOWERED SEDGE. Common in shady places; Langdale End. Hayburn Wyke, etc.
leporina L.—OVAL or HARE’S-FOOT SEDGE. Common in wet places.
elata All.—TUFTED SEDGE. Rare; Scarborough Mere (Baines’ “Flora of Yorkshire,” 1840).
nigra (L.) Reich.—COMMON SEDGE. Common in marshes and wet meadows.
   var. juncella (Fr.) Fr.—Rare; Langdale End, 1915 (A.I.B.).
flacca Schreb.—GLAUCOUS HEATH SEDGE. Common on the moors.
digitata L.—FINGERED SEDGE. Rare; “found by Mr. Reynolds at Hackness” (J.G.B.).
pilulifera L.—PILL-HEADED SEDGE. Uncommon; Hipper Beck, 1916, one specimen (A.I.B.); Hole of Horcum, 1947 (H.R. det. C.M.R.), but doubtless in many other places.
caryophyllea Lat.—VERNAL SEDGE. Common in dry pastures.
pallescens L.—PALE SEDGE. Uncommon; two localities near Langdale End, 1915-16 (A.I.B.); Bickley, 1916 (G.W.T.); Staintondale (W.F.); Forge Valley (C.M.R.).
panicea L.—CARNATION SEDGE. Abundant in marshes and damp meadows.
pendula L.—GREAT PENDULOUS SEDGE. Locally common; Forge Valley.
strigosa Huds.—LOOSE PENDULOUS SEDGE. Rare; Forge Valley (W. W. Reeves and M. B. Slater, 1889; Y.N.U. Excn., 1932).
sylvatica Huds.—PENDULOUS WOOD SEDGE. Common in damp woods, Forge Valley, etc.
laevigata Sm.—SMOOTH-STALKED SEDGE. Uncommon; Raincliffe Wood and wood near Jugger Howe, 1916 (A.I.B.); Hayburn Wyke, 1898 (W.F.).
binervis Sm.—GREEN-RIBBED SEDGE. Common on heaths and moors.
hostiana DC.—TAWNY SEDGE. Uncommon; Langdale End, Jugger Howe, 1915 (A.I.B.).
lepidocarpa Tausch—Uncommon; Jugger Howe, 1946 (H.R.); Dalby Dale, 1944 (C.M.R.).
hirta L.—HAIRY SEDGE. Common in damp woods.
acutiformis Ehrh.—COMMON SEDGE. Common on river banks and in ditches.
   var. spadicea Roth.—Forge Valley, 1915 (A.I.B.).
riparia Curt.—GREAT SEDGE. Rare; Forge Valley, one specimen, 1915 (A.I.B.).
rostrata Stokes—SLENDER-BEAKELED SEDGE. Common in marshes and bogs.

GRAMINEAE

PANICUM Linnaeus
*miliaceum L.—Rare; waste ground, Scarborough Mere, 1914 (E.C.H.).

SETARIA de Beauvais
*viridis (L.) Beauv.—GREEN BRITTLE-GRASS. Rare; waste ground, Scarborough Mere, 1914 (E.C.H.).

PHALARIS Linnaeus
* canariensis L.—CULTIVATED CANARY GRASS. Rare; waste ground, Scarborough Mere, 1914 (E.C.H.).

arundinacea L.—SEA-SIDE CAT’S-TAIL GRASS. Common; Throenby Mere, Forge Valley, Scalby.

ANTHOXANTHUM Linnaeus
odoratum L.—SWEET-SCENTED VERNAL GRASS. Abundant.

ALOPECURUS Linnaeus
myosuroides Huds.—SLENDER FOX-TAIL GRASS. Uncommon; Great Wold Valley (J.G.B.); waste ground, Scarborough Mere, 1914 (A.I.B. det. G.C.D.); Pickering, 1944 (M.E.P.).
geniculatus L.—FLOATING FOX-TAIL GRASS. Common; Cayton, Cumboots, Sawdon, Hayburn Wyke.

pratensis L.—MEADOW FOX-TAIL GRASS. Abundant.

MILIUM Linnaeus
effusum L.—WOOD MILLET GRASS. Common; Raincliffe Wood, Hackness, etc.

PHLEUM Linnaeus
pratense L.—COMMON TIMOTHY GRASS. Abundant.
nodosum L.—Rare; Flixton sand-pit, 1916 (E.C.H.).

arenarium L.—SEA-SIDE CAT’S-TAIL GRASS. Limestone pasture near Ayton Road, 1896 (W.F.).

AGROSTIS Linnaeus
canina L.—BROWN BENT GRASS. Common.
tenuis Sibth.—COMMON BENT GRASS. Very common.
stolonifera L. (incl. A. alba auct.)—MARSH BENT GRASS. Common.

CALAMAGROSTIS Roth (non Adanson)
epigejos (L.) Roth—WOOD SMALL-REED. Uncommon; Ellerburn Church, 1916 (D.W.B., A.I.B.).
canescens (Web.) Gmel.—PURPLE FLOWERED SMALL-REED. Rare; Raincliffe Wood (J.C. Rep. B.E.C., 1900).
FLOWERING PLANTS

APERA Adanson
interrupta (L.) Beav.—DENSE-FLOWERED SILKY BENT GRASS. Rare; Flixton sand-pit, apparently native, 1916 (A.I.B., E.C.H.); and still there.

AMMOPHILA Host
arenaria (L.) Link—MARRAM GRASS. Rare; Saltwick Nab, 1912 (A.I.B.).

AIRA Linnaeus
caryophyllea L.—SILVERY HAIR GRASS. Common.
praecoX L.—EARLY HAIR GRASS. Common.

DESCHAMPSIA de Beauvais
caespitosa (L.) Beav.—TUFTED HAIR GRASS. Common.
setacea (Huds.) Hack.—BOG HAIR GRASS. Very rare; North Burton, Wold Valley, 1909 (J.G.B.).
flexuosa (L.) Trin.—HEATH or WAVED HAIR GRASS. Common.

HOLCUS Linnaeus
mollis L.—CREEPING SOFT GRASS. Common.
lanatus L.—MEADOW SOFT GRASS, YORKSHIRE FOG. Abundant.

TRISETUM Persoon
flavescens (L.) Beav.—YELLOW OAT GRASS. Common at Flixton and Seamer.

AVENA Linnaeus
*fatua L.—WILD OAT. A common colonist.

HELICOTRICHON Besser
pubescens (Huds.) Pil.—DOWNY OAT GRASS. Not uncommon; Flixton and Seamer.
pratense (L.) Pil.—PERENNIAL OAT. Common on limey soils.

ARRHENATHERUM de Beauvais

SIEGLINGIA Bernhardi
decumbens (L.) Bernh.—DECUMBENT HEATH GRASS. Common at Hilla Green and Langdale End.

PHRAGMITES Adanson
communis Trin.—DITCH REED. Common at Scarborough Mere, Ganton, Folkton, Seamer Carrs, Cornelian Bay, etc.
CYNOSURUS Linnaeus

*echinatus L.—ROUGH DOG’S-TAIL GRASS. Rare; Flixton sand-pit, 1947 (H.R. teste C.M.R.).
cristatus L.—CRESTED DOG’S-TAIL GRASS. Abundant.

KOELERIA Persoon

gracilis Pers.—CRESTED HAIR GRASS. Uncommon; Flixton, Spital Corner, 1916 (A.I.B.).
britannica (Dom.) Druce—Rare; Forge Valley (J.F.G.C. Rep. B.E.C., 1933); North Cliff, Scarborough, 1913 (E.C.H.).

MOLINIA Schrank

crystalis (L.) Moench—PURPLE or BLUE MELIC GRASS. Common on wet moors, etc.

CATABROSA de Beauvais

aquatica (L.) Beauv.—WATER WHORL GRASS. Uncommon; Seamer Carrs, 1916 (E.C.H.); Pickering (Y.N.U. Excn., 1938); Saltwick Nab, Forge Valley, carr near Folkton (H.R.); pond above Scalby Beck (W.F.).

MELICA Linnaeus

nutans L.—MOUNTAIN MELIC GRASS. Uncommon; Forge Valley, 1913 (A.I.B.); between Levisham and Pickering (W.F.).
uniflora Retz.—WOOD MELIC GRASS. Common in Forge Valley, at Hackness, etc.

DACTYLIS Linnaeus

glomerata L.—ROUGH COCK’S-FOOT GRASS. Abundant; a viviparous state from Seamer Carrs (Hb. E.C.H.).

BRIZA Linnaeus

media L.—QUAKING GRASS. Common at Langdale End, etc. var. albida Lej.—Rare; Sand-dale near Ellerburn, 1916 (A.I.B.).

POA Linnaeus

annua L.—ANNUAL MEADOW GRASS. Abundant.
emoralis L.—WOOD MEADOW GRASS. Locally common in woods.
compressa L.—FLAT-STEMMED MEADOW GRASS. Not uncommon on dry banks and walls; Scalby, Yedmandale (W.F.); Ruston, Wykeham, 1945 (C.M.R.).
pratensis L.—SMOOTH MEADOW GRASS. Common.
trivialis L.—ROUGH MEADOW GRASS. Common.

GLYCERIA Brown, R.

fluitans (L.) Br., R.—FLOATING MEADOW GRASS. Common in watery places; Forge Valley, Cayton Carr, etc.
FLOWERING PLANTS

plicata Fr.—Flixton Carrs (Y.N.U. Excn., 1943).
maxima (Hartm.) Holmb.—REED MEADOW GRASS. Common in watery places; Hertford River, Brompton, Snainton, Cayton Carr, etc.

PUCCINELLIA Parlatorre
maritima (Huds.) Parl.—SEA MEADOW GRASS. Rare; Scarborough old pier (T.G., J.G.B.).
distans (L.) Parl.—REFLEXED MEADOW GRASS. Rare; Scarborough north shore (J.G.B.).
rupesris (With.) Fern. et Weath.—PROCUMBENT MEADOW GRASS. Very rare; Robin Hood’s Bay, 1935 (C.M.R.).

SCLEROPOA Grisebach
rigida (L.) Gris.—HARD MEADOW GRASS. Not uncommon; Forge Valley, Cloughton, Yedmandale, 1913-16 (E.C.H.); Stone Haggs (T.B.R.); Pexton Moor, Thornton-le-Dale (E.R.C.); Wykeham, 1945 (C.M.R.).

VULPIA Gmelin
bromoides (L.) Gray, S. F.—BARREN FESCUE-GRASS. Rare; Forest, Beedale, 1945 (C.M.R.).

FESTUCA Linnaeus
ovina L.—SHEEP’S FESCUE GRASS. Common in dry hilly pastures.
rubra L.—CREEPING FESCUE GRASS. Rare; Scarborough Castle Walls (T.G.).
var. glaucescens Heg. et Heer.—Scarborough, 1914 (E.C.H.).
pratensis Huds.—TALL FESCUE GRASS. Common in wet places.
gigantea (L.) Vill.—GIANT BROME GRASS. Common in shady places.

BROMUS Linnaeus
ramosus Huds.—WOOD BROME GRASS. Common in damp woods.
erectus Huds.—PERENNIAL BROME GRASS. Uncommon; Hackness Hairpins, 1916 (A.I.B.); Yedmandale, 1945 (C.M.R.).
sterilis L.—BARREN BROME GRASS. Common in fields and waste places.
mollis L. sec Holmbg.—SOFT BROME GRASS. Common by roadsides and in waste places.

BRACHYPODIUM de Beauvais
sylvaticum (Huds.) Beauv.—WOOD FALSE BROME GRASS. Common in thickets and hedgerows.
LOLIUM Linnaeus
   *perenne* L.—PERENNIAL RYE GRASS. Abundant.
   *multiflorum* Lam. ITALIAN RYE GRASS. Common.

AGROPYRON Gaertner
   *caninum* (L.) Beauv.—WOOD COUCH GRASS. Common.
   *repens* (L.) Beauv.—COUCH GRASS. Abundant.

NARDUS Linnaeus
   *stricta* L.—MAT GRASS. Common on moors and heaths.

HORDEUM Linnaeus
   *nodosum* L.—MEADOW BARLEY. Rare; Pickering, 1944 (M.E.P.).
   *murinum* L.—WALL BARLEY. Common in dry places.

CONIFERAE
TAXACEAE

TAXUS Linnaeus
   *baccata* L.—COMMON YEW. Common.

PINACEAE

PINUS Linnaeus
   *sylvestris* L.—SCOTS PINE. Common.

LARIX Miller
   *decidua* Mill.—EUROPEAN LARCH. Common.

   The following conifers, in addition to the above, have been planted in the area by H.M. Forestry Commission, the Duchy of Lancaster and others.


Ferns

FILICES - FERNS

OPHIOGLOSSACEAE

BOTRYCHIUM Swartz

lunaria (L.) Sw.—MOONWORT. Uncommon; near Hayburn Wyke, 1911 (A.I.B.); Langdale End, 1935 (G.B.W.).

OPHIOGLOSSUM Linnaeus

vulgatum L.—ADDER’S TONGUE. Common; Hayburn Wyke, Cloughton Newlands, Thornton-le-Dale (H.R.); Langdale End, 1935 (G.B.W.).

OSMUNDACEAE

OSMUNDA Linnaeus

regalis L.—ROYAL FERN. Rare; Harwood Dale, 1915-16 (G.W.T.); has now disappeared from the area owing to the depre- dations of collectors.

MARSILEACEAE

PILULARIA Linnaeus

globulifera L.—CREEPING PILLWORT. Rare; Scarborough Mere (J.G.B.); not seen in recent years.

HYMENOPHYLLACEAE

HYMENOPHYLLUM Smith, Sir J. E.

tunbrigense (L.) Sm.—TUNBRIDGE FILMY FERN. Rare; Baker says, “Said to have been found by Mr. Peterkin on the banks of the stream which falls into the sea at Hayburn Wyke.” This record is vouched for by Dr. Richard Spruce.

POLYPODIACEAE

PTERIDIUM Scopoli

aquilinum (L.) Kuhn—BRACKEN. Abundant.

BLECHNUM Linnaeus

spicant (L.) Roth—NORTHERN HARD FERN. Common at Hayburn Wyke, Hackness, etc.

PHYLLITIS Hill

scolopendrium (L.) Newm.—HART’S-TONGUE FERN. Common in shady places.

ASPLENIUM Linnaeus

marinum L.—SEA SPLEENWORT. Rare; Burniston Wyke (“Nat. Hist. Journ.,” 1885, p. 77).

trichomanes L.—COMMON WALL SPLEENWORT. Common on walls and rocks.
oboatum Viv.—GREEN LANCEOLATE Spleenwort. Rare; Beast Cliff, 1909 (H.J.B.); Goathland, 1933 (F. Druce).
adiantum-nigrum L.—BLACK-STALKED Spleenwort. Rare; Ravenscar Undercliff (E.G.H.); Bridestones, 1940 (E.R.C.); near Goathland (W.A.S.).
ruta-muraria L.—WALL-RUE Spleenwort. Common at Hackness, Ayton, Brompton, etc.

ATHYRIUM Roth
filix-femina (L.) Roth—LADY FERN. Abundant in moist and shady places.

CYSTOPTERIS Bernhardi
fragilis (L.) Bernh.—BRITTLE BLADDER-FERN. Rare; Newtondale (Y.N.U. Excn., 1941).

DRYOPTERIS Adanson
filix-mas (L.) Schott—MALE FERN. Abundant.
dilatata (Hoffm.) Gray, A.—BROAD SHIELD FERN. Common in moist woods and shady and rocky places.
spinulosa (Muell.) Warr—NARROW PRICKLY-TOOTHED SHIELD FERN. Common in boggy woods and thickets.
aemula (Ait.) Kuntze, O.—HAY-SCENTED FERN. Rare; Hackness (E.R.C., Dr. Rowlands).
POLYSTICHUM Roth
setiferum (Forsk.) Woynar—ANGULAR-LEAVED SHIELD FERN. Rare; Newtondale (Y.N.U. Excn., 1941).
aculeatum (L.) Roth—PRICKLY SHIELD FERN. Common in woods and moist shady places.

THELYPTERIS Schmidel
oreopteris (Ehrh.) Chr., C.—SWEET MOUNTAIN BUCKLER FERN. Uncommon; Hackness, 1939 (E.R.C.).
phegopteris (L.) Sloss.—BEECH FERN. Rare; Whisperdales (E.G.H.); not seen recently.

GYMNOCARPium Newman
dryopteris (L.) Newm.—OAK FERN. Rare; at one time in Raincliffe Wood, Beedale, Yedmandale, now disappearing from the district.
robertianum (Hoffm.) Newm.—LIMESTONE POLYPODY. Rare; Newtondale, 1940 (E.G.H.).

POLYPODIUM Linnaeus
vulgare L.—COMMON POLYPODY. Abundant on walls and banks.
**EQUISETACEAE — HORSE-TAILS**

**EQUISETUM** Linnaeus

telmateia Ehrh. GREAT WATER HORSE-TAIL. Common in Forge Valley and cliffs north of Scarborough.

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**arvense** L.—CORN or FIELD HORSE-TAIL. Abundant.

**sylvaticum** L.—BRANCHED WOOD HORSE-TAIL. Uncommon; Ringing Keld Bog, 1914 (T.B.R.); Raincliffe Wood, Forge Valley (E.R.C.).

**palustre** L.—MARSH HORSE-TAIL. Common in bogs.

**var. polystachyum** (Weig.) Duv. Jouve—Rare; Ringing Keld, 1903 (C.W.).

**fluviatile** L.—SMOOTH NAKED HORESETAIL. Not uncommon.

**hyemale** L.—DUTCH RUSH. Rare; Scarborough (T.G.).

**LYCOPODIACEAE — CLUB-MOSSES**

**LYCOPEODIUM** Linnaeus

**selago** L.—FIR CLUB-MOSS. Rare; Seamer Moor (T.G.).

**clavatum** L.—COMMON CLUB-MOSS. Rare; Ramsdale Beck near Foul Syke, 1915 (G.W.T.); Dalby Dale, 1944 (C.M.R.); near the Falcon Inn, 1924 (G.B.W., A.I.B.).

**alpinum** L.—ALPINE CLUB-MOSS. Rare; Hutton Buscel Moor (J.G.B.).

**SELAGINELLACEAE**

**SELAGINELLA** de Beauvais

**selaginoides** (L.) Link—LESSER ALPINE CLUB-MOSS. Rare; Langdale End, 1915 (E.C.H.); near Bloody Beck (Hb. E.C.H.); Dalby Bog, (A.G.).

**CHAROPHYTA — STONEWORTS**

**CHARA** Linnaeus

**delicatula** Agardh.—FRAGILE CHARA.—Uncommon; Thornton-le-Dale, 1922 (J.R.F., J.G.); Grosmont, 1946 (E.R.C.).

**fragilis** Desv. var. *hedinii* Kuetz.—Rare; Filey, 1946 (E.R.C.; H.R. det. C.M.R.).
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HEATHLAND AFFORESTATION  
IN THE SCARBOROUGH DISTRICT  

J. Weatherell  

By kind permission of Her Majesty's Forestry Commission.  

INTRODUCTION  

Afforestation involves an ecological change wherein land not normally supporting trees is converted into forest-land. Such a change is inevitably followed by a sequence of others, each of which is a reflection of changed conditions in the soil and the life within and above it. An understanding of these changes helps the forester to assess the wellbeing of his woods, and to determine necessary management.  

A wood may need sixty to a hundred or more years to mature according to tree species and site conditions. In an ecological study of a woodland area, periodic recordings are thus essential for the benefit of future foresters and ecologists. For this purpose two local areas are described as they were before afforestation, together with observations on methods of afforestation and difficulties encountered. The calcareous grit plateaux of Wykeham and Broxa Forests are examples of state afforestation; on the Ordnance Survey map these sites are marked Wykeham Low Moor and Hackness Moor respectively. Planting began at Wykeham in 1928, at Broxa in 1941. Both areas have been subjected to intensive research into methods of afforestation.  

PHYSIOGRAPHY.  

The areas under review are slightly convex plateaux dipping gently to the south. Their elevation is 600-700 feet above mean sea-level, and they are fully exposed to great force of wind, chiefly from the north-west, but with low-temperature winter winds from the north-east. The rainfall is estimated to be 25 inches per annum. Geologically the surface stratum is the lower calcareous grit of the middle oolite. The small amount of calcareous matter originally present has long been washed away, and there is now an acid reaction.  

The soil is a podzol, that is a soil where downward washing or leaching of fine soil particles and mineral salts from an upper layer has occurred. Such washed-out materials are usually deposited at a lower level. The following soil profile is representative though the A2 horizon varies in thickness and the depth of the pan varies accordingly.
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<th>Depth in cms.</th>
<th>Description</th>
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<td>A0</td>
<td>0-6</td>
<td>Brown and black matted peat.</td>
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<td>A1</td>
<td>6-12</td>
<td>As A2 but stained by A0. Not always present.</td>
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<tr>
<td>A2</td>
<td>6/12-19</td>
<td>Leached grey sandy soil with small rock fragments; compact.</td>
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<td>A3</td>
<td>19-19.5/20</td>
<td>Black peat from dead roots.</td>
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<td>B1</td>
<td>19.5-20</td>
<td>Precipitated humus in sand and around stones; dark in colour. Not always present.</td>
</tr>
<tr>
<td>B2</td>
<td>20-20.3</td>
<td>Brown hard pan, black on upper surface.</td>
</tr>
<tr>
<td>B3</td>
<td>20.3-35</td>
<td>Red-orange-brown sandy soil with small rock fragments; slightly less compact than A2 and with a higher clay content.</td>
</tr>
<tr>
<td>C</td>
<td>35-</td>
<td>Yellow-buff sandy soil, with rock fragments varying in quantity but tending to increase in size as the depth becomes greater; clay content rather less than in B2.</td>
</tr>
</tbody>
</table>

A0 is usually almost structureless and is capable of absorbing large quantities of water, but when dry it is slow to do so, and after a period of drought acts as a waterproof cover which encourages surface flooding.

A1 when present is peat-stained A2 and is the layer most densely occupied by the roots of the heath plants and those of the occasional trees.

A2 is a zone of leached mineral soil with some root humus remains. Its grey or even white appearance gave rise to the word podzol, a Russian term meaning ash-like soil.

A3 is a thin underground humus layer consequent on the inability of the roots of the natural vegetation to penetrate B2. Such roots travel horizontally over the pan, and when they die add to the humus layer.

B1 when present, is stained by humus infiltration from A3 and other humic layers nearer the surface.

B2 is a concentrated collection of substances leached from A1, one of the most important being iron. The break-up of this pan allows the downward and upward passage of water; normally it is a barrier to both roots and moisture.

B3 is a zone of deposition containing clay and other materials moved from the A horizons by leaching, merging gradually into C—the parent material, a stony sand weathered from the sandstone rock.
PREVIOUS HISTORY.

Contrary to the belief of some, there is no doubt that these plateaux have not always been covered with a moorland vegetation. Fossilised pollen preserved in the soil can be identified with certainty, and proves that such trees as oak, lime and alder, accompanied by hazel, at one time formed the dominant vegetation type. Such forest species could have existed only under warm and wet climatic conditions such as we believe predominated between 4000 and 7000 years ago. The occurrence of a drier climatic phase following this probably eliminated some species, but there seems little doubt that oak, birch and pine persisted. It seems likely that these were in turn ousted by Bronze Age man when he was driven to exploit these relatively poor soils with his primitive shifting cultivation, his grazing animals and the use of fire. The disappearance of the dense forest cover, coupled with soil depletion by unscientific cultivation, would give ready access to the heather, which, once established, would consolidate its dominance by its tremendous vigour in competition with other vegetation. Doubtless relics of old forest persisted and provided scattered regeneration over the area as a whole, but this would periodically be burnt off, thus preventing the re-establishment of broad-leaved forest even though the climate became appreciably moister again some 2000 years ago. In the course of time the heather brings about such soil deterioration, in particular the formation of a hard pan, that colonisation by trees is achieved only with difficulty and if they do survive, their growth is stunted.

Such a historical account may seem to be of merely academic interest, but it is well for the forester to know that these plateaux have once borne a good forest soil, and if it is realised how long soil deterioration has been at work it gives some idea of how feasible it is to restore such a soil. This reversal of soil deterioration constitutes a major problem for the silviculturist, and a most important factor in the solution will be the correct choice of species for re-afforestation.

NATURAL VEGETATION PRIOR TO AFFORESTATION.

A.—SHRUBS.

1. Calluna vulgaris (heather or ling). This is the dominant species; its average yearly growth rarely exceeds two inches and may be less than one inch; it is highly inflammable in dry weather.

2. Erica tetralix (cross-leaved heath). Associated with fairly wet sites.

3. Erica cinerea (fine-leaved heath). Generally less common than E. tetralix and restricted to drier sites, the sides of tracks, etc.

4. Empetrum nigrum (crowberry). Rare.

5. Ulex europaeus (gorse). Associated with old depressed tracks.
B.—SEDGES, RUSHES and GRASSES.

1. **Juncus squarrosus** (heath rush). Closely associated with **Scirpus**, but rather more common, especially where the peat has been burned off.

2. **Juncus bufonius** (toad rush). Rare.

3. **Scirpus caespitosus** (deer grass). Occurs on wetter sites where **Calluna** is least vigorous.

4. **Carex flacca** (glaucous sedge). Rare.

5. **Eriophorum vaginatum** (hare's tail cotton-grass). Patchy, but very frequent on wetter sites, and best noticed when in fruit.

6. **Eriophorum angustifolium** (narrow-leaved cotton-grass). Rare to patchy and always confined to wet depressions.

7. **Molinia caerulea** (purple moor-grass). Rare.

8. **Nardus stricta** (matweed). Of rare occurrence. Associated with old tracks where peat is thin enough to expose mineral soil.

C.—TREES.

1. **Pinus sylvestris** (Scots pine). Rare and always in scrub form.

2. **Betula spp.** (birch). Rare and never taller than 3 feet.

To the east of Hackness Moor and within easy reach of the highway much better examples of Scots pine and birch may be found together with other tree species. These are almost certainly examples of natural regeneration, but may have descended from earlier plantings nearby.

**GENERAL FORESTRY PRACTICE.**

**FOREST NURSERIES.**

All conifers are raised from seeds. Cuttings are sometimes possible but a high degree of skill is needed for success and the method is not yet economic. When the seedlings are one or two years old, they are transplanted within the nursery and left for another year. Transplanting discourages the formation of long roots, encourages short root formation and gives the tree an opportunity to build up a reserve of energy before it is transferred to its forest site.

Two types of nursery are in use locally. The older type is on agricultural soil, the recently developed type is on heathland soil. The latter produces trees more fitted to heathland planting, the explanation for which may be connected with mycorrhizal equipment of coniferous roots. A tree produced in one soil type tends to go into partial check when transferred to the other soil type, though normal growth is resumed after a year or so, provided other deleterious factors are not present. This check occurs possibly because the mycorrhizal equipment developed in one soil is useless to the tree in the other soil. A further valuable feature of the heathland nursery is its relative freedom from troublesome weeds, at least during early years.
PLANTATIONS.

About seventeen hundred plants are needed to afforest one acre. For an equally proportioned pine-spruce mixture these can be obtained from one ounce of Scots pine seed and one quarter-ounce Sitka spruce seed. Seventy per cent, or more of the trees will be eliminated partly by natural competition, but mainly by deliberate thinning before the final crop is left to mature. The initial heavy stocking of the trees and subsequent removal in stages of so many stems is the forester’s method of providing straight stems, free from large branches. Thinnings allow removal of weaklings, deformed trees and “wolves.” The last are so called because of inherent vigor for branch production which, if uncontrolled, would suppress rather smaller but better quality stems.

At the original stocking per acre a dense canopy of branches is formed in ten to fifteen years. The upper branches absorb light at the expense of the lower branches and ground vegetation. These latter die, which is what the forester wants. The dominant trees continue their upward growth and also expand laterally; consequently an annual increase in the amount of foliage is essential if stability between the foliage food-factory and timber production is to be maintained. Thinning or removal of stems allows increased development of foliage on the remaining trees. Each thinning allows further branch development, but there is always some degree of shade at an ever-increasing height which is sufficient to discourage vigorous branch development below. When the forest crop has nearly reached its height limit the final thinning takes place which allows further increase of stem diameter.

FOREST DEMARCAITION.

Forests, under management, are divided into compartments or blocks, usually of about 25 acres and each is given a number. Easy reference to any part of the forest is thus obtained. Demarcation is effected by unplanted rides which vary in width from twenty-five to sixty-six feet, or even wider according to their various uses. Rides give access to the forest and serve the all-important feature of providing fire-proof lines. In recent years the wider rides have been used as nurseries where seedling conifers are raised. When timber extraction begins in earnest, the rides will become highways of activity.

Rides may be straight or curved. The former provide numerous viewpoints through the forest, especially useful in periods of fire danger; the latter lend themselves to extraction routes in undulating country.

FIRE

Fire is the great enemy of all forests. A single match or cigarette end can cause the loss of thousands of pounds worth of valuable timber, besides endangering human and other life. On no account should fires or stoves be lit anywhere near plantations or inflammable vegetation.

Steps are taken to minimise the spread of any fire which may occur in spite of all possible preventive measures. During danger periods such as public holidays and week-ends, the more accessible areas are patrolled. In addition field telephones are installed for rapid communica-
tion. Rides are cleared of inflammable vegetation, and fire-proof belts of Japanese larch are established. Fire-beaters made of young birch trees are installed at strategic points.

In the event of an actual outbreak everyone can be of assistance by beating out the flames. One person at least should inform the local forester or police from the nearest telephone. "Forestry Commission" will be found in the directory, and the fire may be reported on a reversed charge.

PESTS.

Rabbits and hares can do much damage, especially in nurseries, and are excluded by suitable fences. Deer have occasionally been reported in the vicinity, but seed-eating squirrels have not yet appeared.

Woodlands abound with insects, many of which are either harmless or useful; others are detrimental in various ways and degrees of importance. Among the latter the following have been observed locally.

Chafer beetles. Melolontha melolontha, Serica brunnea. Have on occasions been troublesome in nurseries where, as larvae, they feed on tree roots.

Cutworm. Agrotis spp. The larvae cut off nursery seedlings at ground level, and pull the tops underground as food.

Pine weevil. Hylobius abietis. This and related species can be very troublesome following felling of coniferous woods. The bark and outer cambium of newly planted and young conifers are ruthlessly eaten, often with disastrous results, unless trapping is resorted to.

Pine shoot moth. Evetria spp. Attacks 3-15-year old pine, particularly Pinus sylvestris. Damage in done to buds, resulting in dead or deformed shoots including the all-important leading shoot.

Pine shoot beetle. Myelophillus spp. These troublesome pests usually follow the pine shoot moth, and do twofold damage, Pinus sylvestris being the favourite tree. Tunnels are cut in main stem cambium by mature beetles in which eggs are laid; the larvae cut new tunnels as they feed on the cambium. Much more serious is the damage done by mature beetles which move from the main stem and feed on the pith of young shoots. The tunnelled shoots die, so ruining normal development, especially when the leading shoot is attacked. Tunnelled shoots on the forest floor indicate that Myelophillus has been at work.

Larch shoot moth. Argyresthia spp. Larvae feed within and usually kill young shoots of larch. Reputed to prefer unhealthy trees. Larch leaf-miner. Coleophora laricella. Larvae feed on larch needles, trees of 6 to 30 years of age being preferred.

Pine sawfly. Diprion pini. Larvae, always in colonies, defoliate pines, and if attack is heavy, other conifers.

Spruce aphis. Neomyzaphis abietina. Causes severe defoliation of Sitka spruce by feeding on needle sap. Immune to freezing temperatures, and under such a combination of enemies the host may die.

Chermes. Adelges spp. Responsible for galls on spruces.
WEATHER

Adequate drainage and efficient thinning are essential if uprooting of trees during occasional severe gales is to be avoided. Wind will break young leading shoots, especially Sitka spruce, in exposed sites.

Spring frosts retard development of young trees of many species, though some, such as larches and spruces, open their buds in relatively long term sequence beginning at the basal branches, and so minimise the damage. Frosted lower buds give the tree a check, so that by the time the all-important terminal bud opens further frosts are less likely.

Frost lift is a serious nursery problem affecting small seedlings. Expanding ice between soil particles gives a mechanical lift to the upper layers within which the seedling root collars are firmly held by surface ice. The succeeding thaw allows the soil to subside away from the lifted seedlings, whereupon the latter frequently fall and perish.

Frost-crack in plantations occurs during a prolonged period of low temperature, and is due to a sudden rupture of the bark consequent on the expansion of freezing moisture within the stem. The rupture is accompanied by a readily audible report.

Glazed frost is a condition where rain coming from relatively warm layers meets with frozen vegetation. The result is an ever increasing collection of ice on stems, branches and twigs, which can, through sheer weight, maim and destroy plantations.

Snow break, that is mechanical damage due to weight of snow, can be serious, especially with Scots pine. Drought can have a marked effect in woods of shallow rooting species, usually in the form of reduced growth in the year following the drought. Lightning damage is rare.

LOCAL AFFORESTATION.

TREE SPECIES.

Coniferous trees are in general much less exacting in soil requirements than are the broad-leaved timber trees, and in the afforestation of low quality podzolised heath conifers offer the only chance of success. Some of the broad-leaved trees such as oak, alder, willow, and birch might grow as scrub, but would not produce marketable timber in the initial rotation. Such broad-leaved species may, however, prove to be valuable soil-improvers and would therefore be in place as admixture species in a coniferous wood; investigations into the effects on the soil of various such species are being made.

The following trees have been used in the afforestation of the upland plateaux of Wykeham and Broxa:

SCOTS PINE (Pinus sylvestris). This is the only coniferous timber producer indigenous to Britain. Many trees are deformed due to pine-shoot moth, and pine-shoot beetle.

CORSICAN PINE (Pinus laricio var. corsicana). This is a native of Corsica and is less liable to insect attack than P. sylvestris. It is liable to frosting and attack by the fungus Bruchorstia destruens at high altitudes, and is difficult to establish because of high death rate following planting.
LODGEPOLE PINE (*Pinus contorta*). This is a native of the Western States and Canada. It is easy to establish, is a rapid grower and very suitable for really difficult areas.

EUROPEAN LARCH (*Larix decidua*). This is an exacting conifer used in small-scale trials at Wykeham; it is heavily attacked by larch shoot moth.

JAPANESE LARCH (*Larix leptolepis*). This is less exacting than *L. decidua*, and is extensively used for fireproof lines across plantations. The non-inflammable nature of this species was discovered when advancing forest fires died out on reaching it.

The larches, by reason of their pale young shoots, reveal each year after leaf fall a deposit of soot which is most obvious on the south west side, that is, on the side facing the industrial areas of South and West Yorkshire. Soot adhering to other species is much less discernible because of their darker stem colour. It is largely removed by snow.

SITKA SPRUCE (*Picea sitchensis*). This is capable of producing a high yield of timber on relatively poor ground. In its native habitat along the Pacific coast of North America it produces trees of magnificent form and size.

In addition a number of less common conifers and several broad-leaved species have been tried experimentally. Of such conifers, western hemlock, *Tsuga heterophylla*, Douglas fir, *Pseudotsuga taxifolia* and silver fir spp., *Abies grandis* and *A. nobilis*, show some promise. Among the broad-leaved trees, birch, *Betula* spp., is reasonably vigorous: beech, *Fagus sylvatica*, and sweet chestnut, *Castanea sativa*, have made progress when nursed by pines.

**DIFFICULTIES OF ESTABLISHMENT.**

The early plantings were not wholly successful, and it was soon realised that the soil would have to be improved if satisfactory tree growth was to be obtained. Direct planting into the natural heath resulted in the death of many trees and the poor stunted growth of the survivors.

Cultivation was the line of approach, but there was no available plough or other tool capable of working in such a compacted soil. Special ploughs were accordingly constructed and improved from time to time. The first workable model reached a maximum depth of six inches and in places ruptured the pan. A revised model reached a depth of eight to nine inches, and the latest operates at a depth of twelve to sixteen inches; this single-furrow plough weighs nearly two tons and is drawn by a 40 H.P. caterpillar tractor. Each development in ploughing resulted in improved growth in the plantings which followed. Ploughing, when deep enough to break the pan, allows water to be absorbed, and gives roots access to lower soil levels besides improving aeration and smothering the natural vegetation.
A second line of approach was the use of artificial fertilisers applied at planting. Results were variable and the subject is still being studied. Manures applied to individual trees at planting exert little effect on growth during the first growing season, but may produce very vigorous growth in the second year after application. Such effects sometimes wear out within a few years and secondary applications have but little effect.

Ten years after the initial planting of ploughed heath at Wykeham, it was found that where pines and spruces were grown in intimate mixture the growth of spruce was better than in adjoining pure plots. This assistance which same species can give to others is of aid to the forester, and is discussed more fully below.

**INTERACTIONS BETWEEN SPECIES.**

As just noted, the beneficial effects of one tree species upon another are used by the forester. This leads him to form mixed woods rather than pure stands, and thus large areas have been planted with a mixture of Scots pine and Sitka spruce. Early mixtures consisted of single rows or plants of one species alternating with single rows or plants of the other species. The current method of mixing is a strip of several rows of the nursing species alternating with a strip of several rows of the nursed species. This is done because the former mixing leads to maintenance difficulties due to the unequal growth of the two species.

Broom has been outstandingly successful in nursing Sitka spruce during the early life of the plantation. Corsican pine and Japanese larch are also useful nurses, generally similar to Scots pine in effect, but less dramatic than broom.

When nursing effects were observed in Wykeham Forest in 1938 a series of experiments designed to uncover some of the factors involved were begun. The following pointers emerged on ploughed areas:—

1. When pines were not more than four feet distant from spruces, the latter showed a small growth increase when the pines were about five feet high.

2. When strips of Japanese larch or Scots or Corsican pines had suppressed the Calluna vegetation immediately below, adjoining Sitka spruce began to grow vigorously.

3. When Calluna in stands of pure Sitka spruce was killed by mulching or hoeing, growth of the spruce improved considerably.

4. The presence of Calluna does not appear to matter very much to spruce when broom is present.

1.—Indicates a possible inter-root effect and possibly a bringing up of the bases by a deeper-rooted nurse. 2 and 3—Indicate a harmful association between Calluna and spruce, while broom appears to counteract this. Nitrogen undoubtedly plays a major part in the life of trees, and is is possible that Calluna, with its underground fungal association, renders normally available nitrogen unavailable to the trees either by changing its form or by somehow exerting priority on its uptake.
Broom is expensive to establish and maintain. Pines offer the best practical method for nursing spruce. In multiple rows they soon suppress natural vegetation, and until better methods are devised, it is likely that such strip mixtures will be employed on Calluna podzols where spruce is the intended major species.

**TREE ROOTING.**

The roots of naturally regenerated trees on the undisturbed heath are all moulded into very similar form by the soil stratification. Whilst such trees as pine, oak, birch and rowan normally have diverse and characteristic systems, here they all confine their main roots to the shallow A1 horizon. A few roots in each case may exploit the humus layer above the pan, but these are never vigorous. The surface roots frequently show the long unbranched form typical of roots growing in an unfavourable medium. Birch, however, is unique in sending down sinkers which are often able to penetrate the pan, even when it is indurated, and it is almost safe to say that every well-growing birch has one or more roots in the subsoil. Pine can do this only in places where the pan is soft or ruptured. On land which has previously carried scrub pine, birch roots frequently enter the rotten wood of old stumps and produce vigorous fibrous rooting within it.

As regards planted trees, excavations have revealed useful data on the behaviour of tree-roots relative to cultivation. Scots pine roots do not develop very well in undisturbed leached soil, and do not penetrate the unweathered or unbroken pan. When they reach B3 via furrows or disturbed soil they develop and branch freely.

The roots of Sitka spruce remain at or within an inch of the surface in unploughed land, but will go down at least twelve inches into ploughed soil. If stands of larch or pine without living Calluna are at hand, the spruce roots develop vigorously in the layer of larch and pine needle litter. One root of a planted alder ceased sixty-seven and a half inches below the surface. At this depth the soil was compact, but with no evidence of gleying. It is of interest that ancient root channels now occupied by living Calluna roots have been found at more than seven feet below the surface.

**ECOLOGICAL CHANGES.**

Perhaps the most interesting ecological changes to date following planting are mycological. In 1946 more than forty species of agarics and boleti were observed in sixteen year old coniferous plantations at Wykeham. A study of mycology is vitally important in coniferous woodland since there is some connection between toadstools and the mycorrhizal root equipment of trees, as well as in the breakdown of needle and branch litter in the forest floor and dead roots in the soil. Some fungi are beneficial, others are harmful or even deadly to the crop.
Grasses such as Deschampsia flexuosa, Poa annua, Holcus spp. and Agrostis spp. have appeared, and in areas sown with broom, Vaccinium myrtillus, Rubus spp., grasses, ferns, mosses and liverworts are to be found.

Broad-leaved species such as birch, willow and oak regenerate fairly frequently following deep ploughing, and birch develops rapidly particularly in areas sown with broom.

When blocks of European larch adjoin Japanese larch there is cross-pollination with the former as the male parent, and hybrid larches appear in the forest rides from self-sown seeds. There is also regeneration of lodge-pole pine at Wykeham, but very little of Scots pine, and none of Corsican pine.

Application of phosphate to newly planted trees almost always produces patches of the mosses Funaria hygrometrica and Ceratodon purpureum with the rose-bay willowherb Chamaenerion (Epilobium) angustifolium. A similar ecological change follows the burning of heaped brushwood in woodland.

The ecological changes recorded to date deal only with what happens as trees are established up to the point where they close canopy. Whilst it is too early in most cases to say that new communities have been formed, at least the old one, the heath, has been destroyed and is now unrecognisable. This is due mainly to one factor—shading, and differences in the vegetation under the various species can so far be correlated only with differences in the degree of shading, but the increase in ferns, mosses and liverworts indicates that a second factor—shelter—is becoming operative. These plants demand a humid atmosphere, now provided by protection from drying wind.

Such is the first stage of ecological change. The oldest plantations are now entering the second stage of development, the formation of a mature stand. Doubtless this will also be beset with surprises and difficulties for the forester, but it must remain for the present another story.

The author is indebted to Dr. G. W. Dimbleby for his help in the section on Previous History, which has been written in the light of Dr. Dimbleby’s own work on this area.
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