





S. 126.

A. 3.





FIG. 1.—BEMPTON AND SPEETON CLIFFS, LOOKING WEST.

TRANSACTIONS

OF THE

Hull Scientific and 

 Field Naturalists' Club

FOR THE YEARS 1903-1906.

VOLUME III.

EDITED BY THOMAS SHEPPARD, F.G.S.



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1907.



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PREFACE.

THE present Part of our Transactions concludes the Third Volume. The Club can certainly feel satisfied that the aim set out when it first began to publish in 1898, namely, that its Transactions should deal with *original* matters of *local* interest only, has been so far achieved. In the three Volumes which have been published it is not possible to find a single paragraph that does not bear upon this district. In the present Volume there are papers and monographs of altogether exceptional worth, and these have been increased in value by a wealth of plates and illustrations in the text of which any Society might be proud.

It is to be hoped that the Club may long continue to carry on its useful work.

T. S.

HULL, *January 1907.*

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PRICE 3/6 NET.

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SOLD BY

A. BROWN & SONS, LTD., SAVILE ST. & KING EDWARD ST., HULL.

1903.

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THE BIRDS OF BEMPTON CLIFFS.

BY E. W. WADE.

(Read February 19th, 1902.)

IF there is one feature in the landscape of the broad-acred shire of which Yorkshiremen may justifiably be proud, it is the chalk cliffs of the East Riding. Other counties can boast mountains, dales, moors, rivers, perhaps as good as or better than ours, but on the whole of the east coast of England, at any rate, we may safely say there are no cliffs to equal these. Making their appearance first at a point somewhat east of Speeton, they extend in a mighty rampart, intersected in three places only by slopes which can be descended without ropes, to the Thornwick bays, from which point to Flambro' Head they are broken up into a series of indentations and caves, famous through all England for their beauty. Can any scene surpass the wild magnificence of these rocks in the storms of winter, when the billows are thundering mountains high at their bases, dashing the spray to a height of a hundred feet or more over the low cliffs of Thornwick, and sending the wind-borne spume miles inland to tell the tale of their fury. Woe betide the unhappy sailors whose vessel is caught in the

cruel fangs masked by those breakers. Their vessel is crushed like an egg shell in the grip of a giant, and they are hurled into eternity before any means of rescue can be devised.

Or visit the cliffs again in spring or summer, when the treacherous sea is sighing gently at their feet, and brilliant sunshine touching into vivid colour the green patches that relieve the monotony of the continuous white line. Can any contrast be more beautiful than this of blue sky, the sea, and towering white walls flecked with green and fringed with sea foam, or more powerful in its appeal to the heart of the lover of nature? At this season, too, the mighty cliff shelters in its bosom myriads of birds who find there a nursery to rear their young; and in the expression of the emotions which at that period possess every phase of created life, present to the onlooker, be he naturalist or not, a scene that invariably excites an appreciation that impels him to revisit it. The otherwise silent and sombre ledges are fairly alive with birds, incessantly bowing to each other as with a politeness which their continual fighting belies, lovemaking, apparently all talking at once, no one listening to the other. The birds seem so thick upon the favourite ledges as to leave no room for more, yet a continual stream of new arrivals comes in and fights its way among the seething mass, sometimes, however, being beaten back and circling round again before repeating the attempt. Each new comer is greeted with a shower of pecks from those already in possession, whilst occasionally the fight lasts till one or other, or both combatants lose their balance and fall off the cliff. Along the face of the cliff the birds fly to and fro like a swarm of flies, whilst countless thousands are settled in small and large parties on the water 350 feet below, quietly courting and feeding, or resting till their turn comes to join their mates above. A babel of hoarse cries, which has been compared to the cheering of a distant multitude, rises continuously, mingled with the sound of quick wing-beats, to the watcher on the cliff top, as does a most ancient and fish-like smell whenever a puff of wind reaches him from below!

In the early morning, when the sun is on the cliffs, I have seen thousands of birds sporting in the water round some low rock, the game apparently consisting of alternately scrambling up the rock and flopping down again into the water, those which dropped down being replaced at intervals by fresh arrivals at the top of the rock. They frequently

lie on their backs in the water for some minutes whilst washing themselves. To the scene add a background of sea, blue sky, flecked here and there with white cloud or breaker, vessels passing to and fro upon the errands of busy life, whilst away to the north-west stretches the coast-line past Filey Brigg to Scarbro' and Whitby. Surely nothing finer could be desired by the lover of nature.

To those who dwell in the neighbourhood of the cliffs, almost every ledge and corner is linked with some memory,



FIG. 2.—BEMPTON CLIFFS, LOOKING EAST.

and the events that have happened there are chronicled in the names bestowed by those who have obtained their daily bread from the cliffs for generations. Any striking feature in their formation has been seized upon and fixed for ever in the attention by an appropriate name.

Such names as Pidgeon's Hole, Sandy Corner, Shitt'n Shelf, Weather Castle, (H)'ateley Shoot, Coffee Mill, Birds' Shoot, Aud Yoon, Staple Neuk, The Dorr, tell of peculiarities in the shape of the cliffs, or of the birds, many of these having

been handed down from father to son. Other names are :— White Wings, because a white guillemot was seen there; White Breadloaf—a friend in need asked for help; E. Hodgson replied to his guest, “Noo theer's a spot theer, and whativer there is on it you shall have 'em.” The man was presented with the eggs from this ledge, with which he bought the first white breadloaf he had had for many months. Shoemaker's Shop, Kit Pape Spot, Broken Head (Coatham's head broken), Franky Barnet Table, Bobby Robson Three Ha'penny Spot, Ding Dong, Katey Robson, Hat Hole, Arra (harrow) Tooth, Duggleby Corner, now called Jubilee Corner, because first climbed in the Queen's first Jubilee Year—all these tell of events in the lives of the people, that endear them to the cliffs.*

To turn to the population of the cliffs past and present, I shall confine my remarks to summer inhabitants—to name the winter visitors to a migration centre like Flambro' is outside the scope of this paper.

The occurrence of the Raven was already traditional when the oldest inhabitants of Bempton and Buckton were boys, their fathers having told them of the time when a price was set upon the head of this Ishmael among birds, who seems to have every man's hand against him wherever he goes.

Mr. Nesfield, at Buckton, has two fine adult Peregrine Falcons, male and female, shot from the cliffs over twenty years ago, and one young one in first plumage which he kept in confinement, over thirty years ago, but when it escaped and proved difficult of capture, he shot the bird in order to secure it. The shooting of one of the old birds was the cause of the eyrie on the cliffs being finally deserted. A pair of Peregrines took up their quarters on the cliff early in April, 1902, but the hen bird being shot, their evident intention of breeding there was frustrated.†

Some forty years ago the birds seem to have been more numerous even than now, if recollections are to be trusted, every bay from Flambro' Head westward having apparently its breeding population, where now a bird is never seen sitting on the ledges, *e.g.*, there is a small cove west of Thornwick known as Chatter Trove, from the noise the birds are said to have made there. It is now entirely deserted by them. In those days the Kittiwake used to

* Wade's Spot, a more modern name, should have been included.—ED.

† I should not omit mentioning that a prominent Flambro' naturalist has a firm belief in the former occurrence of the Great Auk at Bempton, a belief which I got into serious disgrace through scoffing at.

breed in thousands, while now scarcely hundreds are seen, and, as the skins were in demand for ornament, the birds used to be ruthlessly shot down in the breeding season. The method was to lie in wait for the birds when they came to collect grass for nest materials, to shoot one, and keep throwing it up and imitating the bird's cry, when, as all who have shot Kittiwakes know, the living birds would flock to the body of the dead one. The question, "Is kitts carrying?" was the usual one asked by the shooter who wished to know whether it was worth his while to go out to the slaughter. So numerous were the birds that E. Hodgson can remember a field upon which the twitch had been raked together on Saturday, being completely cleared of it by the time the carts came to take it away on Monday, all having gone into the nests. Then followed a time of indiscriminate slaughter. Scores of excursionists poured in from the neighbouring towns to aid in the massacre. The birds were shot off the water as they flew to their parental duties on the cliffs, the young being left to starve and die. The human brutes who killed them were rarely at the trouble of picking up the bodies (which, indeed, were of little use to anyone), and, on the strength of this butchery, passed themselves off as "sportsmen." This went on until there was danger of the disappearance of the birds altogether. But birds are wonderfully tenacious in clinging to their favourite haunts. No persecution could drive away the remnant who came as usual year after year, until the Protection Acts gave them a chance again.

By the Act of 1880, all wild birds were protected between 1st day of March and 1st day of August. A schedule was appended to the Act specifying certain birds, the penalty for killing which was £1 per bird, and amongst these were our cliff birds. Other Acts followed in 1881 and 1894, and in 1896 an Act giving power to the Secretary of State, on application by a County Council, to extend the close time in any portion of its area. By an Order dated 10th May, 1895, this was done for the East Riding of Yorkshire, and the close time made to extend from the 1st day of March to the 15th day of August in each year. The eggs were not protected, this being unnecessary, as we shall see later.

On July 5th, 1902, some casual shooting from a Filey boat caused the destruction of some hundreds of eggs and newly hatched birds, the startled parents, when they left the rock, kicking these off the ledges, from which they fell on to the rocks below.

These Protection Acts aroused the bitterest hostility among the Flamborough fishermen, both because they were deprived of the fees derived from taking out the so-called sportsmen in boats to the scene of butchery, and because they grudged the birds the fish upon which they live. Their food consists mainly of the fry of the herring, but also of any young fish of suitable size (sand eels, &c.), and various crustaceans. After all man's needs are supplied there must surely be more than enough for the birds, which, as far as I am aware, have never made any sensible diminution in the quantity of fish. The Member who was mainly responsible for the first Protection Act, the late Christopher Sykes, lost the support of the Flambro' voters for many years in consequence.

The present breeding-ground extends from Selwick Bay, under the lighthouse, westward to where the cliff disappears below Speeton, and the species breeding are as follows:—The *House Martin*, building beneath the rocky ledges. The *Jackdaw* and *Carrion Crow*, who here keep up the reputation of their family for thieving. The *Wheatear* I have seen in June on the cliff top, but have no proof its breeding there. The *Rock Pipit*, whose nest is perhaps the most difficult of all nests to locate; its entrance is generally a hole about $1\frac{1}{2}$ inch wide under a tuft of grass, and on the approach of an intruder the cock bird gives the alarm, the hen slips off her eggs, and both sit chirping at him from various points on shore or cliff till his patience is exhausted. The *Kestrel*, a few pairs of which breed on the ledges, and are taken annually. The *Cormorant* frequently perches in the rocks, but has no breeding-place nearer the Whitby district and the wreck of the "Beaconsfield" at Aldborough. The *Stock-dove* and *Rock-dove*, which apparently breed separately. A pair or two of *Herring Gulls*, which are, however, generally robbed of their eggs and driven away. The *Kittiwake Gull*, whose plaintive cry and beautiful plumage form so great an ornament to the cliffs, and last, but not least, the *Puffin*, *Razor-Bill*, and *Guillemot*.

The Puffin is interesting mainly from its singular appearance. The horny sheath assumed over the bill in the breeding season, and the red skin round the gape, and the two appendages above and below the eye, give the bird the appearance of being altogether overweighted by the bill. It has an extraordinarily comical effect, and some people have been illnatured enough to turn this against the bird and say it looks a snob. In the Shetlands, when anyone looks

a bit wanting in brains, he is said to be "for all the world like a Tammy Norrie."

The Razor-Bill differs very little in habits from the Guillemot, except that it is more solitary, and prefers a hole or sheltered corner to lay in instead of the open ledges. Male and female in both Razor-Bill, Puffin, and Guillemot are indistinguishable, and the birds undergo but little change from winter to summer plumage. The Razor-Bill has a sooty hue on the throat in summer, which is lost in winter, and the Guillemot, owing to the loss of some slight metallic hue present in the plumage during the breeding season, looks darker on the head and back in winter, and has a white or mottled, instead of a dark brown throat, and a patch of white extending on each side of the throat to the nape of the neck. Puffin, Razor-Bill, and Guillemot, all are true pelagic birds, spending their whole lives on the sea,* and only resorting to the cliffs during the breeding time. All are North Atlantic species, their farthest southern range in winter being the Mediterranean, and also about lat. 30° in the Atlantic, whilst in summer their breeding range extends from the Mouth of the Tagus to Iceland, the Faroes, Bear Island, and the American Seaboard up to lat 64°. The Razor-Bill appears to be a rather more tender bird than the Guillemot, with a higher rate of mortality, and lower rate of increase.

It is as a *Guillemot* haunt that our cliffs are famous throughout the British Isles, and to the Guillemot, therefore, I shall mainly confine my remarks.

There are two varieties, viz., the Ringed or Bridled Guillemot, which is distinguished by a white rim round the eye and a white line extending from the outer corner of the eye down the neck, and the bird which has not this mark, *i.e.*, the typical species. In the first half of last century, opinions raged round the question of these two being separate species. Yarrell, on the evidence of Iceland fishermen, considered that they were, which opinion Dr. Saxby, in his "Birds of Shetland," tried to maintain, but with no certain data. He kept Ringed Guillemots in confinement for five years, during which the plumage never changed, and he maintained that the eggs of the ringed bird had larger blotches than those of the other. The St. Kildan's contend that bridled birds are all males. Gould, in 1837, questions its right to be considered a separate species, and

* The Guillemot at any rate, if placed on land, is unable to take to flight.

Hewitson, in 1856, says it has no such claim; but the vexed question was put finally to rest by Harvey Browne and Buckley in their "Fauna of the Outer Hebrides," when they observed bridled birds paired with typical, and both bridled males treading typical females, and vice versâ, also a bridled bird feed a young one which was under the wing of a typical bird. In face of all this evidence I regret to find a writer, in a letter to the *Spectator* on 1st June, 1889,

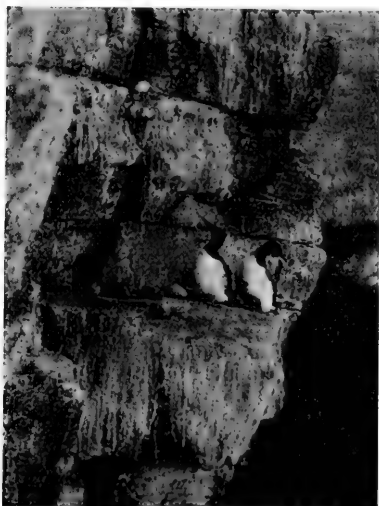


FIG. 3.—GUILLEMOTS ON HATELEY SHOOT.

stating that the Ringed Guillemot is found breeding in small numbers on our cliffs, and that it *breeds true*.

The proportion of bridled birds on the Hebrides is about one in five, whilst on our cliffs the climbers sometimes do not see one all day. In looking over some thousands of birds with powerful glasses on 19th January, 1902, I could only find one Bridled Guillemot amongst them, and but two birds with white patches on the neck.

The Guillemot spends the winter on the open sea, and begins to revisit the haunts of its youth about Christmas

time. At irregular intervals these visits are repeated, generally taking place at high-tide time, and in calm weather, when the birds appear almost as thick on some ledges as in June, but are silent. None but the Guillemot ever comes to the cliff in winter. Late in April the birds begin to take up their abode permanently on the cliff, and early in May the first eggs are laid, the Razor Bill being slightly before the Guillemot in commencing. The average time for eggs

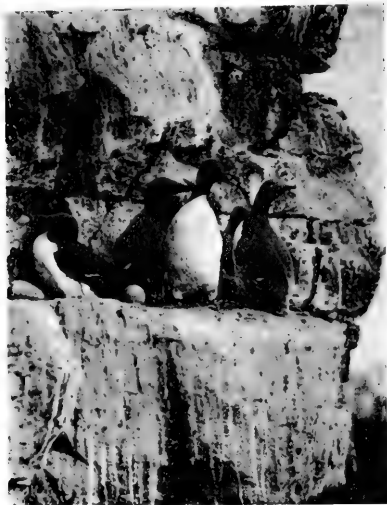


FIG. 4.—GUILLEMOTS ON HATELEY SHOOT.

is from the third week in May to the commencement of July. The earliest eggs of which I have any record were seen on 6th May, and from then till about the second week in July eggs may be seen. The latest date I have taken an egg is 17th July. If, however, the egg be taken, a second and even a third is sometimes laid, three being the outside number, and only one being produced at each laying. The second egg is frequently more brilliantly more brilliantly coloured than the first. An impression prevails among some writers that a second egg may be produced within a week if the first is

taken, but from actual data, as well as report, I am able to fix the interval in the case of the Guillemot at nineteen to twenty days, and of the Razor Bill, seventeen days.

The birds are so much alike, that in cases where a ledge had been cleared of eggs and visited a few days afterwards, when other birds had laid there, the observer might easily persuade himself that the same birds had produced second eggs.

A considerable difference exists in the date at which different birds lay, for on 15th June, 1901, climbing a ledge which had been left alone, I found fresh and half-incubated eggs side by side. The large end of the egg is extruded first, the bird standing straight upright, with the feathers ruffled, during the process. When sitting, the egg is tucked between the feet by the bill, and is covered by the thigh feathers. The bird then either sits upright upon it, or in the recumbent position usually attributed to sitting birds, the position being lengthways along the egg. A sitting bird can be distinguished by the way in which it resolutely turns its face to the wall as though shunning the pleasures of this world and devoting all its attention to maternal duties! When the egg is well incubated or hatching, the bird often refuses to leave it, preferring even capture by hand.

Sports from the typical variety are sometimes seen on the cliffs, a very dusky bird which lived for a season or two enabling the climbers to ascertain that sometimes the male assists in the duties of incubation, as in this case the normal and dusky bird were seen to change places on the egg. A bird with an entirely white head, except for two dark marks above the eyes, has now been seen for four or five years. Harvey Browne and Buckley, on the contrary, assert that the female sits whilst the male feeds her, she becoming fat and he lean in the process. The disengaged birds, whose numbers are swelled occasionally by non-breeders, meanwhile sit facing the sea in rows, on the ledges, making endless obeisances, dressed in white waistcoats like the banqueters at an alderman's festival, and, for aught we know, perhaps making long speeches about civic matters to each other.

No Guillemot will willingly leave the ledge where it was born and brought up, hence the many scuffles for a place upon the ancestral rock; and unless actually driven off by stronger birds, they always return to lay there. Certain peculiarly marked eggs have been taken from the same.

ledge for twelve and fourteen successive years, and I have specimens of such eggs extending over a period of three and four years. Even shooting birds from the ledges, as we have seen, does not deter the survivors from coming back to the very same spot. A well-marked egg is found year



FIG. 5.—CLIFFS NEAR HATELEY CORNER.

after year on the same ledge of rock as long as the bird lives, unless a fall of rock occurs, in which case all desert that neighbourhood.

There is, however, a deplorable carelessness among the birds in rolling their eggs off the ledges. Perhaps it is because the egg rests upon the web of the feet, that whenever

they are suddenly startled up a regular shower of eggs is rolled down the cliff. A visit to the cliff-foot during the season reveals hundreds of empty egg-shells wasted on the beach. If the bird is leaving its egg of its own accord it often is seen to push the egg away before taking to flight, but if angered or alarmed it is my firm belief that many birds kick their eggs down the cliff to prevent the intruders getting them. I have stood on a ledge watching a bird which deliberately kicked its egg down several minutes before leaving the rock itself, and still sat looking at me. Many eggs are laid at sea and trawled up or washed up in Filey Bay. No egg, except that of the Jack Snipe, bears so large a proportion to the size of the bird as that of the Guillemot, actually averaging, as it does, $\frac{1}{3}$ of the weight of its parent,* or, in the case of a double-yoked egg, considerably more.

It is astonishing that amongst all the eggs, which so much resemble each other, the parent can find its own again, especially as in wet weather the ground colour is quite lost in mud and the birds' excrement. Some writers affirm that they do not always find their own again. I have seen dirty eggs on the ledges, cold and deserted, but whether they have been lost by the parent, or the bird has been shot, it is difficult to say. When frightened off the egg the bird makes a long stay away, at least half-an-hour, but if a young one is on the ledge she is soon back. It is believed that the rock at this season retains enough heat to preserve the vitality of the egg. Taking all things into consideration, I should say few birds are so careless of the safety of their eggs as the Guillemots. The bird will sometimes be found sitting on a ledge just wide enough to hold bird and egg, and occasionally with water continually dripping upon her.

The peculiar pear-shape of the Guillemot's egg, in conjunction with its position upon the rock ledges, lends itself to the belief that it has been evolved by the operation of the law of the survival of the fittest, as it would obviously be a protection against the destruction of the egg by the agency of wind. Upon this point, however, there is room for controversy, as an examination of the actual conditions now prevailing leaves a doubt whether this abnormal shape could have been so developed. (1) The parent bird leaves the egg in all sorts of positions, as often as not with the small end pointing seawards, and this at the extreme edge of the ledge, and sometimes on a dangerously narrow ledge, sloping

* The average weight of a bird is 2 lbs., and of an egg $\frac{1}{3}$ lb.

slightly down towards the water, where, if it commenced to roll, it must inevitably fall. (2) Constant observation and enquiry have failed to elicit any instance of an egg revolving on its own axis, and so escaping destruction, the surface of the ledges, as viewed by the climber who stands upon them, being so uneven as almost to prevent such movement. (3) The close attendance of the parent bird is an additional safeguard, because she rarely leaves the egg except when scared by foes. (4) In the months of June and July, when incubation is proceeding, violent gales are infrequent, and as a practical climber of many years' experience, I find that what may be a high wind at the cliff top is not felt below—as soon as the climber leaves the edge of the cliff he reaches a region of calm, where he is shielded from the fury of the wind, apparently by an air buffer covering the face of the rock, from which the force of the gale rebounds, leaving its occupants unharmed. (5) On the Farnes, where eggs are laid on the top of an unsheltered stack of rock, there is no recorded observation of their being blown about by the wind, nor has this open position produced any special modification in the shape of the egg, which exactly resembles those laid in sheltered places.

The colours of the Guillemot's egg vary more than in those of any other bird. The general type is a greeny blue with streaks and splotches of black. Next in point of numbers is a white egg with black streaks and blotches. The rest have no definite scheme of colouration, but show every shade of red from the lightest "rusty" to deepest chocolate-red, whilst brown, fawn, buff, stone colour, blue; green, yellow, and violet, combine in endless shades and varieties of marking, spots, blotches, and scrawls, to make a bewildering display, the richness of which almost dazzles the beholder. The varieties of size and shape are also extraordinary. No cliffs are so famous for producing these varieties as our own.

That portion of the cliff climbed by Edward Hodgson's gang is more famed for these rich-coloured varieties than any other, which he attributes to its being less thoroughly "climbed out" than the others, partly owing to the number of odd corners which are not worth visiting, and partly to his ceasing to climb sooner than the other gangs. The effect of this is also seen in his birds laying, on the average, a week earlier than those on other parts of the cliff.

The Razor-Bill's egg is not so richly marked as that of the Guillemot, the blue and green types being absent

altogether. It is also slightly smaller in average size. Occasionally the two birds lay eggs with a white ground-colour almost exactly alike.*

The Guillemot sits about thirty days, and from about the middle or third week in July onwards the young are hatched. Their continuous shrill chirpings then mingle with the hoarse growls of the old birds, who fly further and further afield in search of food, reaching even as far as the Lincolnshire coast. In this respect the Guillemot is handicapped. Owing to the shape of his beak he can only carry one fish at a time, with its head down his throat, whereas the Razor-Bill and Puffin, with their broader bills, carry sometimes as many as a dozen at a time, the bodies of the fishes hanging down on each side of the bill, the heads being in the bird's mouth. The extra numbers of trips which the Guillemots make to the cliffs will partly account for their being so much more in evidence there. Very little food is wasted, such a thing as a fish being seldom seen on the ledges. The commonest food seems to be sand-eels.

About the third week in July the young begin to take to the water, but how they get down alive from that giddy height is not clearly known. Several alternative methods are believed in and loudly proclaimed by their respective apostles. Some say the old bird carries the young in her beak, some, on her back, some, between her legs. Mr. Heathcote saw an old Guillemot, in St. Kilda, push the young one off a low ledge and follow herself, both flopping into the water together. Gätke, from fifty years of observation, says the old ones leave the ledges, calling the young, and that the latter, in their eagerness to reach their parents, overbalance themselves, and fall off the ledges into the water; but the cliffs of Heligoland are low, and the same method on our high cliffs would mean destruction to young birds unable to fly. Ed. Hodgson says that he has seen young Guillemots and Razor-Bills called off the ledges by their parents, always at high tide, when, with rigid wings, and feet spread out on each side of the tail, they slant away to the water. When climbing ledges with young of a fair size upon them, I have observed them occasionally launch boldly out,† flapping their tiny wings, and, by spreading

* A Razor-Bill's egg with white ground-colour may be distinguished from a Guillemot's of the same type by holding it to the light and looking through the hole by which it was blown, when the inside of the shell of the Razor-Bill will be seen to be light green, whilst that of the Guillemot is white.

† Usually they viciously attack the intruder.

out their webbed feet and tail to give them support (as their parents do when performing difficult evolutions in the air), land on a grassy slope far below, quite uninjured. As



FIG. 6.—GUILLEMOTS NEWLY HATCHED.

soon as they reach the breakers instinct asserts itself, and they dive again and again with the most exuberant delight. By the third week in August the ledges are all deserted, and parents and young have gone out to sea.

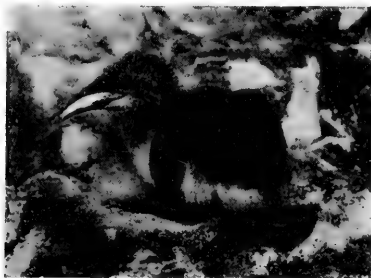


FIG. 7.—YOUNG GUILLEMOT WITH SAND-EEL.

There is but little difference between the young of the Guillemot and Razor-Bill when hatched, both have dirty white underparts, and are grey-black above, but later the Razor-Bill has a greyer head and neck, and its slightly

stouter bill always distinguishes it. The young Puffin at first is covered with fluffy black down, with a patch of white on the breast. How long they take to reach maturity is not

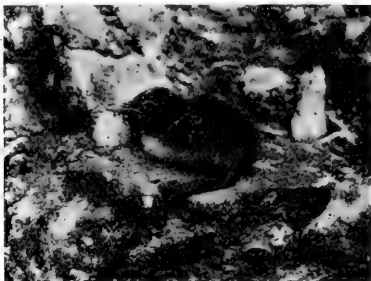


FIG. 8.—RAZOR-BILL NEWLY HATCHED.

fully known, but from the numbers of non-breeding birds present at the cliffs, it must be at least two years before they breed.

The Guillemot has, perhaps, fewer enemies than most



FIG. 9.—YOUNG RAZOR-BILL.

birds. The larger Falcons do not seem to trouble either the Guillemot or the Razor Bill, though the Peregrine is very fond of the Puffin. The Guillemot, however, is not entirely free from persecution by natural enemies. He is infested by

a species of louse, as far as I know peculiar to himself, which, to judge by its bite when it gets a taste of human blood, must cause the bird considerable annoyance. The Jackdaw

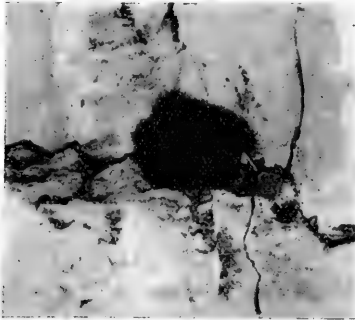


FIG. 10.—PUFFIN NEWLY HATCHED.

and Herring Gull harry the eggs and young whenever these are left uncovered by the parent birds. One would have supposed that a bird so quarrelsome where its own species is



FIG. 11.—YOUNG PUFFIN.

concerned would have made some attempt to fight off a foe whose purpose was to destroy its offspring, but the Guillemot looks on with apparent indifference whilst these birds suck its eggs or rip open its defenceless young. The Herring

Gull's *modus operandi* is to dig its bill through an egg, fly out to sea with it, sucking the contents out as it goes, and then drop the empty shell. When once they have commenced the habit they seldom leave the cliff as long as eggs are to be had. The Jackdaw, being possessed of feebler weapons, employs more guile. His way is to roll the eggs off the ledges and then fly down and share the spilt contents with his relatives below. J. Hodgson tells me that he has seen a Jackdaw deliberately roll several eggs from a ledge, watching them as they fell down the cliff, and then fly down to a lower ledge to repeat the process, always keeping an eye upon the descending egg to mark where its contents were scattered.

The "unnatural" enemy of the Guillemot is man. In our part of the world he confines his attention to the eggs and does not, like the men of the Outer Hebrides and St. Kilda, snare the sitting birds for food. Probably he would despise such provender, though it is said that the breast of the bird is by no means to be ignored. The industry of climbing (locally known as "climming") is an old and an honourable one in the villages of Flamborough, Bempton, and Buckton, affording a comfortable living for some six weeks each year to over a dozen men. The Yorkshireman would never dream of going about his cliffs without ropes, and looks upon anyone who is fool enough to do so as little short of a madman.*

In the Shetlands, Dr. Saxby tells us, that about the middle of the eighteenth century it was thought a disgrace to die anywhere but on the banks, *i.e.*, rocks. Such a thing as a rope was never used. Probably the generally loose and crumbling nature of the chalk rock is accountable for the horror with which our Yorkshireman regards the notion of climbing in any way but suspended by ropes from the top of the cliff. From the recollections of Edward Hodgson, extending back nearly fifty years, I am able to supply a history of climbing as carried on at Bempton. When a boy, his father used to take him out to coil up the ropes on the cliff top. In those days only two men used to go out, the one being let down and pulled up by the other, and

* In the course of my attempts in this direction I have aroused no little astonishment and some wrath by my supposed foolhardiness. I have been likened to a rat (with an adjective) running about the rocks, and one Sunday morning, after an arduous climb up some very loose rock, on arriving at the top who should meet me but my old friend Ned Hodgson, with his grandson in one hand and his "bonny black-thorn" in the other. Shaking this latter at me, he exclaimed, "Eh! A'ad a good mahnd te warm yer."

E. Hodgson remembers how his father, when he found the weight below too much for him, used to call to the boy to leave his rope and pull till the climber got to a place where the weight was taken off the man at the top. The record haul with this method was seven score eggs, a part



FIG. 12.—EDWARD AND JOHN HODGSON.

or the cliff still bearing the name of "Seven Score Place," in remembrance of the feat. The weight carried by the climber can be reckoned at about 4 eggs per lb., or $2\frac{1}{2}$ stone, which he and the man above had to raise to the top, in addition to his own weight.

Those were the good times, before slaughter became the

fashion, but climbing was slow with so little assistance, and the two men would sometimes rest an hour between each descent. Later on, three men were employed, one to lower and two to pull up, and you will find three is the number mentioned in Seebohm's "British Birds." In those days, however, the places greatly overhanging were left severely alone.

Prior to the passing of the Protection Act, a bad time for both climbers and birds prevailed, and E. Hodgson tells me that he could not make half-a-crown a day at it, even when taking his wife as "third man" for the sake of economy! The climbing was consequently almost discontinued for some years. With the increase of the birds has come a corresponding increase in the numbers and skill of the climbers, four gangs of four men each being now employed during the season regularly at the Speeton and Bempton cliffs, besides occasional raids near the Head made by the Flam-borough fishermen.

The right of egg-gathering belongs to the farmer whose land abuts upon the cliff-top, and this right he grants to the men who work for him when egg-collecting is out of season.

The season, varying as the egg supply is early or late, commences about the third week in May and finishes about the end of June or first week in July (latest date 10th July). During that time each gang will collect on an average about 300 to 400 eggs daily, or, allowing something for wet days, when climbing is impossible owing to the greasy state of the ropes, 130,000 eggs in all per season. In spite of this the birds increase yearly. The price of the eggs varies, the commoner ones being sold for sometimes 16 a shilling, sometimes 12 a shilling, and the better-marked ones, according to the rarity of the markings, fetching from 2d. to 7/6 each. Twenty-five years ago 3d. was considered an extravagant price for an egg. Mr. Audas recollects requiring to be persuaded to buy an exceptionally good red egg for 2d. A good proportion of the eggs are used as food, others are applied to the process of clarifying wine and dressing patent leather.*

Each gang of men keeps strictly to its own ground, there being, from the birds' point of view, "honour among

* The eggs are now sought after by collectors from every part of the kingdom, and the competition thus set up has gradually raised the price paid for rare specimens.

thieves."* A climbing gang goes systematically over its ground day by day, economising time and labour as far as possible by visiting the ledges when the greatest quantity of fresh eggs is likely to be found upon them. Each ledge upon this system is visited every third day, unless wet weather should intervene, when they get behindhand, and many eggs, having received a few days incubation, are spoiled for eating purposes. They are then taken and used as food for pigs, to induce the birds to lay again. When a ledge becomes thin it is "fallowed" for a year, after which, the birds reared



FIG. 13.—J. HODGSON DESCENDING THE CLIFF.

there having brought up the ground to its full laying strength, it is "climbed" again. Some favourite ledges, however, are always crowded and will bear climbing every year. The birds invariably come back to the ledges where they are reared unless driven away by actual crowding.

* Some fifteen years ago I can remember a scurvy trick played upon a Bridlington gang. Having to come a greater distance, and happening one windy morning after a stormy and wet night to come late to work, they found almost all the ledges cleared. A council of war decided that the wind must have cleared the ledges. The true culprits, who, more from a spirit of mischief than anything else, had been beforehand and climbed every ledge, were never discovered.

The method of climbing is doubtless familiar to the members of this Club, but I have so often seen it inaccurately described that I should like to go over the ground again. An iron bar, or stake, as it is called "at cliff top," is driven into the ground, to which a rope is attached and the loose end (the length of which is regulated according to the distance to be descended) is flung over the cliff, scattering the frightened Guillemots who flee in every direction, kicking many a good egg to the bottom in their haste. This rope is known as the hand-rope as it is held by the climber, and with its assistance he swings to and fro' and regulates the amount of weight borne by the man at the top. A hemp sling, made in the form of two loops through which the legs are thrust, is fastened firmly to a belt round the climber's waist, and attached by two hemp eyelets in front to a second rope. It is then passed round the body of the man who does the lowering, being prevented from cutting through his clothes by a strong leather apron worn round his waist. He sits on the ground and holds the rope with a hand on each thigh, letting it run through his fingers. The climber retreats backwards towards the edge of the cliff, holding the fixed hand-rope in one hand, and in the other a revolving wheel mounted in the end of an iron stake. This he sticks into the edge of the cliff, passes his body rope over it, and after carefully clearing away all loose stones from the vicinity of the ropes, goes merrily down the cliff, kicking off from the rock and keeping himself perpetually swinging to and fro' to prevent his commencing to spin round where the rock is overhanging. Whenever he reaches a ledge with eggs he stops, letting his mate above know that he is getting them by taking part of the weight off the body-rope. The man at the top then holds the rope in both hands, pressing them against one of his thighs.

When the climber has cleared the ledge, he kicks himself away from the cliff, puts his full weight on the rope, and is lowered again. Both the man at the top and the climber carry handfuls of grass, without which their hands must blister at the first descent, for these practised hands waste no time over the work, and, if necessary, a man will drop down 100 feet in two or three minutes to get to the ledge where the eggs are. When descending, therefore, the hand-rope is held very loosely as a rule. The extra two hands at the top meanwhile are occupied in uncoiling ropes, seeing that they run straight, &c. A regular code of signals is employed through the agency of the rope passed round the waist of the

man above, which, when jerked by the climber, tells his mate what he requires. A single jerk means he wishes to come up. The laconic command "up" is then given, and all three men commence a "tug of war," by which the climber is raised to the top. Two jerks mean more hand-rope, and the command "more band" is given and executed. Three jerks mean "less hand-rope." The rope, when hanging down too far below the climber, by its weight prevents his free swing to and fro, and consequently he must not have more out than is necessary. Of implements, the climber has none, save two linen bags, one slung across each shoulder transversely to the opposite side of the body, and a stick, with an iron hook at the end. An old "billycock" hat padded with cotton-wool, or better still, a tall hat, protects his head from falling stones—the only danger he dreads. Fear of anything else is unknown to him. The qualms which a beginner feels, when, for the first time, he has to launch himself backwards off an overhanging ledge (comparable, I should say, to those of a gymnast doing his first 80 ft. fly), become, to the practised hand, a delightfully exhilarating sensation. Sometimes he can only succeed in reaching an egg by swinging in, catching at it with one hand, and swinging back without touching the ledge with his feet at all. Sometimes he walks sideways along a ledge collecting eggs until he is some twenty or thirty feet out of the perpendicular. To save the trouble of walking back he kicks off from the ledge, when all the eggs are gathered, and swings back to the perpendicular. This is the hardest sensation of all for the beginner to master. Where the cliff is overswung so much as to make the eggs unattainable, iron pegs are driven in at intervals by the climber. Round each of these he winds his hand-rope in turn as he comes to them, and so draws himself under to the desired ledge. He peers into each cranny as he goes down, and if he sees a Puffin glowering at the end of her burrow, or, mahap, a pair of Rock-dove's eggs out of his reach, the stick and hook are brought into requisition to draw the eggs to him. At Jubilee Corner, where the rock is unusually overhung, a permanent wire rope is fixed in the rock. This was first placed there by attaching it to the middle of a rope, the ends of which were held on each side of the projection, thus forming a loop, which may be described as similar to a skipping rope. The loop was then thrown over, the ends pulled tight and secured, and the wire rope was ready for descent, being afterwards permanently fixed by iron pegs. Considerable ingenuity

has been brought into the science of climbing, and save where the rock is loose and rotten, a way to any ledge can be found, however difficult of access. So often have the ledges been climbed that the man at the top knows almost as well as the man below what is going on, and mechanically holds or lowers as required. When the work is exceptionally severe the climber sometimes rests on a ledge for a few minutes, but, as a rule, goes straight through with his work till all the ledges within reach are cleared, when the signal is given and he is hauled up, stopping sometimes on the way up to gather an egg which had been overlooked on the way down. When he reaches the top the bags are emptied into a huge market basket. Should one of the eggs be broken, old Ed. Hodgson turns to the crowd of boys who are generally present, and, with the ghost of a smile wrinkling the corners of his mouth, says, "Can any of you yoong gentlemen sook a hegg?" Some boy more bold than the rest tries, but the contents of the Guillemot's egg are generally too stiff for him, and he spits it out amidst the laughter of his companions.

Very few accidents happen to the climbers. Edward Hodgson ceased climbing at 52, being then, as his son said, "ower numb" to negotiate the ledges. Sometimes ladies have been known to go down the cliff, and a beginner who "frames well" is said to be "middling fierce at job." I can only recommend anyone in search of a new pleasurable sensation to try climbing. The men will look after you and see that you run into no danger, and the excitement is, perhaps, greater than that gained in any other form of athletics.

At the close of the day the eggs are pooled in one large heap and shared out, each man taking three eggs in turn till all are appropriated. The eggs are then carried home in market baskets.

There are some interesting problems to study in connection with the Guillemots and their eggs. The persistence of the birds in sticking to and coming back to the same ledges, however much persecuted, is one of those characteristic traits which has given rise to the epithet "stupid," as applied to this species, as is also its refusal to leave the egg sometimes until captured by hand. Of the former we can say that a closer study of nature shows the same persistence more or less evident in all birds, who prefer coming back to the same ground year after year, unless driven away; of the latter, that the bird must be aware that leaving the egg



FIG. 14.—J. HODGSON DOWN RAINCLIFFE.





FIG. 16.



FIG 15.

W. WILLIAMSON ON JUBILEE CORNER.



generally involves the destruction of the egg. The colouring of these birds' eggs also opens up many interesting problems.

The numberless varieties in colour shown can hardly be due to the attempted predominance of one colour which is more protective than another, because the predominant colour, green and black, makes the eggs most conspicuous. Is it, as Dixon in the introduction to the 2nd vol. of



FIG. 17.—AFTER THE ASCENT.

Seebohme's *British Birds* suggests, that the absence of foes gives the Guillemot's egg a freer hand to branch out into varieties than those of other birds? The foes present, viz., Jackdaw, Gull, and man are very deadly in their way, but in spite of them the birds and eggs increase. Of the Jackdaw and Gull, it is impossible to say whether they prefer any special type of egg. As far as observation goes they do not. Of man it is asserted that by taking all the rarely-marked eggs he can get, he has diminished the numbers of such

eggs gathered each year. This statement however, as it cannot be accurately measured (most of the climbers being unscientific observers, and most of them getting more and more by the sale of rare eggs each year), is also open to doubt. These varieties occur only very rarely, 1 abnormal egg in 1000 being about the average per season, and if they indicate a permanent departure from the normal type, the movement can only be in its inception. Given a sufficient number of eggs to select from, any species of bird will be found to produce many abnormal eggs, but none so far removed from the common type as those of the Guillemot. The cause, however, to which this abnormal variation can be assigned appears to be shrouded in mystery.

A specimen of the Feathered Thorne (*Himera pennaria*) was caught on November 8th, on the tram stables at Stepney, Hull. This specimen is an addition to the list of Macrolepidoptera occurring near Hull, published in the "Transactions of the Hull Scientific and Field Naturalists' Club" for 1899.—J. W. BOULT.

HUMBER SALTMARSH PLANTS.—The areas reclaimed from the Humber possess only a saltmarsh flora at the time of enclosure, and few plants except cornfield weeds obtain a footing afterwards. It is interesting, therefore, to note that *Listera ovata* is well established on a drain bank on the 1850 enclosure on Sunk Island. The drain is still brackish, and *Scirpus maritimus*, *Suaeda maritima*, and *Salicornia herbacea* grow at the foot of the bank.—T. PETCH, B.A., B.Sc.

PLUMATELLA REPENS IN HOLDERNESS.—During August, 1902, whilst searching for marine species in the brackish ditches and ponds near the Humber, I found the fresh-water polyzoon, *Plumatella repens*, near Skeffling, in a ditch which, although it runs up to the river bank, contains fresh water. The zoophyte formed a semi-transparent, whitish mass, encrusting the roots and stem of Rumex, and in some respects resembled the alcyonelled form, the zoœcia being crowded together. This is the first fresh-water polyzoon I have found in Holderness, and the second in the Humber district; the other being *Fredericella sultana*, at Barton, Lincs., August, 1901.—T. PETCH, B.A., B.Sc.



FIG. 18.—SHARING THE SPOIL.



FIG. 19.—HOMeward BOUND.



THE MARINE FAUNA OF THE HUMBER DISTRICT AND THE HOLDERNESS COAST.

By T. PETCH, B.Sc., B.A.

(Read August 20th, 1902).

FOR many years the study of marine zoology seems to have been neglected by Yorkshire naturalists; indeed, so far as our particular district is concerned, there is no evidence that any systematic investigation has ever been commenced, for, with two exceptions, the only available records relate to dead polyzoa, &c., gathered on the tide-mark. We may plead, with considerable justification, that the Holderness coast is uninviting to non-ornithological zoologists; the sandy shore from Bridlington to Spurn, and the belt of mud along the Humber, possess none of those characters which make corresponding areas in other districts attractive. But a few brief explorations have shown that by taking advantage of the numerous coast defences we can demonstrate the presence of a number of species in addition to the mud fauna proper, many of them living under conditions which suggest extremely interesting problems, and I venture to record the results of these expeditions as a preliminary list for the Humber district in the hope that the subject will be undertaken by others.

With the exception of a single visit to the Western Reservation in August, 1902, when *Nereis pelagica* and *Corophium longicorne* were taken, my excursions have been confined to localities east of Hull; the frontage of the Hull docks, or even the docks, may provide additions to the list. As far as I can ascertain no species of the usual dock fauna has been recorded for the Hull district.

Saltend and Paull, about three miles east of Hull, furnish our first hunting ground. Here, in the shallow pools on the grassy flats outside the bank, which are reached only by tides over 27 ft. 6 ins.,* we find a prawn (*Palæmonetes varians*), an amphipod with abnormally large antennæ (*Corophium longicorne*), and an isopod (*Sphæroma rugicauda*), which rolls

* Albert Dock.

itself into a ball when alarmed. *P. varians* is more abundant after spring tides, but *C. longicorne* lives in tubes in the mud until the pools dry up; I have found them in mid-winter. In 1902, shoals of *Neomysis vulgaris* were to be found in all the Humber pools from Saltend to Spurn and in most of the brackish drains where I had not taken it previously. *Paludestrina ventrosa*, which occurs in all our brackish ditches inland, is abundant on the *Ulva* in the Saltend pools, with some *P. stagnalis*, and small whitish specimens of the latter are found on the stones on the foreshore, but this species evidently does not flourish here. Another interesting mollusc, *Alexiu myosotis*, lives amongst the grass just below high water mark of average tides, especially along Hedon Haven. Under the stones in front of Paull, and at the foot of the piles which protect Saltend Common, we find the isopoda, *Ligia oceanica*, *Jæra nordmanni*, and *Idotea marina*, and the amphipoda, *Gammarus marinus*, *G. locusta*, and *Orchestia littorea*. The larger specimens of *Ligia* may often be seen on the timber basking in the sun, but their exceptional agility renders them by no means easy of capture. Worms are represented by *Nereis pelagica* and *N. diversicolor*, and mollusca by the periwinkle, *Littorina rudis*. In front of Paull, *Membranipora monostachys* decorates bricks and broken tiles from half-tide level downwards, and it is fairly abundant also on the stones at Saltend, though these are barely submerged at neap tides. A red alga, *Rhodochorton rothii*, previously found by Mr. J. F. Robinson at Hull, forms a velvet coating on these stones, and *Porphyra vulgaris* grows amongst *Enteromorpha compressa* on the timber.

All these are common along the Humber foreshore in similar localities, and if the narrow belt of chalk which suffices in such situations formed an adequate protection elsewhere, we should meet with little else until we reached the "clays" of Kilnsea and Spurn; but owing to the change in the direction of the Humber currents, or the narrowing of the channel, it usually happens that the reclaimed areas require much stronger safeguards against erosion shortly after enclosure, and these generally consist of banks of chalk at right angles to the river bank. If these "cranches" run out into deep water, they provide a Laminarian zone, destitute, of course, of *Laminaria*, but affording a suitable habitation for many unexpected species.

The most notable of these cranches is Well Creek, about three miles east of Paull, and fifteen miles in a direct line from Spurn. It is commonly known by this name amongst Hull

anglers, but there is no creek, unless they refer to the narrow bay which is left at low water between Foulholme Sand and the mainland, and into which this bank extends across the foreshore of Cherry Cob Sands. My first acquaintance with its inhabitants was made on a fishing expedition, when I hauled up a fine specimen of *Tealia crassicornis* which seized the bait and allowed itself to be torn off the rock rather than relinquish its meal. At spring tides, crass of all the colours of the rainbow may be seen in abundance, many over three inches in diameter, and often surrounded by rejected shells of *Tellina tenuis*; *Tubularia indivisa* clothes the lowest stones with pink blossoms and overshadows its more beautiful companion, *Obelia gelatinosa*; pycnogonids feed on the crass or sprawl amongst the *Tubularia*; and the stems of the latter are covered with *Clytia johnstoni*, *Farella repens*, *Pedicellina* and *Coryne*. The scale worm, *Lepidonotus squamatus*, is fairly common; *Amphitrite johnstoni* rears its thick mud tube between the stones; and the surface of every block bristles with the projecting galleries of *Polydora ciliata*. Altogether, we add some thirty species to our list from little more than half as many square yards.

Another anemone occurs here, always on the under surface of the larger blocks, and often so flattened that it seems merely a brown blotch on the stone. When expanded, the column is 1-1½ inches in height and half-an-inch in breadth, smooth, rich reddish brown, very mutable, capable of constriction in any part, no warts; tentacles, long but not fully expanded except in the dark, dusky, with a white ring near the tip; generally half expanded, with the disc thrown into six lobes like fringed petals just projecting over the edge of the column; margin of column entire, no moulding; base usually expanded; acontia, thick, long, white, emitted freely. Mr. Alexander Gray agrees in considering it a form of the daisy anemone, *Sagartia bellis*.

The crass occurs again on the western bank of Stone Creek, and in greater profusion on the first bank on Sunk Island. This does not run out as far as the one at Well Creek and is therefore not as productive, but the proximity of Sunk Island Sand alters the character of the mud, and we find here the western limit of the lugworm, *Arenicola marina*, and the "white cat," *Nephtys longisetosa*. *Campanularia flexuosa* occurs here, and *Obelia gelatinosa* attains a length of eight inches.

The change in the character of the shore is evident from the fact that shrimping with "push-nets" is practised from

Sunk Island, Patrington Haven, Skeffling, etc.; but no favourable hunting-ground is to be found in the bend to the east of Sunk Island, where the work of reclamation is still proceeding. At Skeffling, however, a sloping bank has been built at high water mark, of closely packed boulders which are said to have been obtained from the ruins of the formerly adjacent Burstall Priory. Here is found a third anemone, living between the boulders or on small stones in the mud; in the latter situation the stone is sometimes two inches below the surface, and the tentacles just project, somewhat resembling the syphon of a mollusc. I thought at first that it was a form of *Sagartia troglodytes* but Mr. Alexander Gray considers it a variety of *S. nivea*. Its height when expanded is 1-1½ inches, breadth of column three-quarters of an inch, white with a light brown tinge at the top of the column and on the disc; when retracted, brownish with a white base, showing opaque white lines extending to the top in young specimens, and ending about half way up in older ones; tentacles, long, translucent, with two opaque white rings near the base; disc, with a ring of white spots, alternately round and linear; two white radii, forming with the mouth a white line extending right across the disc; suckers at top of column. In captivity they have lost the brownish tinge, and are pure white when expanded and somewhat greenish when retracted. I have not seen any acontia emitted. In the white spots and radii they agree with the *troglodytes* figured by Gosse, Pl. iii. Fig. 2. The same form may be found in small numbers at Stone Creek, and on the Den, at Spurn.

From Skeffling to Spurn, *Obelia gelatinosa* and *Gonothyræa loveni* occur on all the stones near high water mark and at the roots of *Zostera* in the pools in such profusion that one despairs of ever finding anything else. *Campanularia angulata* may be secured by gathering the *Zostera* leaves, and probably other species will reward anyone who examines the *Zostera* pools more carefully than I have been able to do. From Skeffling *Mya arenaria*, *Scrobicularia piperata*, and the cockle are common, and *Paludestrina stagnalis* is present in millions; from Welwick to Spurn undoubtedly forms the headquarters of this species on the north shore of the Humber.

The Den, the reputed site of Ravenser, furnishes the only group of stones on the north shore of the Humber, between Hull and Spurn, which has not been deposited by human agency, and from its proximity to the open sea

might be expected to yield good results, but in reality it is distinctly disappointing. The boulders of which it is composed are small, very few measuring a foot in diameter, and at its lowest horizon, *i.e.*, on the south-west side, it is only a broad shingle beach. There are few anemones; *Vesicularia spinosa* grows in large tufts on *Fucus*, with some *Membranipora pilosa*; the ragworm, *Nerine coniocephala*, and two nemertines occur under the stones; and the limpet and the dogwhelk have here their only station on the north shore of the Humber. But it is worth a visit, if only to see the tubes of the "sand mason" and the masses of *Corallina officinalis*, where the water drains off from the pools on the top. Several other seaweeds grow here, but *Chondrus crispus* is the only one identified at present.

Dredging in the Humber has been limited to excursions in August with the Paull shrimpers. There is not much variety in the rubbish; *Portunus depurator*, the cleanser crab, comes up occasionally; the hermit crab (*Eupagurus bernhardus*), *Pandalus annulicornis*, and *Pectinaria belgica*, were dredged off Trinity Sand; and *Hydractinia echinata*, *Clytia johnstoni*, *Clava multicornis*, and *Sabellaria alveolata* were found on empty whelk-shells. *Tellina balthica*, a common Humber bivalve, is often found in the stomachs of plaice caught in the trawls; the thick shells are evidently broken by their mutual pressure.

On the outer coast there are few permanent abodes for zoophytes or worms, since the whole beach is continually moving southwards. On the Binks, where the shingle is temporarily brought to rest, we find nothing, for, judging from its state at low water when one usually plunges knee-deep into the gravel at every other step, the upper strata of this immense deposit must be in motion when submerged; consequently, it offers no attractions except to the student of ripple marks, and he will find admirable examples, ten yards long with a fall of two feet on the steeper side. Proceeding northward, the groynes on the Spurn shore furnish several mollusca and polyzoa, especially *Gibbula cineraria* adorned with living *Membranipora pilosa*; and a large patch of boulders and clay pools between Kilnsea and Easington—Kilnsea Skerries—still awaits careful examination; I have never been fortunate enough to obtain the desired coincidence of favourable tide and favourable weather. *Tubularia larynx* grows here, sometimes on the large boulders, but more often in small tufts on the clay in the corners of the pools.

In August 1900, a pool outside the sea-bank at Easing-

ton, only reached by very high tides, yielded a "shrimp" which I have not found elsewhere in the district. Dozens were swimming round and amongst a mass of *Ruppia rostellata*, *Chaetomorpha litorea*, and *Cladophora* which almost filled the pool, and with this as a background they were dark, but as they swam into open water the colour faded until they could scarcely be distinguished from the sand. I held my hand motionless in the water, and they swam up to it, just as *P. varians* does in the Thames pools, to see if it was edible, but at the least movement they darted backwards, assuming a vertical position with a peculiar bend of the pleon as though they were sitting on invisible chairs. As I had no apparatus, I tried to catch them by drawing them slowly to the shore, but they always escaped at the last moment, until I accidentally drew my hand along the bottom and so pushed in front of it a gradually increasing ridge of sand. This time I succeeded; the shrimp evidently imagined itself safe as long as it saw sand beneath it, and made no attempt to escape until it was stranded on the shore. Only once in half-a-dozen times did the manœuvre fail, and I caught sufficient to verify the opinion formed from its behaviour, that it was *Macromysis flexuosus* (*M. chameleon*). This pool, which was in existence in 1890, has since been destroyed by the advance of the sea; and several other pools here, formerly slightly brackish, are now flooded with sea water at exceptionally high tides. This year (1902) I obtained from them *Palæmonetes varians*, *Neomysis vulgaris*, *Paludestrina stagnalis*, *P. ventrosa*, and the black sea slug, *Limapontia depressa*; the two crustaceans also occur in the large pond on the landward side of the bank.

After we leave the Spurn district, shore hunting is confined to pools in the clay or groups of boulders near low water mark, which may remain undisturbed, sometimes only for a few months, sometimes for a year or two. In this way several crustacea have been obtained at Aldborough, and some mollusca at Holmpton. It is to be regretted that no examination was ever made of the ruined Hornsea Pier, where, sixteen years ago, we gathered mussels from the barnacle-covered pillars; the barnacles were considered worthy of a place in my heterogeneous collection, and I still possess specimens, with *Cyprina islandica* which I well remember carrying home in my boots from Barmston.

Many species may be obtained during the "crabbing" season at Hornsea, Withernsea, and Easington. This year (1902), as the Hornsea fishermen were compelled by the

weather to leave their crabpots out until the middle of August, I was able to secure many deep water forms. The most interesting capture was the hermit crab in his accustomed home, an empty whelk shell, with the upper whorls tenanted by *Nereis fucata* and the crustacean, *Nenia tuberculosa*, sharing the lower.

In addition to all these localities, in which work is necessarily discontinuous, the brackish ditches of the Humber district offer a wide field for investigation without any of the discomforts of mud-wading, and have already provided several interesting discoveries. Here we may watch the gradual change as the water becomes less brackish year by year, or note the rarer converse effect on the flora and fauna when by some means the salt water enters a normally fresh water stream. As a rule, fresh water species are killed by a very slight admixture of salt water, but marine (estuarine) species can endure a wide variation of salinity; and this endurance creates a feeling of astonishment that the instances of migration from salt to fresh water are so few.

In the Hedon drain, the shore crab and the plaice have been caught in practically fresh water, and *Tellina balthica* was obtained in abundance several years ago in the lower reaches where the fresh water flowed over it at every low tide. During the last two years, owing to the imperfect clough, the drain has become more brackish, and in August, 1902, I took the common shrimp (*Crangon vulgaris*) and *Neomysis vulgaris*, half a mile from the outfall, where formerly we caught roach. The lower limit of the flowering rush, the arrow head, and the fresh water mussel has been pushed back a mile; even *Potamogeton pectinatus* does not flourish in the lower reaches, and the drain no longer turns red with unicellular algæ in August. An instance of the converse occurs on Sunk Island in a drain on the 1850 enclosure which formerly entered the old North Channel by a clough (dated 1850) which is now blocked up. *Palæmonetes varians* lives with *Limnea peregra* and the water crowfoot in the drain, and *Orchestia littorea* is found on its banks. *P. ventrosa*, *Enteromorpha*, and the other inhabitants of brackish water are absent.

Another instance is found at Patrington Haven, which was navigable in the middle of the last century. It then opened into the North Channel, a relic of the former channel round Sunk Island, but owing to the reclamation of the eastern parts of Sunk Island in 1826 and 1850, it became so warped up that all traffic was discontinued. Subsequently, the North

Channel was again excavated to carry off the Winestead drainage water, and a clough erected near the Humber (1868). At present, the former course of the Haven is marked by a shallow depression with a series of pools from one to three feet wide and about four inches deep. After over half a mile of this, it drops about a dozen feet into the Winestead drain, and this enters the Humber by a modern clough (1868), a mile and a half away. The pools are brackish; the mud in them is black, with no sign of the yellow Humber silt; and they are above the level of all except the highest spring tides. They contain *Paludestrina ventrosa*, and a few *Sphæroma rugicauda*, but no *P. stagnalis*, nor the other crustacea found in tidal pools. On the sides, amongst a luxuriant growth of *Triglochin maritimum* and *Plantago maritima*, *Alexia* occurs in profusion, sometimes crawling up the stems of the plants like a *Succinea*: the shells are larger and thinner than those found on the Humber bank. Thus we have here a mollusc which usually requires a periodic bath of salt water, living in a situation where the salt water can never reach it, for there seems no reason for supposing that the tidal water has flooded this area since the erection of the clough. Its normal position on the Humber bank is at the roots of grass, &c., at high water mark of average tides; I have not taken it above the level of a 26 ft. tide (Albert Dock). It occurs again inland on the sides of a closed ditch on Cherry Cob Sands. Here it was accompanied (August 1902), by *Paludestrina ventrosa*, *P. stagnalis*, *Palaemonetes varians*, *Sphæroma rugicauda*, and *Idotea marina*; and from the presence of *Idotea* and *P. stagnalis* I suspect that the ditch has been connected with the Cherry Cob Sands drain till recently. All the specimens of *P. varians* from this locality are marked with red dots, and have only one tooth on the lower edge of the rostrum.

This ditch, and the immediate neighbourhood of the clough in Cherry Cob Sands drain, form the only inland localities so far discovered in Holderness for *Paludestrina stagnalis*. On the foreshore it occurs in abundance from Spurn to Welwick, and thence in decreasing numbers to within a few miles of Hull, and it shares the brackish pools at Easington (seashore) and Saltend, which are out of the reach of ordinary tides, with *P. ventrosa*. The latter inhabits all the brackish ditches inland, but has not been found on the foreshore. *P. jenkinsi* is only known as a freshwater shell in Holderness.

All the brackish water crustacea mentioned above may be

found in the narrow drain which runs for three miles at the side of the road through the reclaimed area known as Cherry Cob Sands. *Neomysis vulgaris* usually remains near the clough amongst the spreading fronds of *Ulva latissima*; the others are common throughout the whole length. About two-and-a-half miles from the outfall, the zoophyte, *Gonothyræa loveni*, occurs on *Potamogeton* and on the sides of the culverts, with a *Membranipora* whose identity was for a long time doubtful. The latter was first found on *Potamogeton*, forming a complete cylinder round the stem, and it similarly encrusts *Chætomorpha* and hawthorn branches which have fallen into the drain, or spreads in radiating colonies over bricks, but under the bridges it forms masses of superposed plates, often an inch thick, extending along the wall in a band two or three inches wide just below the water line. Sometimes it assumes a more erect habit and forms a cornucopia-shaped structure about an inch in height. The masses of plates are very fragile, especially when the animal is dead, and the larger growths will seldom bear removal. One specimen, a foot in length, which I saw in August, 1902, had been built round a branch an inch thick, which projected from the mud; the diameter had been trebled by the overlapping plates, and encrusted *Chætomorpha* hung in white festoons from the upper end. When normally encrusting *Potamogeton*, &c., the zoëcia are arranged alternately in straight or spiral lines, somewhat resembling *M. membranacea*, and bear two erect spines at the upper end, but they differ from that species in the less rectangular shape of the cell and in the thickened cell wall which is milled or granulated along the upper edge and finely denticulate on the inner. Professor Harmer considers that this form should be referred to *M. lacroixii*.

The masses of plates, in which the zoëcia are spineless and without the inner denticulations, agree almost exactly with *M. monostachys*, var. *fossaria*, recorded by Hincks from similar localities in East Anglia, specimens of which were kindly sent me by Professor Harmer. I have also found the spineless form normally encrusting a brick in company with the other, and where the two colonies met and produced free expansions, one or two of the cells possessed six spines. In addition, two small upright tubular colonies, resembling miniature corals, exhibit on some of the zoëcia the single spine of *M. monostachys* though more upright than in the typical form.

Specimens kept in a small brackish water aquarium lived

from April to July, and their decease then was due in a great measure to the decay of the Potamogeton. I never observed any new growth, and am inclined to attribute this to the fact that the water was maintained at the April standard of salinity. The natural water shows a wide range of variation, which may be due to the entrance of the Humber water through the primitive clough, and the concentration of the brackish drainage water from the adjoining fields. With regard to the first, some water undoubtedly enters, but never in sufficient quantity to cause any appreciable increase in depth although the drain is only from six to ten feet wide. The samples of water for the following analyses were taken about two-and-a-half miles from the outfall, immediately below the upper limit of *Membranipora* and *Gonothyræu*.—

- Dec. 27, 1901—Drain partly frozen; depth of water, 1 ft.
Chlorides = 5.29 grams NaCl per litre.
April 1, 1902—Depth about 1 ft.
Chlorides = 7.91 grams NaCl per litre.
May 21, 1902—Depth about 1 ft.
Chlorides = 18.6 grams NaCl per litre.
August 1, 1902—Depth 6-8 inches.
Chlorides = 23.8 grams NaCl per litre.
Sept. 1, 1902—Depth 6-8 inches.
Chlorides = 23.5 grams NaCl per litre.

The tide of Sept. 1, was two feet higher than that of August 1.

In addition to the species enumerated, *P. ventrosa* is abundant, *Nereis diversicolor* attains a larger size than on the Humber foreshore; *Cladophora gracilis* (?), which grows in abundance from Skeffling to Spurn, is fairly common on the bridges.

Former records for the Humber district are *Amathilla sabini*, "River Humber," Rev. A. M. Norman, "British Amphipoda," Ann. and Mag. Nat. Hist., Ser. 6, vol. iv., p. 119; *Chiton marginatus* and *Hydrobia ulvæ*, Spurn, W. C. Hey, *Naturalist*, Nov. 1884, vol. x., p. 92; and "American Shells in the River Humber" (*Venus mercenaria*), Science Gossip, vol. xxv. p. 115. With regard to the last, Mr. J. R. Hardy informs me that it was, and is still, obtained by the Cleethorpes oyster dredgers, together with the "crow oyster," *Crepidula fornicata*, another American shell, both having been introduced with oysters.

Two lists of debris gathered on the tide mark have been published:—"Polyzoa, &c.," observed on the occasion of the visit of the Yorkshire Naturalists' Union to Spurn, Sept. 3, 1884 (*Nat.*, Nov. 1884, vol. x., pp. 92, 93), and

“Notes on Polyzoa found at Cleethorpes,” Vines (*Nat.*, Jan. 1892).

With the exception of *Cardium echinatum* (listed with the hope that search will be made for it on the Humber sands), and possibly some of the polyzoa dredged off Hornsea, all the species recorded here have been obtained alive. Many others have been collected on the beach after storms, but it is impossible to say how far these may have travelled, and therefore it has been thought advisable that they should be recorded separately.

(Species occurring in the Humber are marked with an asterisk.)

CŒLEENTERATA.

HYDROZOA.

**Clava multicornis* (Forsk.). On chalk, Well Creek, Stone Creek, &c.; dredged on whelk shells, off Trinity sand.

**C. squamata* (Müll.). On *Fucus vesiculosus*, Stone Creek.

**Coryne van benedenii*, Hincks. On *Tubularia indivisa*, Well Creek.

**Tubularia indivisa*, Linn. Well Creek; Stone Creek; alive, but detached, Kilnsea Skerries.

T. larvnx, E. & S. On boulders, and on the clay, Kilnsea Skerries.

**Hydractinia echinata* (Fleming). On whelk shells dredged off Trinity sand.

**Clytia johnstoni*, Alder. On *Tubularia*, Well Creek; on red algæ, crab pots, Hornsea; with gonothecæ, August.

**Obelia gelatinosa* (Pall.). Near low-water mark, Well Creek; Stone Creek. From Skeffling to Spurn on stones near high-water mark, and on *Zostera marina*. With gonothecæ, August.

**Campanularia flexuosa* (Hincks.). Stone Creek; with gonothecæ, August, 1902.

**C. angulata*, Hincks. On *Zostera*, Skeffling.

**Gonothyræa loveni*, Allman. Skeffling to Spurn, on stones and *zostera*; brackish drain, Cherry Cob Sands, on bridges and *Potamogeton pectinatus*. In reproduction in the latter locality in May, in the former in August.

Plumularia similis, Hincks. Crab pots, Hornsea.

Antennularia antennina (Linn.). Brought up with crab pots, Hornsea.

SCYPHOMEDUSÆ.

**Aurelia aurita*. Frequent on the outer coasts in August. Observed swimming in Hedon Haven, September 1st, 1902.

Cyanea capillata. Common, outer coasts, August.

ANTHOZOA.

**Sagartia bellis* (E. & S.). Well Creek.

**S. nivea*, Gosse. Stone Creek; Skeffling, near high-water mark; the Den.

**Tealia crassicornis* (Müll.). Well Creek; Stone Creek.

CTENOPHORA.

Pleurobrachia pileus (Fabr.). Pools, Aldborough.

ECHINODERMA.

- Ophiocoma rosula*, Forbes. }
Uraster rubens (Linn.). } Crab pots, Hornsea.
Solaster papposa (Linn.). }

VERMES.

NEMERTINI.

- * *Amphiporus lactifloreus* (Johnst.). The Den, under stones.
 * *Tetrastemma dorsalis* (Abild.). Well Creek.
 * *Lineus gesserensis* (Müll.). Stone Creek and Skeffling, under stones.

POLYCHÆTA.

- * *Lepidonotus squamatus* (Linn.). Well Creek.
 * *Nereis diversicolor*, Mull. Saltend, &c.; brackish drain, Cherry Cob Sands.
 * *N. pelagica*, Linn. Saltend, &c.
N. fucata, Sav. In whelk shells occupied by hermit crabs, crab pots, Hornsea. On an average, one in every three shells examined.
 * *Nephtys longisetosa*, Ærst. In sandy mud, Stone Creek, Skeffling, &c.
 * *Nerine coniocephala*, Johnst. Under stones, the Den.
 * *Polydora ciliata* (Johnst.). In borings in whelk shells, Hornsea; in chalk, Well Creek, Stone Creek, &c.
Dodecaceria concharum, Ærst. In borings in whelk shells, Hornsea.
 * *Amphitrite johnstoni*, Mgrn. Well Creek; Stone Creek. During S.W. gales the mud between the chalk blocks is washed away and the upright tubes are destroyed; the worm then takes refuge in the lower part, which usually runs horizontally along the under surface of the stones.
 * *Terebella conchilega*, Pall. The Den.
 * *Pectinaria belgica*, Pall. Dredged off Trinity Sand.
 * *Arenicola marina*, Linn. From Stone Creek eastwards.
Filograna implexa, Berkeley. On whelk shells, Hornsea.
 * *Spirorbis borealis*, Daudin. On *Fucus* and *Vesicularia*, the Den; on whelk shells, Hornsea.
 * *Sabellaria alveolata*, Linn. On whelk shells, Hornsea, crab pots; dredged off Trinity Sand.
 * *Spio seticornis* (Fabr.). Skeffling, amongst clusters of mussels in the zostera beds.

POLYZOA.

- Eucratea chelata* (Linn.). On *Campanularia* (?); crab pots, Hornsea.
Scrupocellaria reptans (Linn.). }
S. scruposa (Linn.). } Crab pots, Hornsea.
Bugula turbinata, Alder. }
 * *B. plumosa* (Pall.). Well Creek; alive, but detached.
Flustra foliacea, Linn. Small colonies on *Laminaria*, crab pots, Hornsea.
 * *Membranipora lacroixii*, Hincks. On *Potamogeton*, &c., brackish drain, Cherry Cob Sands.
 * *M. monostachys*, Busk. On stones near high-water mark, Saltend, Skeffling; on *Mytilus* and stones near low water, Well Creek, Stone Creek, Paull; brackish drain, Cherry Cob Sands.

- **M. monostachys*, var. *jossaria*, Hincks. Brackish drain, Cherry Cob Sands.
- **M. pilosa* (Linn.). On *Fucus* and *Vesicularia*, the Den; on *Gibbula*, Spurn and Kilnsea; on whelk shells, Kilnsea and Hornsea.
- M. membranacea* (Linn.). On *Laminaria*, Hornsea.
- M. lineata* (Linn.). On whelk shells, crab pots, Hornsea.
- M. dumerilii* (Aud.). On whelk shells, Hornsea crab pots.
- **M. aurita*, Hincks. On chalk, Well Creek, Stone Creek.
- Cribrilina annulata* (Fabr.). On whelk shells, Hornsea crab pots.
- Microporella malusii* (Aud.). On whelk shells, Hornsea crab pots.
- M. impressa* (Aud.). On red alga, Hornsea crab pots.
- M. ciliata* (Pall.). On red alga, Hornsea crab pots.
- Mucronella peachii* (Johnst.). On whelk shells, Hornsea crab pots
Kilnsea Skerries.
- Schizoporella spinifera* (Johnst.). On red alga, Hornsea crab pots.
- Cellepora pumicosa* (Linn.). Hornsea; Kilnsea Skerries.
- Crisea eburnea*, Linn. Hornsea crab pots.
- C. denticulata* (Lam.). Hornsea crab pots.
- Diastopora patina* (Lam.). On whelk, Kilnsea Skerries.
- **Alcyonidium mytili*, Dalyell. Well Creek, Stone Creek, &c. abundant on stones. On *Gibbula*, Spurn.
- **Vesicularia spinosa* (Linn.). In tufts on *Fucus*, the Den.
- **Amathia lendigera* (Linn.). The Den.
- **Farella repens* (Farre). On *Tubularia*, Well Creek.
- **Pedicellina cernua* (Pall.). On *Tubularia*, Well Creek.

CRUSTACEA.

BRACHYURA.

- Stenorynchus phalangium* (Penn.). Crab pots, Hornsea.
- Hyas coarctatus*, Leach. Crab pots, Hornsea.
- Cancer pagurus*, Linn. Outer coast. In holes in the clay, Kilnsea Skerries, Aug. 6, 1902.
- **Carcinus maenas* (Penn.). The Humber; Hornsea, Aldborough, &c. In all the agricultural drains near the outfall.
- **Portunus depurator* (Linn.). The Humber; not common.
- P. arcuatus*, Leach. Crab pots, Hornsea.
- Porcellana longicornis* (Penn.). Crab pots, Hornsea.

MACRURA.

- Galathea squamifera*, Leach. Crab pots, Hornsea.
- **Eupagurus bernhardus* (Linn.). Dredged off Trinity Sand. Crab pots, Hornsea.
- **Crangon vulgaris* (Linn.). Abundant. Hedon drain, half a mile from the outfall, July, 1902.
- Hippolyte cranchii*, Leach. Hornsea crab pots.
- H. varians*, Leach. Hornsea crab pots.
- **Pandalus annulicornis*, Leach. Dredged off Trinity Sand.
- **Palæmonetes varians* (Leach). Pools, Saltend, Easington; brackish ditches, Easington, Cherry Cob Sands; fresh water ditch, Sunk Island.
- Leander serratus* (Penn.). Hornsea crab pots.
- Macromysis flexuosus* (Müll.). Pool on the sea shore above the level of ordinary tides, Easington, August, 1900.
- **Neomysis vulgaris* (Thompson). Hedon drain; Cherry Cob Sands drain. Pools, Saltend, &c. Zostera pools, Skeffling to Spurn. Pond inside the bank, Easington.

AMPHIPODA.

- * *Talitrus locusta* (Linn.). Kilnsea, Easington, &c., river and sea shore.
- * *Orchestia littorea* (Mont.). Under stones and amongst grass at high water mark, River Humber; on the bank of a fresh water ditch, Sunk Island.
- * *Montagua marina*, Spence Bate. Amongst Tubularia, Well Creek.
- * *Kroyera arenaria*, Spence Bate. Aldborough.
- * *Amathilla Sabini* (Leach). "River Humber." Rev. A. M. Norman.
- * *Gammarus marinus*, Leach. Saltend, &c.; Aldborough.
- * *G. locusta*, Linn. Saltend, &c.
- * *Nænia tuberculosa*, Spence Bate. In the body whorl of whelk shells occupied by hermit crabs, Hornsea crab pots.
- * *Corophium longicorne* (Fabr.). Pools, Saltend, &c.; brackish ditches, Cherry Cob Sands.

ISOPODA.

- * *Eurydice pulchra*, Leach. Shore pools, Aldborough.
- * *Idotea marina* (Linn.). On the foreshore, Saltend, Well Creek, &c. Zostera pools, Skeffling to Spurn; brackish ditches, Cherry Cob Sands.
- * *Sphæroma rugicauda*, Leach. Saltend, Paull, &c.; ditches, Cherry Cob Sands, Patrington Haven (Old Dock).
- * *Sph. serratum* (Fabr.). Aldborough.
- * *Jæra nordmanni* (Rathke). Paull, Well Creek, the Den.
- * *Ligia oceanica*, Linn. In all the chalk banks along the Humber.

CIRRIPEDIA.

- * *Balanus improvisus*, Darwin. Well Creek, &c.
- * *Balanus balanoides* (Linn.). Hornsea Pier.
- * *Chthamalus stellatus* (Poli.). Skeffling.
- * *Terruca strömia* (Müll.). On whelk shells and Laminaria, Hornsea.

PYCNOGONIDA.

- * *Pycnogonum littorale*, Brunnich. On Crass, Well Creek, Stone Creek.
- * *Nymphon gracile*, Leach. Well Creek, usually on the mud.
- * *Phoxichilidium coccineum* (Johnst.) Well Creek, Stone Creek, amongst Tubularia.

MOLLUSCA.

- * *Craspedochilus cinereus* (Linn.) = *Chiton marginatus*. Spurn, Sept. 3, 1884. W. C. Hey. Common, Well Creek to Spurn.
- * *Anomia ephippium* (Linn.). On whelk shells, Hornsea, Kilnsea.
- * *Mytilus edulis*, Linn. Well Creek to Spurn.
- * *Cyprina islandica* (Linn.). Barmston sands.
- * *Kellia suborbicularis* (Mont.). In Laminaria, Hornsea crab pots.
- * *Scrobicularia plana* (da Costa) = *piperata*. Skeffling to Spurn.
- * *Tellina tenuis* (da Costa). Common, R. Humber.
- * *Macoma balthica*, var. *carnaria*, Penn. Common, R. Humber.
- * [*Venus mercenaria*, Linn.] Cleethorpes oyster beds. J. R. Hardy.
- * *Cardium echinatum*, Linn. A single valve in good condition, Well Creek.
- * *C. edule*, Linn. Skeffling to Spurn.

- **Mya arenaria*, Linn. Skeffling to Spurn. Distorted specimens amongst stones on the Den.
Barnea candida (Linn.)=*Pholas*. In clay, Kilnsea Skerries.
- **Patella vulgata*, Linn. The Den.
Helcion pellucida (Linn.). Kilnsea Skerries.
Gibbula cineraria (Linn.)=*Trochus cinerarius*. Holmpton, Kilnsea, Spurn.
Lacuna crassior (Mont.). Holmpton.
L. divaricata (Fabr.). Holmpton.
- **Littorina littorea* (Linn.). Well Creek to Spurn; Kilnsea Skerries.
**L. obtusata* (Linn.). Well Creek; Stone Creek.
**L. rudis* (Maton). On stones near high-water mark, Saltend to Spurn.
**Paludestrina ventrosa* (Mont.). Brackish ditches. Pools outside the bank, Saltend and Easington (sea shore).
- **P. stagnalis* (Baster)=*Hydrobia ulvæ*=*Rissoa ulvæ*. In pools and on the foreshore, Saltend, &c. Abundant in zosteria pools or on the mud, Skeffling to Spurn. Inland, in a closed ditch, Cherry Cob Sands, and in Cherry Cob Sands drain near the clough. Often found dry on the mud, but never buried in it.
- *[*Crepidula fornicata* (Linn.)]. Cleethorpes oyster beds. J. R. Hardy.
Buccinum undatum, Linn. Kilnsea Skerries; Hornsea.
- **Purpura lapillus* (Linn.). Holmpton; Kilnsea Skerries; groynes, Spurn; the Den.
Limapontia depressa, Alder & Hancock. On *Vaucheria*, in pools only reached by exceptional tides, Easington, August, 1902.
**Eolis papillosa* (Linn.). Well Creek, August, 1901.
**Alexia denticulata*, var. *myosotis*, Drap. Amongst grass, just below high-water mark of average tides, Saltend to Welwick; in a closed ditch, Cherry Cob Sands; abundant at the old head of Patrington Haven, August, 1902.

TUNICATA.

Cynthia grossularia (Van Beneden). On *Gibbula* and whelk shells Spurn.

ADDITIONAL NOTE TO FOREGOING PAPER.

Since the foregoing account was printed, it has been ascertained that the tidal water is periodically admitted into the Winestead Drain as far as the clough of 1839; *Alexia*, therefore, lives at Patrington Haven under normal conditions. The horizon given for it on the Humber bank is about 10½ feet O.D. (springs rise over 13 feet O.D.); this is exceeded in sheltered situations as at Patrington.

Paludestrina jenkinsi now occurs from Hedon Haven to Lord's Clough, with *Limnæa peregra*, *Planorbis spirorbis*, *Physa hypnorum*, and *Pisidium pusillum* in water containing chlorides=.77 grams NaCl per litre; and from Lord's Clough to Marfleet (Mr. T. Stainforth, April 13, 1903), the only shell found, in water containing chlorides=4.8 grams NaCl per litre.—T. PETCH.

EVIDENCES RELATING TO EAST HULL.

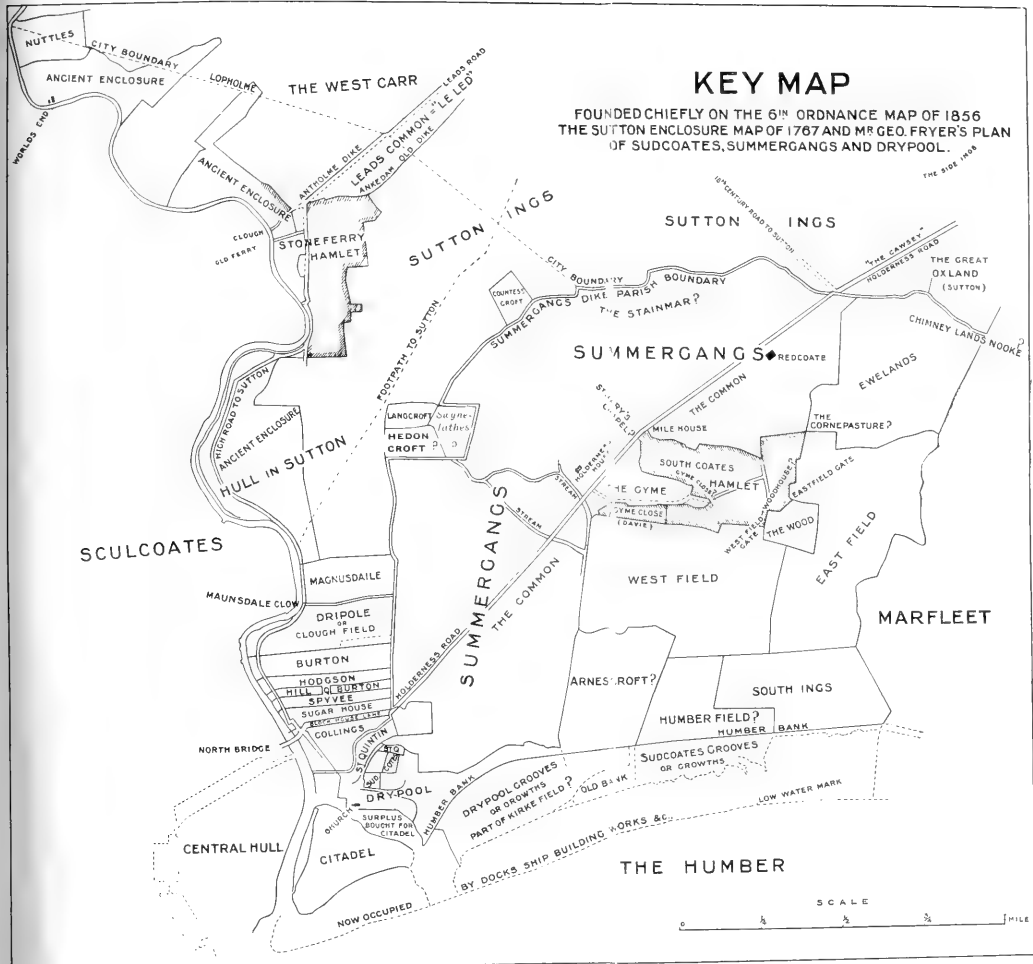
BY THOS. BLASHILL, F.R.I.B.A.

THE extended boundary of the eastern portion of the City of Kingston-upon-Hull includes the modern parish of Drypool-with-Southcoates and a large portion of the parish of Sutton, consisting chiefly of the hamlet of Stoneferry. It includes, also, the more distant Marfleet. New streets and buildings are fast obliterating ancient sites, with the boundaries of at least half a dozen manors, and it is important to put upon record, before it is too late, the former condition of these territories. I shall have to use some of the materials already published in my "History of Sutton," and must refer to it for fuller details on many matters, but it was my research for that object which made possible this contribution to local history.

In early times, when the district east of the valley of the Hull was called the Isle of Holderness, that wide low-lying valley, except in a few favoured spots, was freely subject to the tidal ebb and flow. The date of the embankment of the Humber and the Hull is too large a question to be settled apart from other investigations, but, judging from the inadequate description of Sutton in Domesday Book, I have suggested that, in 1086, all our low grounds were still overflowed by the tides. The historical and topographical interest of the locality is, however, not dependent on the precise date of the reclamation.

Beginning with the group of manors, or reputed manors, in the parish of Sutton, we first find that Domesday Book associates the Manor of Sudtone, held under the Lord of Holderness, with a berewic held under the Archbishop's College of St. John of Beverley. The owners of manor and berewic had each his house with its enclosed land, but the tillage and meadows of both were in narrow strips or in plots, mixed together all over the area; the manor consisting of about three-fourths, and the berewic one-fourth of the whole. In time, the berewic began to be called a manor, and the manor itself became divided amongst many persons, each of whom described his share as if it were the whole.





For clearness, and also because of the interest which is given to the story, places and persons must be associated together. The following were the lords of the undivided manor as it descended from father to son; all were of knightly rank:—

Siward, living in the time of the Conqueror.

Sayer de Sutton 1st, "the ould lord Sayer."

William, mentioned in 1173.

Amandus, mentioned in 1187 and 1195.

Sayer 2nd, the King's Bailiff of the Port of Hull, mentioned as early as 1211.

Sayer 3rd succeeded about 1250.

Sayer 4th succeeded about 1270.*

John de Sutton, senior, 1289.

John de Sutton, junior, 1339.

Thomas, the brother of John, 1356. He died between 1381 and 1389, when his daughters, Constance Marjory, and Agnes, divided his manors and lands.

The berewic was acquired from the College of St. John at an early date, on the nominal rent of one pepper corn, by the family of de Melsa, or Meaux, living at Bewick, in Aldboro. They held it until, in 1377, John de Meaux, the last male, died, and his sister Alice, who married Sir Ralf de Hastings, succeeded. Then the berewic passed into a family whose prominence in those times was very likely to be fatal. The grandson of Sir Ralf and Alice was Sir William de Hastings—created a baron—the Chamberlain and friend of Edward IV., with whom he landed at Ravenspur in 1471, and on whose death Hastings was promptly executed by order of Richard III. In his will he mentions his "manor" of Sutton, and afterwards we hear no more of a berewic. It is a pity that the lords of manor and berewic never quarrelled, for else we should have learned more about them and their lands.

Sayer de Sutton the second, the first and last man of real mark in the family, Bailiff to the King for the port at the river's mouth, a strong, high-handed man, always struggling with his neighbours or his superiors, often in the right, paying the penalty when in the wrong, was a commanding influence over East Hull in the early years of Henry III.

* A deed quoted herein is evidence that the date of 1289, given in Frost's "Notices," is erroneous.

He was a drainer of marshes, and it seems probable that he caused the cutting of Summergangs Dyke, which forms the boundary between Sutton and modern Drypool-with-Southcoates. These last originally lay wholly in the parish of Swine. There was a berewic in ancient Dripole, and another in Sotcote—he and his successors held the latter under the Archbishop's College of St. John of Beverley. But they held a very large portion of ancient Dripole as a manor dependent on their Manor of Sutton. This may have been the Dripole berewic, or the result of some arrangement with the Archbishop. In dealing with the districts of East Hull I shall begin with this portion.

DRIPOLE IN THE PARISH OF SUTTON.

Ancient Dripole included the Groves. When, in 1302, the road from Hull into Holderness was made a public highway, it was said to pass first "through the middle of the town of Dripole to Suttcoats Som'gang." This accurately describes the course of the thoroughfare, which divided the northern part of Dripole from the rest. While the fortifications of Henry VIII., along the east side of the Old Harbour still remained, the North Block House stood right in front of the North Bridge, so that the traffic had to go partly round it, and along the short piece of road formerly called Bridge-Foot. Beyond this, in the seventeenth century, and later, was Block House Lane, now called Witham, a country road between grass fields, with only such agricultural buildings as usually went with such land. At the further end of this wide thoroughfare the great open Common of Summergangs stretched out right and left, Block House Mill standing near the corner of it, opposite the centre of the wide road.

Summergangs Dike, which defined the west side of Dansom Lane and part of Naylor's Row, curved round to its outlet at Drypole-gote, near the entrance to Drypool Basin. Between this spot and the North Bridge would be the site bought from Sir Thomas de Sutton on which to build a tower to defend the town. The fortifications of Henry VIII. took land out of Sutton and Swine, they also cut off the end of Summergangs Dike, which got a new outlet beyond Dripole Field, half a mile further north. Of this there is evidence. Excavations would probably show that the lower course of the dike had been subject to the tide, much of the land being waste. As the history of





Bygones Field
or
Clough Field

Burton
Dread Hill

Moochery
Hill

Spivee

Burton

Sugar
House

Beechhouse Lane

Gunby

Holehouse Road

St Quintin

St. Quintin

Old road
to the
parish church
and the
graveyard

WATER LANE

WATER LANE



the ancient and modern fortifications is well known, chiefly through the researches of Mr. E. S. Wilson, F.S.A.,* I need only refer to the condition of the adjacent lands, quoting chiefly from Wills at York, from the "East Riding Registry," and from private documents kindly shown to me.

In 1659, Joseph Blaides left to his son William a close, adjoining unto the Block House, containing twelve acres in Drypoole.† His descendants had ten acres there, with three tenements. In 1709, Mrs. Ann Watson conveyed to Alderman Collings Block House Close, of six acres, on the south side of Block House Lane. Captain Phillip's map of 1720 shews a stable of Alderman Collings', where now runs Great Union Street. This street was laid out in 1801, when the North Block House was removed, but there was previously there a way into Drypool. In 1744, William Burton, of Hotham, the heir to his great uncle, Christopher Gunby, sold to John Jones, house carpenter, and Thomas Ward, bricklayer, his cottage, with garth of an acre in the parish of Sutton, "at the going in to the town of Drypool, from Hull, at the north-west end of the town of Drypool, and abutting on the highway which leads from Hull to Drypool."‡ In 1768, Thomas Broadley acquired from Matthew Henry Witham, together with a share in the manor, land near to the North Bridge, and south of "Bridge-Foot, otherwise Witham." I think this new name came from his father, Henry Witham, whose aunt, the widow of Thomas Dalton, had left her late husband's property in Sutton to her own family. From that time building went on over this corner of Sutton parish, leaving a large vacant space in the centre of it, known as the "Muck-Garth," and used as such without much protest until the Cholera epidemic of 1849.

There was in Bridge-Foot, probably on both sides, waste land of the manor. When buildings sprung up, John Collings and others paid rents to the lord. Edward Johnson

* "Statement as to the Title to the Citadel and Fortifications of Kingston-upon-Hull." And see also a very interesting paper on "The Castle of Kingston-upon-Hull," by Mr. Joseph H. Hirst, M.S.A., in the Transactions of the East Riding Antiquarian Society.

† The name of Block House Lane seemed to cling to the locality. In Baines' Directory, of 1823, the map applies it to Naylor's Row. A Sugar House conveyance, of 1825, mentions, I think in error, "Lime Street, formerly called Block House Lane."

‡ A Fine (Trinity Term 8 Wm. III.) in which Christopher and Robert Gunby were plaintiffs shews that the family held lands in Sutton, Stoneferry, Southcoates, and Drypool as early as 1696, but I think the name was then somewhat recent.

had a way to his lime kiln. Thomas Broadley's purchase included houses, shops, and warehouses, let to Robert Owing and others. In 1768 Owing demised to Burrill a new built house and buildings adjoining ground of the Rev. John Collings on south and east.

Early in the eighteenth century, Lime Street was called the High Road to Stoneferry and Sutton. It ran close to the raised bank of the river, which left a width of some thirty or forty yards of grass between bank and stream. The local name for this space, covered only at the highest tides, was the Growths, or Groves.

For a quarter of a mile from Bridge-Foot the High Road ran past old enclosed lands on the right, that extended back in long strips as far as Summergangs Dike, where Dansom Lane was afterwards made. The Growths along the river, opposite to each plot, belonged to the plot.

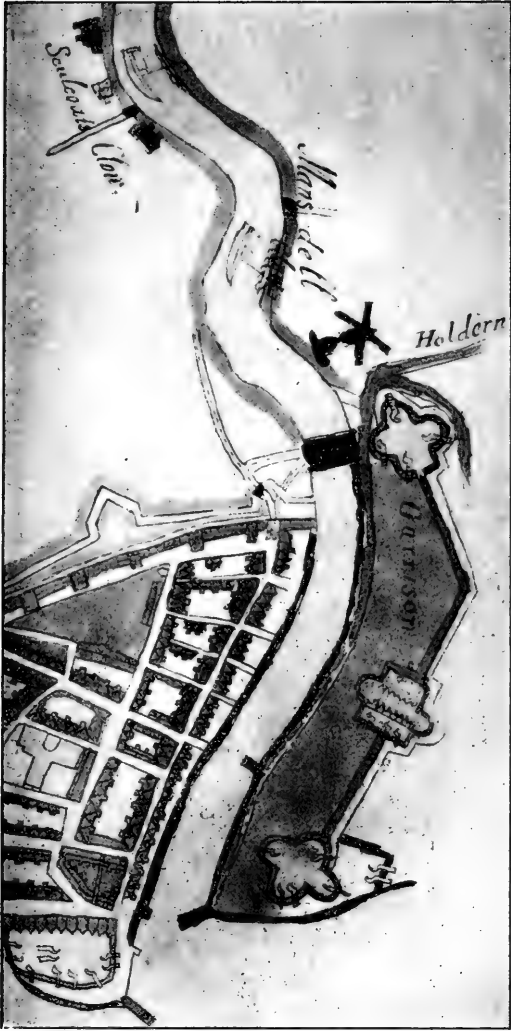
In Joseph Osborne's Map of 1668, in the Hull Museum, a wooden windmill is shewn near the river, not far from the North Bridge. In Captain Philips's Map, of 1720, the separate plots on the right of the high road, divided by ditches, seem to be carefully indicated. Early in the eighteenth century, shipbuilding and seed-crushing, already well established on the Sculcoates bank,* were in contemplation on "Sutton Side," as it was sometimes called. A rape mill, an oyle mill, a warehouse, one good residence, and some small farm buildings, already stood near the high road to Stoneferry, and the brickmaker was making ready for the builder.

The suburb springing up was called Brick-Kilns. The whole district, which was afterwards called the Groves, was still reckoned to be in the Sutton portion of Drypool.

At, or close to the entrance to the High Road from Bridge-Foot, was a tavern called "The Antigallican," a sign very popular in those days of hatred against the French. It was pulled down about 1765, before the house next door was bought to make the outlet for Sutton Drain, then about to be cut.† In 1730, Hannah, the widow of Edward Johnson, Grocer, conveyed to her son, William Johnson, "of Brick-

* Wincolmlee, about which there is an absurd legend of an old woman who would "wink and lie," is there. I think the name was brought from Wincolmlee, near Newcastle, by Hugh Mason, who owned the Charterhouse lands adjoining, or perhaps by one who was connected with shipping.

† E.R.R. Conveyance by Thomas Broadley and his tenant, Robert Owen, or Owing, of the adjoining plot to the Commissioners of drainage.



FROM JOSEPH OSBORNE'S MAP, 1668.

Kilns, limeburner," her lime-kiln and little garth, lying in Brick-Kilns near the River Hull, and near to the North Bridge. In 1740 he described it as being between the Sugar House and North Bridge. Although one fine lime-tree is remembered, and more have been imagined in that locality, I am disposed to derive the name of Lime Street from the industry then practised there.

The plot on which the Sugar-House was built consisted of six acres of grass, in two closes, that extended along the wide part of Witham as far as Dansom Lane. The land at the corner of Lime Street and Witham was perhaps not included. The plot had belonged to the Johnsons, but, in 1721, passed through the hands of Robert Ellerker, millwright, to the executors of Richard Sykes, of whom William Wilberforce, senior, was one. In 1726, a rape mill, lately built, and two houses faced the high road by the river. But, in 1732, Godfrey Thornton, of London, and William Thornton, of Hull, sons of John Thornton, a Hull merchant, and brothers-in-law of William Wilberforce, had here their buildings for boiling, baking, and refining sugar, first illustrated in Gent's "History of Hull." In 1752, in the time of their nephew, John Thornton, of Clapham, who married Lucy Watson, of Hull, a distill house had been lately built, with a double refining house. In 1756, William Wilberforce, junior, was concerned financially with the Thorntons and Watsons in a piece of land forming the northern part of the Sugar-House site, on which a Soap-House with two dwelling houses were newly erected. In 1760, this "sope-house with warehouse for smelting tallow" was conveyed to John Thornton. The soap-house was carried on for many years by Lee and Pead, and afterwards by Lee and Cross.

The Sugar-House was owned in many shares, chiefly by the Thorntons, who actually carried on the business to the fifth generation, but Watsons and Wilberforces were also interested in the property. Fifty years ago there was a draw-bridge across Lime Street that had to be raised to let a high vehicle pass, also an upper bridge, and men were wheeling sacks in long procession. There has been found recently a very fine iron chest of the seventeenth century, having under the lid an elaborate lock with ten bolts. It was in a hole in the brickwork under the old chimney, and may have contained the more treasured belongings of the Thorntons. A similar chest is in the vestry at Swine. Sugar-baking came to an end before the soap-making industry, which was carried on till about 1859.



IRON CHEST FOUND AT THE SUGAR HOUSE.

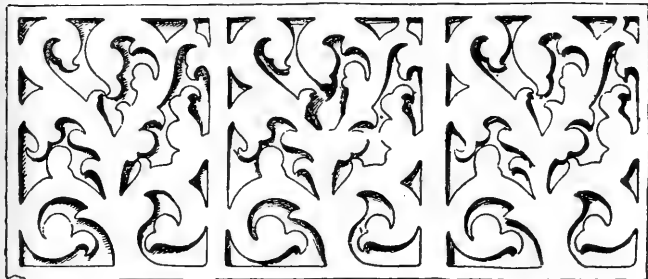
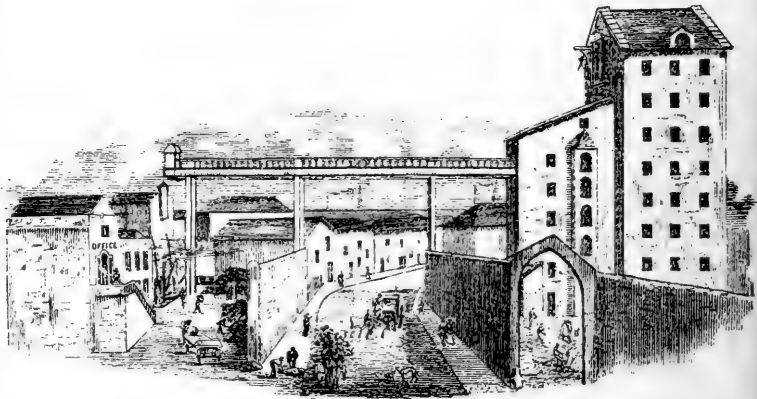


PLATE OF POLISHED IRON, PIERCED, THAT COVERED THE LOCK.

The third William Wilberforce, whose memory is imperishable, imbibed from his near relatives, the Thorntons, the principles of religion and philanthropy which he upheld with all the energy of his life. But, with the Thorntons, those principles were hereditary and inbred. London merchants and bankers of the highest standing, Directors of the Bank of England, Chairmen of great commercial associations, leading authorities on finance, and the trusted advisers of Chancellors of the Exchequer, they kept in touch, by business and by marriages, with the town from which they sprang. Of such were John Thornton, "the philan-



THE SUGAR HOUSE AS A WAREHOUSE.

thropist," whose benefactions were "more than princely," Samuel Thornton, who represented Hull in four Parliaments, but suffered in a great commercial crisis, John Thornton, his son, who took upon himself the inherited burden, Henry Thornton—the cousin and closest friend of Wilberforce—a man of boundless generosity, and Henry Sykes Thornton, "a king of men." The threatening ruins that tower over Lime Street are their monument.

One of the houses built by the Thorntons still remains. It was probably the residence of Benjamin Pead, soap maker, and from 1846 to 1865 was the parsonage of the Rev. John Scott, the vicar of St. Mary's. It is a good example of an eighteenth century town house.

The house which the Spyvees leased from the Burtons, built before 1690, with its ornamental gables, stood next to the soap-house, but has disappeared. Hither John Spyvee brought his business of a "roper" from Goole way, becoming a Freeman of Hull in 1722, but the burial, in 1718, of a "band-maker" at Sutton, seems to suggest an earlier date.



SEVENTEENTH CENTURY HOUSE OF THE GUNBYS, BURTONS, AND SPYVEES.

His son Samuel, and his grandson Samuel, followed him as lessees under the Burtons, heirs of the Gunbys, and then the chief proprietors here. They had farm buildings at the back, also tillage in the Clough Field, and pasturage in Summergangs. In 1748, the "Greaves, or Groves" in front, extending to the river side, were under a short lease to Edward Hodgson, whose family was coming into prominence. In 1774, Samuel Spyvee, junior, bought the house and rope-

walk, but Sutton Drain had before then cut off the further end of the land on which Pemberton Street was laid out. Rope-making was continued by Samuel Spyvee Cooper, but the builder was inevitable. There was, to the last; an old wooden bridge over the water, not quite reaching the eastern bank; the gap could be temporarily spanned when a rope for a deep mine was being made, and the rope would then be extended even along Pemberton Street. Spyvee Street now commemorates this old family. Their memorials are to be found at Drypool Church, which attracted this growing neighbourhood until 1844, when it was provided with the new Church of St. Mark's in its own parish.

In 1787, the next plot in Brick Kilns, before owned by Idell and by Pople, but then by Hill, was sold by auction at the George Inn. It ran back as far as the Quakers' Burial Ground. There were upon it two dwelling-houses fronting the high road, and a large building, lately a rapemill, also the Groves by the river, containing 1575 square yards. The auctioneer used a sand-glass to time the bids, and to demonstrate to buyers the ebbing away of their opportunity. By the conditions of sale the highest bidder within the running of three half-minute glasses was to be the purchaser. The property fetched fifteen hundred and sixty pounds.

Quakers then had their separate burial grounds, the burials being registered at the Parish Churches until they hept Registers of their own. This small grave-yard, now surrounded by houses, contains three flat stones, the oldest of which commemorates Ant^o Wells, of Hull, Merchant, who departed this life on the 28th day of 6th month, 1676. In 1678, when the wife of Thomas Richardson, of Wyton, was buried there, the Minister of Sutton noted that they failed to produce to him an affidavit that she was wrapped only in woollen, as the law then required. It had, by mistake, been sent to Swine, because Drypool was known to be in Swine, and this locality was still called Drypool. There are a few entries in the Sutton Registers down to 1679 of persons buried "in loco usurpato populo vulgo dicto Quakers," and, with grander simplicity, "in Sepulterio Quakerorio."

Quakers swarmed about Hull, and were notorious for their sufferings. In 1657, when the Quaker, William Elliker, a small Sutton farmer, probably living in this neighbourhood, refused to pay eight shillings and sixpence towards the repair of the "Steeple-House," or Church, the Steeple-

House officers, with the local constable, Peter Tock, seized a bacon-flitch, which was sold for twenty-six shillings, and two chines, worth one shilling and sixpence. Still smaller men lost calves or pewter dishes, and, after deducting expenses, a few coppers would be offered back, which they would refuse to touch. This is only a sample. They were hauled before the magistrate in Hull, or cudgelled, or turned out to a savage mob. Many were sent to York Castle; some died. They were, no doubt, very provoking. When they differed with the magistrate they called him a liar, and when he was drunk they told him of it straight, tightening their hats on their heads.

In 1767 the adjoining plot to the north, with its groves or growths, belonged to Edward Hodgson. In the same year the property beyond this, now the Allottment Gardens and the Recreation Ground adjoining Dansom Lane, belonged to Robert Burton, but the growths by the river had been acquired by Hugh Blaydes. In 1818 these were occupied as timber yards by Richardson & Wade, John Barkworth, and others, which brings us to the modern state of things in this locality.

We now reach a large plot, the history of which goes back to remote ages. It was the ancient ploughland of the manor, called Dripole Field as lately as 1710, but which, from the new outlet to Summergangs Dike, got the name of the Clough Field. It contained only twenty-eight acres, which does not agree with the three oxgangs, or forty-five acres, which Sayer de Sutton, the second, held in Dripole, nor with the area of the berewic in Dripole as given in Domesday.* Perhaps the enclosed lands between it and Witham had been carved out of old Dripole Field; there is here great scope for conjecture. Nearly the whole of the strips of lands in this tillage field must have belonged to Robert Burton, for in 1757 he sold the wide Growths in front of it, reserving only the claims of the owners of one broad land and one narrow land in the field. What is called a Pightle, probably a Toft, that had been nibbled from the Clough Field was sold in 1764 to Thomas Hodgson, and is now, I think, the site of the Subscription Mill in Dansom Lane. In 1767 the Enclosure Award gave the whole field to Robert Burton. In the midst of this ancient ploughland the truncated spire of St. Mark's Church dominates its district of mean streets.

* This was three *taxable* oxgangs, which was probably the same land that Sayer afterwards held.

We know the complete history of Magnusdaile, the estate next to the Clough Field during nearly seven hundred years. It had been got together bit by bit in the thirteenth century, by the Monks of Meaux. They had one piece six perches wide, from Robert de Melsa, the owner of the berewic, for the health of his soul and the souls of his ancestors, but were bound to repair the "Sedik" or river bank, along which was a right of way, afterwards the High Road. Some of the plots were given to keep up the daily alms at the Abbey Gate, some were got in exchanges, some they redeemed from mortgages to the Jews at York and Lincoln. They were permitted to enclose this estate of thirty two acres with bank and ditch. It ran from the river to Summergangs dike, and its northern boundary was a stream called Gyselfleth. After a hundred years, however, they had so neglected its boundaries that the cattle of the neighbours roamed over it, but when they began to clear out the ditches, the lord of the manor and the free tenants made violent resistance. Then all the parties met on the spot, the monks shewed their charters, old men gave their recollections, and as Sir Thomas de Sutton took their part, they were allowed to amend their boundaries. They could then let the land at a mark per annum more than before.

At the Dissolution in 1539, Magnusdaile, in Dripole, was occupied by Agnes Squyer, at the rent of £3 19s. In 1608, Peter Orrell, of South Cave, got a lease from James I. for forty years, at £3 a year, with 16s. for "increase for the price of a sheep." In 1627, his son, Walter, who was living there in his own house, sold the remainder of the lease to William Popple, described in the conveyance as "Master and Mariner," for one hundred and forty eight pounds. In 1656, Alderman William Popple held the freehold, and left it to his son, Edmund, it being then occupied by Peter Tocke, the constable, and Richard Tocke. In 1709, John Idell conveyed to Alderman Gray meadow land near Halfpenny Gate, "otherwise Maunsdale;" there was then, perhaps, a toll gate on the High Road. About that time Henry Cocke held Magnusdaile. In 1767 this property belonged to Richard Hodgson. From him it passed to Howard; the brick making industry having spread over it. It was next owned by Mr. Liddle, then the Flax and Cotton Mills, old and new, were built upon it, with the workmen's dwellings in Dansom Lane, called the Lines. Howard Street (now Chapman Street) was run through it, and the Groves got

the kind of population, and put on the appearance of a Lancashire town.

Before the middle of the seventeenth century, the drain, to take the water from Summergangs Dike, had been cut between Old Dripole Field and Magnusdaile, with a clough, shown in Osborne's map, and this gave rise to the new name of the Clough Field. The estate of the Monks has been commemorated in old documents under such names as Maunsdale, Mansdell, and Moundscale; Mounsdale Drain may still be traced. It is mentioned in presentments by the jury of the middle Bayliwicke of Holderness in 1708, when the owners and occupiers of Summergangs were amerced in five pounds for default in the Clow Dike.

Somewhere along the High Road to Stoneferry, at, or near Magnusdaile, was the Outhouses. Richard Tocke, tenant to Alderman Popple, was living, as the Parish Register says, at the "Oute houssiss." Here was another burial-place, several times mentioned in the Register. It is sometimes called, rightly or wrongly, a "burning" place; some traces of it ought to be found in excavations, not far beyond the Sculcoates Bridge. I think that Gyselfleth, north of Magnusdaile, was the boundary of ancient Dripole. At some little distance beyond the boundary the footway to Sutton struck off from the High Road across the Ings, where it still runs by Thistleton.

HULL, IN THE MANOR OF SUTTON.

Beyond Magnusdaile, a belt of land close to the river bank was an old enclosure, behind which were the open meadows of the Ings. The way in which some, at least, of this river-side land became enclosed seems to be shown by two charters (Stowe, Nos. 484 and 485), in the British Museum. By these, Sayer the Third granted to the Nuns of Swine thirty acres of land, measured by the perch of eighteen feet, between the closes formerly belonging to Amandus de Watton and Simon Scott, of Hull, extending from the meadows of Sutton to the river, with common of pasture for their cattle after the hay and corn harvest until the middle of March. The large close that measured thirty acres and a half, on which the Hull Glass Works stood, and which Earle's Cement Works now occupy, answers this description, lying, as it does, north of Magnusdaile, part of which had been the property of William de Watton. The

Charter, No. 487, grants twenty one acres of land in the meadows of Sutton, extending from the common pasture of Summergang as far as the arable land by the river.

The enclosed lands beyond the thirty-acre close, towards Stoneferry, were the South Field, the Little Field, and the "Intack," a name that suggests its enclosure. They were sold to Mr. Thomas Broadly, by the last representatives of that branch of the Daltons which acquired the third part of the manor, called Boomer's, or Bulmer's, from the descendants of Agnes, daughter of Sir Thomas de Sutton.

The Ings were, in general, called the Meadows of Sutton, but, on account of their extent, they had many distinctive local names, a portion near the river beyond Magnusdaile being known as the Meadows of Hull.

There is a Charter (Stowe, 486), by which Sayer the Third granted important rights-of-way to the Nuns of Swine, who had large and growing interests in Dripole. One of these ran along the present footway, leading from Sutton towards Kingston-upon-Hull. Sayer grants to the nuns that, with their men riding or going, they may use the path which reaches from Sutton as far as Dripole, "through the meadows of Sutton and of Hull and of Dripole as the men of Sutton and Dripole now use it." This is an exact description of the path, as shown on the old map of Sutton, which represents the allotments in the common fields at the Enclosure of 1767. It is not known that Sayer had any lands on the west side of the river, and, if he had, we cannot conceive why the men of Sutton, or the nuns, should desire to go from Sutton to Dripole by the way of Wike, or Myton, or the "Hull" which grew up on their sites. I place this evidence first, because it throws light on many documents of older and later dates. Sayer the Second had leased to Thornton Abbey, in 1217, for twelve years and three months, pasturage for 616 sheep, at six score to the hundred, in the fields and marshes of Sutton, Hull, Sotecotes, and Dripole, with free entrance and exit between Hull and Wilflete. That is, I submit, all over his lands between the River Hull and the limits of his manors at Marfleet.

The application of the name "Hull" to these meadows may more clearly be inferred from a singular grant (Dods-worth, 94. f. 90), made by Sayer the Fourth, immediately on succeeding to the manors. His father, Sayer the Third, who died about 1270, having left, we must suppose, no special provision for Joan, his widow, she impleaded in the Court of the King, before the Justices of the Bench,

by a Writ of Dower, called from its commencing words, "Unde nihil habet," certain persons who had held lands and tenements from her husband. They included Archbishop Walter Giffard, Isabella de Fortibus, then the widowed Countess of Albemarle, Richard, Abbot of Meaux, and Matilda, Prioress for Swine. These, appearing before the Justices in the Octave of St. Hilary, 55th Henry 3rd, drew in Sayer, the son, as heir, who, as he says, "to avoid costs and labours and grievances," granted to his mother, on Thursday next before the Feast of St. Matthew, in the Chapel of Sutton, a sufficient dower, including the following items:—

"The Manor of Sottecotes with its liberties, easements, and other appurtenances, his entire holding in Drypol, with all its liberties, easements, gates, customs, and other appurtenances, eighty acres of meadow with their appurtenances, in Villis de Sutton et Hull, with which she had already been dowered by the Bailiffs of the Countess of Albemarle." And also "William the Reeve (prepositus), of Hull, with all his holding, all his family and chattels." I do not suppose that the "Ville de Hull" then meant more than the cottages which accommodated the herdsmen whom William supervised, with, possibly, a few serfs or labourers employed about the bank of the river. At any rate, the dower granted would be in his manor, and not in the Hull which sprung up at or near Wike or Myton.

Again, Sayer, "the son of Sayer" (who was probably the fourth), granted to Robert de Hildyard, common in Sutton and Hull, as much as belonged to an oxgang of tillage. Tillage and pasturage would be in his manor. At the inquest on the death of Sayer the Fourth, in 1289, the manor of Sutton is mentioned, together with the manors of Ganstead and Hull, but nothing is known of his holding a manor of Hull other than this.

These charters throw light on an older document (B. M. Lansd., 194), by which Stephen, son of Ralph de Sutton, a descendant of former lords, grants, for the health of his soul and the souls of all his ancestors, to God, and to the Altar of St. John of Beverley, his bondsmen, John, Henry, and Roger, sons of Richard, son of Robert of Hull, with all their children then born, or in future to be born. Unless it can be shown that the lords of Sutton had also a manor on, or near the site which Edward I. obtained from the Monks of Meaux, we must, I think, read all the ordinary references to Hull with Sutton of this early date, as applying

to the Hull which was a member of the manor of Sutton. And when, in 1269, Joana de Stoteville refers to her men of Hull, they must have been men in her manor of Cottingham, who lived by the river side.

I am not concerned in questions as to the sites of Wyke and Myton, but I do not understand how, if the name of Hull was in use before 1278 for the growing town on, or near to the site which Edward I. afterwards acquired from the Monks of Meaux, the Monks should, in that year, be petitioning for a market and fair at the same spot, under the name of Wyke, near Myton, on the Hull; nor is it likely that, with such a gold-mine actually within their grasp, they should have mortgaged their estate here for a trivial sum, thus inviting a loss which they must have foreseen. Nor can one imagine such a commerce as Frost mentions in his Notices, existing upon a site that, as yet, had no Municipal Government and no public means of approach by road, and which failed to be clearly described in any independent documents relating to this locality.

I suggest that the commerce, whether by the Hull or by the Humber, was carried on by transshipment between sea-going ships and river barges, in the harbour or haven, from the chain fixed across the river's mouth to the chain at Stanford-Rak, or Stoneferry, these being the two limits of the port. In respect of such traffic, the "Ville de Hull" means the Port on the Hull. Such an arrangement rendered necessary the appointment of Sayer the Second as the Bailiff of the river, until the king saw the advantage of a regularly constituted town at the river's mouth, which would put an end to the ill-regulated commerce along the stream.

Sayer the Second, though deprived, for his misdeeds, of the control of the traffic, retained his ancient rights over the stream. In 1269, his son, Sayer the Third, gave up to Archbishop Walter Giffard, his rights of making weirs in the water of Hull, or any other obstacle to ships and boats, between the Humber and Beverley. This date is fixed by a similar grant of Joanna de Estouteville in respect of her manor of Cottingham; John de Oketon being one of the witnesses to each charter.

From the railway bridge at Wilmington may still be traced on the grass, after a light fall of snow, the High Road to Stoneferry. When the Holderness Road and the Ings Road to Sutton superseded the High Road by the river, Stoneferry was, for wheel-traffic, practically cut off from Hull. Sixty years ago, the existing road beyond Wilmington was a private way to

farm lands, axle-deep in mud, with an unlighted footway, along which women walked in pattens. The keeper of the Holderness toll-bar would stroll round to see if he could catch any unauthorised person driving that way to Hull to escape the toll.

STONEFERRY.

Stanferry, Staynfery, Stanefery, or Stoneferrye, may be one of the places made dry by the Embankments, or it may have been one of the small holms always just clear of the tides. I assume it is the same as Stanford-Rak, where, before 1269, Johanna de Stuteville of Cottingham and her predecessors put a chain across the river at night. At that time it was the place nearest the Humber where road traffic crossed the river and it must then have been a place of some importance. The derivation of the name from "Sutton-ferry" is plausible, but it is more allied to Stanmar or Stainmar, the sheet of water that once lay over a great part of Summergangs and Sutton Ings.

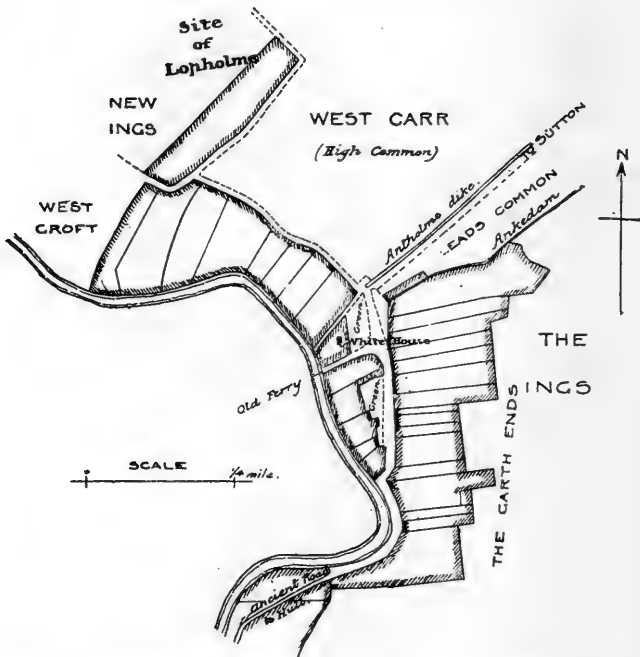
It was a hamlet of small farms with one site that may have been anciently occupied by a residence or a farm of the Lords of the Manor. This is close to the ancient ferry and landing place and to Stoneferry Clough; the enclosure map of 1767, shows that the paddock between the existing farmstead and the town street was part of the village Green. Its traditional name is the Green garth.

In the reign of Richard II. a third part of the manor with its fishery was conveyed from Thomas Ughtred to Sir Ralph Hastings, together with "The Ferry of the Water of Hull" then let to William Bulfyne.

Stoneferry Clough is the most ancient outlet for water from the meadows of Sutton; it took drainage even from Wawne. The old channel still crosses the fields from near 'Tween dikes-lane to Stoneferry-town street, where it widens towards the Clough. The ancient name was Ankdam, it is now called Antholme or Hantom, but in very early times a 'Leda' or canal was cut along the side of the road from Sutton. This is called in the Enclosure Award, Antholme-dike. Between these two channels was a long narrow Common, called in old charters the "Lede" or "le led"; some adjoining meadows in the Ings were called Ledeholmdaile. At the Enclosure it was called Leads Common. Both the dikes were solemnly fished by owners of shares in the manor in order to keep up their rights. They divided the dikes into

sections. As late as 1774, after the Enclosure, a conveyance from Wadman to Frost of the Hastings be'ewick, includes "one fishery in the middle set in the Lea Dike and also one set in the upper end of New Lea Dike." The old name for the road from Stoneferry to Sutton is Leads Road,

TOWN OF STONEFERRY



and the Bridge over Sutton Drain is Leads Bridge. Such is the persistency of old names.

After the partition of the manor between the three daughters of Sir Thomas de Sutton the chief house of the successors of Constance, the eldest, must I think have been upon the site by the old ferry which I have indicated. They let it to tenants with the manorial rights. Her third share in the

manor and lands was bought in 1527, of Robert Ughtred by Cardinal Wolsey, some little time before his disgrace, as part of the endowment of his new College at Oxford. In 1529 it was confiscated by Henry VIII., who in 1535 granted it to Sir Marmaduke Constable. In 1554 the lessee was Stephen Hogge of a Southcoates family. He lived at Stoneferry and left to his wife and children his part of the manor of Sutton which he held from Sir Marmaduke Constable, and his two parts of the house in which he lived. In 1649, this share in the manor was held by Sir Philip Constable, Bart., who calls himself "a third lord in Sutton"; his rental here stood thus—

| | | Rent- Capons. |
|-----------------------------|-------------|------------------|
| Thomas Hay of Stoneferry... | 02. 13. 04. | 2 |
| John Cross | 10. 01. 08. | 2 |
| William Watson | 01. 14. 08. | 2 |
| Steven Snaith | 02. 00. 00. | 2 |
| | <hr/> | |
| | 16. 09. 08. | |
| | <hr/> | |

The capons are the last remnants of the ancient "services" which in feudal times a tenant had to render to his lord. Apart from them his manorial rights seem to have been of no substantial value. The lands lay intermixed all over the Parish, so that the rental of Stoneferry cannot be separated from that of Sutton.

In March 1552-3, Sir Philip Constable's estates having been forfeited for treason against the Commonwealth, a survey and valuation was made. (Rentals and Surveys, Domestic, Interregnum, E. 58, Folio 182 b.), in which Constable's third share in a cottage and a ninth part of the manor stood at six shillings and eightpence a year. Among the tenants was Mr. Thomas Watson, the prefix to whose name shews that he was of more consequence than his small rent of forty shillings for Constable's third share would indicate. His father, Mr. Thomas Watson, and his mother had lived at Stoneferry, though they were probably from Drypool; their wills shew no signs of wealth.

I am not sure that he can be identified with the Thomas Watson whose half-penny token dated 1668 and bearing the arms of the Tallowchandlers' Company, is in the Municipal Museum, but he was probably a prosperous merchant in Hull. The Town Clerk, Charles Vaux, Steward of the Manor of Sutton, was his friend and executor. Before

his death in 1665, he had acquired the forfeited estates of Sir Philip Constable in Sutton and Stoneferry and seems to have added thereto. He lived at the White House on the site I have described. His property was chiefly settled by Deed and by Will on his widow for her life, some of it without any devise of the remainder, of which his sister Elizabeth, the wife of John Truslove of Wawne and Stoneferry, got a considerable share as "shift-lands," besides what she had under his will. From her descendants Mr. Thomas Broadley bought a portion called Whitehouse farm, the rest of her property being acquired by Mrs. Ann Watson who lived at White House, and, dying in 1721, founded in that house her College for widows and maiden daughters of clergymen.

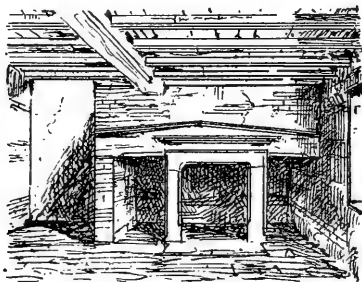
Mrs. Ann Watson's will furnishes incidentally many interesting particulars as to her house and lands, and other possessions. She left amongst her friends her plain gold ring, with a "posie" or motto in it, her gold ring without a posie, her clothes of woollen, linen, and silk, and a pair of silver candlesticks and snuffers. Her heirlooms and pictures in her house were to be continued there for ever for ornaments and benefits to the house. Her house, called White House, the north end of cow-house, and the close it stood in, were for ever to be appropriated to a college or dwelling for clergymen's widows and clergymen's daughters, old maids, and for a school for teaching children.

Ten girls, who could read, were to be taught by the school dame to knit, spin, and sew. The girls were to be the children of poor inhabitants in need of such assistance, and were to help the ladies in their domestic affairs, and each was to receive twopence per week. The children were to go to Sutton Church on St. James' Day, and every Sunday when there should be service and sermon, and to be catechised when there should be catechising. The minister of Sutton was to have five pounds for the service and sermon on St. James' Day. The school dame was to read prayers on Wednesdays and Fridays. Each of the inmates was to receive five pounds per annum, the school dame being paid five pounds more.

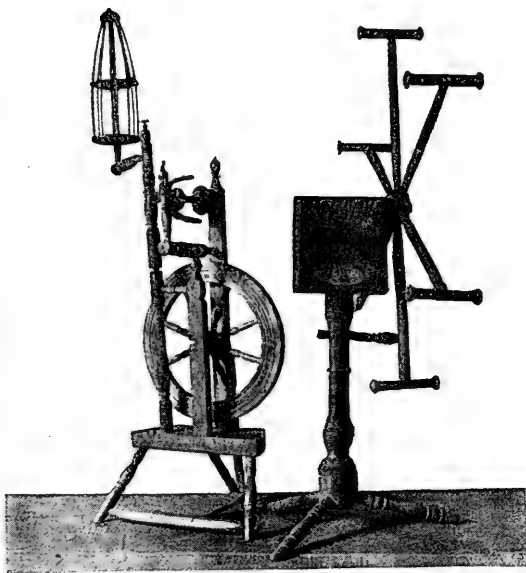
When a new College or Hospital was provided at Stoneferry, the White House was used as a farm. In the time of my grandfather, Samuel Hudson,* who succeeded his father there, it was a spacious Manor house, having a carved oak staircase

* This name, which appears in lists of occupiers from the sixteenth century, is now extinct.

and large rooms that had been divided to accommodate the former residents.

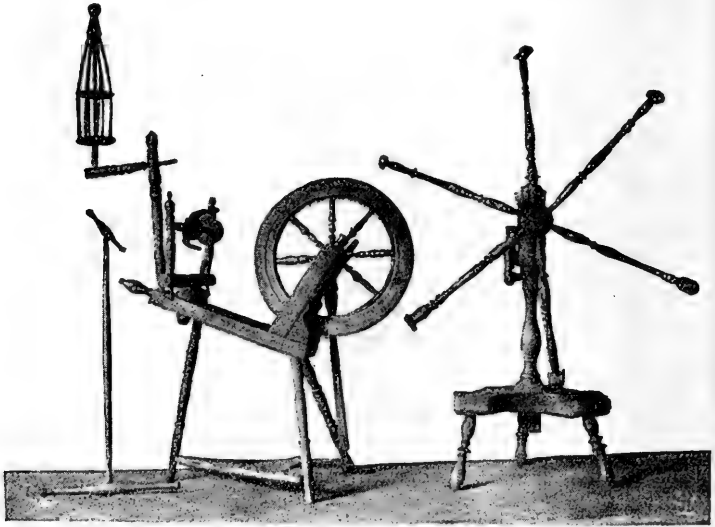


OLD ROOM IN THE WHITE HOUSE.



OLD UPRIGHT SPINNING WHEEL.

The house was taken down when a new house was built some seventy-five years ago. The small portion now remaining consists of a low room with a chamber over; the floor of the chamber is carried on a beam and joists, all bearing a good moulding on the angles. There was originally a wide fireplace, but within the opening a more modern fireplace has been constructed. It may be that this was done by Mrs. Watson, or even by the Trusloves or Thomas



LATEST FORM OF SPINNING WHEEL.

Watson. The floor-timbers and the wide fireplace look as old as the time of Stephen Hogge.*

The Rev. J. H. Bromby, Vicar of Hull, remembered the ladies being carried to Sutton Church, as Ann Watson had provided, riding on pillions behind the tenants. Until the direct road from Hull was made, Stoneferry had much of the quaint tranquility of a Dutch village. But until the

* The implements for spinning, measuring, and hanking flax, here illustrated, are part of those used at that house until 1829 by my grandmother and her daughters.

drain was cut there was not always access to Sutton. In 1589 and in 1637 Stoneferry children had to be baptized at Drypool because of the floods over the Leads Road.

The student of Field names may find near the city boundary some interesting items. Meadows and pasture that Isabella, Countess of Albermarle, had held under the lords of Sutton, were held in 1296 by Robert de Hillyard, lately her bailiff. They descended to the two daughters of Thomas de Hillyard of Riston, about whose wardship and marriage there is an interesting dispute recorded in the Chronicle of Meaux Abbey. Katherine, who married Peter de Nuttle of Burstwick, parted with her life interest, settling the reversion on her son (Dods. 139. f. 45. b.), in whose family the property descended. By the river, just beyond the World's End farm, are two fields called High and Low Nuttles, which commemorate this piece of family history. Early in the fifteenth century, there was near Stoneferry a hamlet called Lopholme, mentioned in the manuscript record at York Minster of a great case about burials in Sutton. Out on the margin of the West Carr are a couple of fields still called Loppam, where marks of foundations are all that remain of this deserted hamlet. Part of the property of the Carthusian Monastery near Hull was here, and families called Lopholme, Lopham, and Loppam, lingered long among the small farmers of Stoneferry.

In 1717 Mary Peacock conveyed to Thomas Mould a Garth where a cottage formerly stood, with half a steng (or rood), formerly called Guyme Coat (an enclosure for sheep), abutting on Guyme Close on the west and on Stoneferry West Carr on the north. Guyme Close would be by the river, north of Stoneferry: the name commemorates a Gime, or breach in the bank. The Moulds were a family of merchants in Hull.

THE WEST CARR AND SUTTON INGS.

The West Carr, a great sheep pasture, Sutton Ings, a great meadow and the pasture of Summergangs in Southcoates, were all under the same lord of the manor, and were occupied to some extent by the same tenants. The sheep and cattle lived in winter on the meadow ground and in summer on the pastures. The chronicle of Meaux Abbey is largely occupied with the early and persistent struggles of the Monks to acquire shares in the newly reclaimed meadows

and pasturage from the lords of the manor, and from the free tenants whose ancient farms were perhaps already large enough for them. The success of the monks was remarkable and, through their trade in wool, they ought to have grown richer than they did. At the dissolution of the monastery in 1539, the Crown seized this property, letting it with Meaux Abbey, on leases for lives to the family of Alford, and later, granting the rents from these leases to John Dudley, Duke of Northumberland and to his son, Robert Dudley, Earl of Leicester 'till it again reverted to the Crown. These rentals were afterwards settled upon successive Queens-Consort.

The municipal boundary includes part of the Ings which were divided into "dailes" or allotments, several transactions in which between the lords of the manor, the Nuns of Swine, and others, are recorded in the Stowe Charters. The Marr or Lake, which had covered much of this ground, was commemorated amongst the dailes by such names as Staynmar and East and West Stanmardaile; Robert de Stanerna seems to have written many of the Charters.

Sutton Drain, made through the Ings about 1765, greatly to the improvement of all the low lands over a wide area, was the outcome of long consideration. In 1677 a Committee of the Corporation had reported against a scheme for carrying such a drain to Malmesdale Clough, thinking that a better outfall could be got into the Humber between Drypool and Marfleet, which idea has since been carried out. A proposition was seriously entertained as recently as 1786, to make Sutton drain into a navigable canal, with Locks and Wharves for the carriage of corn and manure and goods; the roads being excessively rough and hazardous. There were then no light carts, and farmers' wagons frequently broke down, even on turnpike roads.

The railway to Hornsea, after crossing Sutton drain, enters upon an Enclosure more ancient than Summergangs dike, for the dike was carried half round it so as to include it in Sutton. It was the largest of the sheepfolds which were necessary adjuncts to pasturage in Summergangs and meadow in the Ings. There were probably more sheepfolds than one here. One of its three divisions is called Langcroft, an old name, the largest is Hedon-croft, probably so called from Hedun de Hedun, who in 1217 held meadow in the Ings.

By a charter (B.M. L.F.C. VIII.), Sayer the third ganted to the Nuns of Swine, the site of that sheepfold in the

“cultura” that lies next to the cultura called Hedon-crofte, “just as it is bounded by the dikes.” These would be meadows, for the term is used of meadows in similar charters. Also before 1260 Sayer granted to the Nuns (Stowe 487) eighteen and a half acres next Hedon-croftes, near to their sheepfold. He warranted this against his lord, the last William de Fortibus, Earl of Albemarle, who died in 1260. At the dissolution in 1540, the property of the Nuns was granted to Sir Richard Gresham, then to Sir John Constable and passed to the Alureds.

In 1731 and 1734 (E.R.R.) conveyances were made of a bercaria or sheep-coate called Swine Lathes, and two closes containing eighteen acres, formerly the lands of John Alured. The lathes would be store places and shelters for sheep. At the Enclosure in 1767, Hedon-close belonged to the family of Sedgwick, the owners of the Hastings manor.

In the Ings, close to the Summergangs dike, a little west of Hull East Park, is a field of old enclosure called Countess Croft. Sayer the third, or his son granted to Isabella, Countess of Albemarle, widow of William de Fortibus, by a charter (Dodsworth, 94), with 120 acres of meadow in Sutton, pasturage for a thousand sheep in Sottecoates, Drypool, and Sutton. This was no doubt, her sheepfold, and we see by such evidences the persistency of old dikes and old names.

SOUTHCOATES.

At the time of the Domesday Survey, about 1086, Sotcote and Dridpol had in the manor or manors thirteen taxable oxgangs. It was then waste, but in the time of Edward the Confessor its annual value had been thirty shillings. The College of St. John of Beverley had in Sotcote a berewic of one carucate or eight oxgangs, and in Dridpol three oxgangs with soke upon five. All this was tillage, amounting to 195 acres in the manor and 240 acres in the berewic. This also was then waste. But if the third part of the ploughland, which must lie in fallow each year, went untaxed and unrecorded, this sum of 435 acres represented a total of 652 acres of tillage, besides meadow and pasturage, of which nothing is told. The total area of the combined townships is now 1481 acres.

The interest of the lords of the Manor of Sutton in Southcoates, led to the foundation of a Chapel there, subject to the rights of the Church or Chapel of Drypole which was under

Swine. In 1236, a dispute between Sibil Prioress of Swine and Sayer the second, who complained that she had deforced him from the advowson of the Church of Dripole, was settled by a Fine in which he quit-claimed to her this right. In return she agreed that the nunnery should find a chaplain, with clerk, books, vestments, light, and all requisites for a chantry in the chapel at Ganstead, also that he should have a free chantry in Southcoates, as he had before, at his own charges, saving harmless the Church of Dripole.

In 1327, Sir John de Sutton senior had licence in Mortmain to alienate three messuages and land, with pasture for two horses, four oxen, and two hundred sheep, in Sotcotes; to a Chaplain to celebrate divine service daily in the chapel of St. Mary at Sotcotes, for the souls of himself and his ancestors. Some of the charters of Sir John de Sutton are dated at Sudcoats, having, no doubt, been sealed at the Chapel of St. Mary, the site of which might perhaps be found among the farms, or at Mile-house, where the Holderness Road turns as if to avoid some pre-existing obstacle. A list of the chantry priests is given by Poulson.

The natural overflow from the Stainmar would be at Marfleet, but, in the constant efforts to improve the drainage, the Humber and the Hull have by turns taken these lowland waters. Summergangs-dike, which was cut for this purpose, divides Sutton from Southcoates and Drypool. It has been called "Gouts"-dike, corrupted to Gold-dyke, from the French *egout*—a sewer.

The Patent roll of the 1st Edward II (part 2.m, 4. d., 1308) reveals some of the troubles of the lord of the manor. John de Sutton senior, complained that certain named persons had distrained and impounded his cattle, killing several, and a Commission was issued with orders to deal with the malefactors. Again in the 1st Edward III (part 3.m. 24. d.) a long list was presented of rioters who, at Drypole, had beaten and wounded John the son of the lord of the manor to the peril of his life. These also with others had entered the Free Warren of John de Sutton senior, at Sotcotes, Sutton, and Drypole, hunting hares and rabbits, and beating and wounding his servants.

Summergangs, always a pasture, dotted and seamed all over with ponds, and sikes and watery hollows, was of very fluctuating value. The charter by which Hull acquired one-sixth of the manorial rights, shews that in the reign of Henry VIII, the full annual value of three commons, each being for eighty sheep and four horses, was thirteen shillings

and four pence. Its history in the reign of Elizabeth is chiefly contained in the Rolls of the Manor Courts which I shall quote, but in a survey made in 1674, when the Crown lease of the Meaux Abbey pasturage was held under Catherine the Queen of Charles II, four hundred sheep-gates were nearly overlooked because, for many years, sheep had not been turned in, as the profit would not have been enough to pay the highway rate. The suggestion that the name comes from So'mer-gangs would be more convincing of the name if the ancient lake had been the South Mere, but there is no evidence of this. It was a pasture, only used in summer and, on account of its wetness, not always in that season.

In my book upon Sutton I have shewn how this grazing for 400 sheep in Summergangs, with pasturage for the lambs in the Ings "in the season of separation," was granted by Sayer de Sutton 3rd to Martin de Otringham, Knight, a burgess of Hedon, and given to Meaux Abbey by his grandson Richard, a priest. After the Dissolution it was included in the leases to the Alfordes of Meaux Abbey. The Prioress of Swine had here pasturage for 500 sheep and all other cattle except pigs. This was worth 26s. 8d. per annum at the Dissolution, and was sold in 1557 to Sir John Constable and his son.

In 1637, Margaret Bell alias Stalker, a servant, died of the plague which she got at Hull. She lies buried in the Summergangs.

The Holderness Road, made for public access to Hull, was not precisely new; it followed the old line of one of the rights of way granted by Sayer the third to the Nuns of Swine. His charter (Stowe 485) gave them freeway for carts and wains, men, horses, and other animals from the bridge of Bilton, through the midst of the meadow of Sutton as far as Summergang-dike, and through the pasture of Summergangs as far as Dripole and Sotecotes and to their sheepfolds. In 1302, in the time of John de Sutton, the grandson of Sayer, the King took, without payment, the meadow and pasture along this track, for laying out the road into Holderness. It passed "through the middle of the town of Dripole to Suttecoates Som'gang," (at Dansom Lane), thence to the cross in Somergangs, (the position of which is lost), thence to the west end of the town of Sutcotes, (near Mile-house), and thence to Lambhelmsike—where Summergangs-dike is now crossed by the road. It may be that the omission to pay for the land was due to its being an old

private road. In the great floods of 1764, the whole land between Bilton and Hull was under water, so deep that the turnpike houses were deserted, and there was no travelling along the road "from January 6th to the 1st day of April, except in a boat. One man and horse, attempting to go through, were drowned."* About 1813, Isabel Richardson, who kept house for her cousin, Thomas Priestman, in Hull, used to walk to his new house at East Mount along this road in pattens, "to keep her feet out of the water, so abundant in this locality."

Many entries in the Book of the Provost of St. John at Beverley, relate to Southcoates where the lords of Sutton held a Manor under the College, while other persons also held lands directly under it. The manor was held at a rent of eight shillings per annum, and when Sir Thomas de Sutton failed to appear at the Court of the Provost or to pay his rent, he was fined like other tenants or was excused like others. Sir Thomas succeeded his brother Sir John, who had held one manor in Sutcoates and two carucates of land, presumably arable, with the meadow and pasture and houses that went with it. In the 26th, Henry VI his representatives were Sir Edmund Hastings, Sir John Salvayn, and the Ladies Isabella Godard, wife of John Cussons, and Constanca Pygott or Bigod, who then shared the divided manor. Their lands in Sutcoates are described as arable, meadow and pasture. In the reign of Henry VIII., Salvayn's share passed through Sir William Sydney and the Crown to the Corporation of Hull.

The hamlet of Southcoates seems to have contained several small farms or cottages with crofts at their rear and sheepcots close to the pasturage. The Manor Rolls and other evidences shew that there were in Southcoates, besides Summergangs, the following open fields and meadows:—

The East Field, West Field, and Humber Field, were originally the three open arable fields necessary for a rotation of wheat, spring crops, and fallow; but by the reign of Elizabeth, and probably long before, all these had been laid down in grass. Indeed, the old plough-lands, when they are clearly visible, seem never to have acquired the double curvature characteristic of ancient tillage. I think the fields were at least partly meadow, for fines were inflicted on those who turned cattle into some of them or drove across them

* This is the true effect of an entry in the Patrington Register, which I examined with the late Canon Maddock; "but" being there used for "except."

after Candlemas. The South Ings meadow abutted on Humber bank and adjoined the Humber Field.

The "Wood" adjoined the West and East Fields; it contained about twelve acres. There was a dike from East Field gate to West Field gate "about the Wood." It was probably rough pasturage, with some trees or bushes; William Hogg lived at the Woodhouse. In 1578, Katherine Wetherall was fined 12d. for cutting down "burcell" in the Wood. Burcell or bristle was a dead fence or the thorns or brushwood used for fencing. Besides these, there were the Ewelands, the Chimney land, and the Cornepasture, all lying to the north-east of Southcoates.

The Ewelands was a good-sized meadow owned by different persons; perhaps their ewes were sent there from Summergangs when the lambs were turned into Sutton Ings to be weaned. It adjoined Marfleet, for Sir Philip Constable's tenant. Mr. Miller, held "all that parcel of meadow lying in Ewland containing eight acres, bounded by Marfleet Common on the east." It was near to Sutton Ings, for in 1726 Anne Kirby conveyed to Peter Langrick two acres of meadow there, near to Ewland Gate, which may have been the Toll-bar.

The "Chimley land" adjoined the Ewelands and the Common. In 1554, Stephen Hogge, of Stoneferry, left to a child then expected his Chimney Land—if a son. It has been suggested that lands were so called because turves for fuel might be cut in them, or because a *Chimin* or way passed through them. Christopher Bennington had to pay ten shillings for neglecting the dike between his Chimley land and Yowelande, and the tenants of Ewelands were fined a shilling for not having scoured two cordes, or fourteen yards, of the dike between them.

In 1713, a conveyance from Beauley and Nettleton to Thomas Wetwang, a Sutton yeoman, included four acres of meadow in the Ings running over the "Cawsey," one end extending to the Sideing, and the other to Chimney lands. The Side-Ings was a small ancient enclosure by Landsyke drain, south of Bellfield; the Cawsey (or Causeway) was, I suppose, the Holderness Road. Another strip of one acre ran "over the Cawsey adjoining Bilton Common." In a copy of "Paynes for the Middle Balywick," of about 1650, the jury, which dealt with all the greater water-courses in the district, ordered that "the sewer beginning at Chimney lands Nooke, and that runneth betwixt the Sumergams and the Ings, and runneth to the new sewer at Maunsdale, and from thence to

Moundsdale Clow, be well dressed with sythe and rake, and ground-scoured where need requires, in paine of every corde undone 10s." This is Summergangs dike, running from the boundary of Marfleet, which is not otherwise referred to in this copy of Paynes. Another conveyance includes meadow abutting upon "a close of meadow" called Chimney lands. The Cornepasture, probably tillage laid down to grass, may have been enclosed land. Thomas and Frances Hogg were joint tenants of the Corne Pasture House. In 1659, Joseph Blaides, senr., left to his son William, who in 1667 devised to his sons, "land called the Corne Pasture and the Ewelands, containing 24 acres." I suspect that these were old enclosures out of the East Field. There was a close called Galencroft.

The entries of encroachments in the rolls of the Manor Courts shew that the Common was part of Summergangs, that which lay south of the Holderness Road. It adjoined the West Field, for Thomas Teele had to pay 12d. for not sufficiently digging out the dike between them. It adjoined the Chimley land, for Robert Hodgson was fined ten shillings in respect of twenty cordes of the intervening dike.

In 1422, William Twyer of Ganstead, by a charter which I have seen, caused to be settled upon his son Robert, on his marriage, lands, which included a messuage, a croft, eleven acres and a half of plough land, one acre and three roods of Meadow in Sotcotes and three animal pastures in the Frith, which was in the same locality.

The Court Leet or view of Frank Pledge, a Royal Court, and the Court Baron of the Lords of the Manor were held together twice a year, in April or May and in September or October; a few of the Rolls, the earlier in Latin, are preserved at the Town Hall. They are usually headed like the first which begins as follows:—*

"Sudcotes. View of Prank Pledge with the Court Baron of the Mayor and Burgesses of the Town of Kingeston upon Hull and of Philipp Constable Esquire, Thomas Dalton, John Stanhoppe, John Cockerell, Ralph Brown, and heirs of Robert Hogge, Lords of the Manor, held there the 12th day of October in the 18th year of the reign of our Lady Elizabeth by the Grace of God Queen of England France and Ireland, Defender of the Faith, &c." The Court elected four Adjisters, called jesters, or keepers of the fields, a Con-

* I have to thank the Property Committee of the Corporation for permission to use these Rolls, and I am particularly indebted to Mr. Boyle, as already mentioned.

stable and a Bailiff, and then dealt with some thirty or forty "sutors," who were absent, either excusing or fining them eightpence each. Henry Randes was the Steward. The Jury of about fifteen was sworn and they had to take the list of offences and deliver their verdict a few days later at the house of John Lewis in Hull, under a penalty of from six and eight pence to forty shillings each. Waste, or stray, cattle had to be handed over to John Lewis.

The ordinary offences were such as not keeping up ditches or fences for which they were responsible, omitting to make a clute or dam across a ditch where necessary, driving cattle across a clute, not bringing in their rams from Summergangs at the proper season, turning horses into a sheep pasture, turning pigs or geese into a pasture, not taking their sheep out of the meadow ground at the feast of the Purification, driving cattle across a field at forbidden times, turning out sheep or cattle where they had no right, taking them in or out without informing the Wardens or Jesters, permitting swine to go unringed or to go "wroting" in the field, allowing dogs to chase sheep, keeping an unlawful dog, turning out diseased animals, as Richard Hoge did with "tow skabed horses" and one with glanders to the infection of the others, fold-breach, or liberating cattle impounded for trespass, or for non payment of "Jest money."

The fines varied greatly for the same offence as to place, time, and the extent of the offence. Generally the basis for the calculation was the noble of six shillings and eight pence. Turning out diseased animals might cost 3s. 4d. or 6s. 8d., turning out geese 5s. to 10s., sheep or cattle wrong 2d. to 1s., a bull 2s., a swine wroting 4d. Twenty cordes (of twenty-one feet) seems to have been a usual length of dike for a tenant to keep in order; to neglect this might cost him ten shillings. But often the fines were so trivial, that the jury-men must have considered the chance of their own turn coming next. The Pinders, who had to impound stray cattle, were ordered not to take for their "punsalls" more than 2d. for a horse, or 1d. for a beast or five sheep. This confirms the ordinary estimate of five sheep to one beast-gate.

Many tenants who had made encroachments on the Common or Summergangs had to pay from two pence to eight pence a year annually therefor, there being, it seems, no absolute prohibition.

To let rights of pasturage to strangers was an offence for which fines of eight pence to six and eight pence satisfied the Court, but a tenant might let grazing rights to another

tenant if he gave notice to the Jesters. The rule, of doubtful application in Sutton, that pasturage could only be held by an inhabitant, "down sitting and uprising," does not seem to have existed here, for among the suitors are residents in adjacent townships.

The Court dealt with cases of debt or damage between the Suitors. It made orders as to the repair of Humber bank, as to keeping up military exercises and enforcing the sumptuary laws by which every one had to dress according to his degree. Rarely it made orders applicable to Drypool, the relations of this place with Southcoates being variable and difficult to understand.

Once Leonard Lockwood and William Hogge had to answer for failing to pay 2s. 8d. for three "se sparres"—pieces of ship timber—bought of Leonard Stutt. Then Leonard Lockwood complained that John Cockerell, having accepted ten shillings, had not let him have pasture for certain beasts as he had faithfully promised, whereupon the defendent came and said the complainant might have the pasture.

In April 1595, the Jury presented the inhabitants of Sudcotes for wearing of hattes, the total penalty being 4d. It being then obligatory on men to wear on Sundays and holidays woollen caps of English make under a penalty of 3s. 4d., the inhabitants of Sutcots and Dripole were presented in October for not wearing capps according to the statute and were amerced in 6d. only. The township of Sutcots was amerced in 12d. for not keeping their Stocks in repair. For not watching according to the statute, the inhabitants of Sutcots were amerced in 12d, and for not exercising the statute for "artylyrie" their amercement was 6d. John Aldred was ordered to keep his gate from Dripole field, (in Sutton) into Summergangs in sufficient repair, hung and locked, and the "bursels" or fences at both ends of the gate in repair. No one might make a brigg from his meadow in Sutton Ings across Summergangs dike unless it was properly fenced and so kept. The same Court ordered that, as there were divers places in the South Ings where the Humber bank was in great ruin and decay, sufficient timber should be taken "of that which now lyethe a scattered abroad on the banke, grothes and pasture of the South Ings" for the lockering of the same. And it was ordered that for the cost of the work every lord, freeholder, or tenant, for term of years, in the South Ings should pay 2s. 6d. for "every Noble ancient rent" they had in the South

Ings. The meaning of the Noble in relation to pasturage in Southcoates will appear from other evidences.

This Court of the 20th October, 1595, is notable for the variety of its business. John Graves did fealty and was sworn a tenant. Mr. Robert Dalton who had succeeded his father as one of the lords of the manor had not shewed his evidences but he had promised to shew and examine them to any who should be thought meet at his own house before the next Court. Mr. Eestoft had made the like default but his tenant Mr. Shipwrighte (a Sutton man) craved respite till the next Court.

The fines were moderated by the Jury, written in English, and ordered to be read out in church where the whole parish would hear. Very few would be entitled by their own innocence to scoff at their neighbours on account of such exposure.

The struggles of the writer of the later Rolls to set down unfamiliar words and phrases are pathetic, but he gives some evidence of the local pronunciation of Yorkshire and Lincolnshire words. He writes of yowes, bease, boles, geyse, and yates that must "hinge of iorane lowpes and crukes." One list is of "paymens layde at thyse corte howldene at Sutcotes in the xxxj yeare of the reigne of oure sufferinge layde the quenne maightye." The "sonne and hare" succeeds his father. A tenant must "dacke his dike" or "dacke his dacke" or "make half dacke." A dack was a hollow or furrow that might let off water, perhaps a mere grip. Then the tenants "shall none genge no horse gaytes from theyre Sheppe gaytes nor shepp gaytes from theyre hors gaytes," upon pain of every default ios., unless they exchanged or substituted half a common together. It was thus secured that at least forty sheep should be dealt with when the tenant chose to change one kind of animals for another. Geng or genge is a variant of ging, a troop or gang. But this scribe also uses "geng" for give—as "to geng warning."

From lists of suitors in attendance at this court, or amerced for absence, or excused, compared with the list of estreats in October 1593, when all were absent through the omission of the bailiff to summon them, we have the following names, nearly in the order in which they were called :—

Freeholders :

Richard Hillyard, Gentleman.
Robert Hogg.
Simon Wetherell.
Thomas Rawlingson.
John Gregorie.

William Willson.
Thomas Bennington.
Stephen Hogg of Stoneferie.
John Aldred, Esquire.
The heirs of Barnebie.
The heirs of Threshwell.

Freeholders (continued):

The heirs of Girlington.
 Michael Beesbie.
 Robert Gayton.
 Walter Proctor.

Leaseholders and tenants at Will:

Marmaduke Grimstone, Esquire.
 John Chicken.
 George Almond.
 Margaret Rawlingson.
 The heirs of Christopher Askwith.
 Joshua Wakefield.
 Richard Hogge, Junior.
 William Barnes.
 Thomas Hogge, Senior.
 Margaret Hodgeson.
 Peter Almond.
 Henry Constable, Knight.

Margaret Tweene.
 Thomas Grimstone.
 Frances Hogge.
 Robert Spencer.
 Christopher Hillyard, Knight.
 Paul Carter.
 Christopher Hogg.
 Thomas Anderson, alias Fox.
 Miles Todd.
 Thomas Hogg.
 William Humpton.
 Robert Stephenson.
 Matthew Tuttell.
 Leonard Lockwood.
 Robert Dew.
 John Graves.
 Richard Huntingdon.
 Thomas Wood.
 Roger Keddie.

A few names, perhaps of temporary occupiers of pasture gates, are missing, Thomas Anderson, alias Fox, and Todd were probably tenants of John Alford, Esquire, of Fawley Court, Wilts, lessee of the Rectory and tithes of Sutton. He was elder brother of Sir Lancelot Alford, lessee of the meadows and pasturage in Sutton and Summergangs that had belonged to Meaux Abbey. John had inherited the rectorial tithes and lands in Sutton and other property, leasehold and freehold. At a Court held about 1590, Edward Trislay was ordered to shew his evidence for his Common in Summergangs. He was Edward Truslove, gentleman, of Wawne and Sutton, a relative of the Alford, and lessee under them of the Rectory lands. He was the father or grandfather of John Truslove, of Wawne and Stoneferry.

The difficulties arising out of the ownership of land in common fields are illustrated by records (Exchequer Special Commissions, 10th and 11th, Charles I.), of proceedings by Katherine, Mary, and Margaret Davie, whose grandmother, dame Katherine Moore, had bought the reversion of the Sutton Rectory, after the lease, granted by Queen Elizabeth to the ancestors of the defendant, Henry Alford. He said that certain lands which they claimed were not part of the Rectorial lands, but the Court ordered them to be given up, and appointed a Special Commission of four persons to set them out. They agreed as to several items of the claim, but differed about a tenement called Bursiland, in Sutton, sometime let to Thomas Foxe, and a bovate or oxgang of land called Bursiland, in Sutton and Sudcoats, lately held by

John Meeke. The report of James Watkinson and Robert Moore reveals a conflict, after which their two colleagues refused to discuss the matter further, and carried the Commission away. It is easy to see how the confusion might have arisen.

The farmstead called Bursiland, worth 6s. 8d. per annum, a mere cottage being worth 4s., was probably named from the bushes or thorns locally called bursels, used for making a dead fence, and the oxgang of land, originally let with it, would bear its name. But the arable fields of Southcoates, laid down to grass, were valued in Nobles, and the identity of the strips of tillage must have been forgotten. When, in 1710, Hugh Mason bought the Sutton Rectory from Brodrepp, the heir of the plaintiffs, he took a conveyance of the tenement called Byrsall Lands, and the oxgang called Byrsill, but perhaps these properties were never identified.

Gyme Close, one of the lands in dispute, containing $4\frac{3}{4}$ acres, took its name from the "Gyme," which was, I think, on the small piece of Summergangs close to the Holderness Road, and near to Mile House, over which piece Southcoates Lane passed. A Gyme was a hole formed in the ground by the giving way of an embankment. There were, near there, a large pond, and a little watercourse called Gyme Sike. The Commission found that Gyme Close abutted north on Summergangs and south on the West Field. The Enclosure Award gives a right of way through the south-east corner of lands allotted to Benjn. Blaydes, called the Gyme, and from thence turning south-west upon the side of the old enclosure into another part of the Gyme, leading from Sudcoates to Hull. It also awarded a thirty foot road on the allotment of Benjn. Blaydes from the Turnpike road near the Gyme Sike on the south-west side of the Gyme, to West Field as far as the village of Sudcoates. This is rather vague, but I think this small piece of Summergangs west of Mile House was called the Gyme.

The Noble of grass was the result of a valuation made of the new pasturage when the arable fields were laid down, in the fifteenth or sixteenth century. The number of cattle-gates that the open grass lands, apart from Summergangs, would support, was then calculated, and three gates were supposed to be worth an annual rent of 6s. 8d., or a noble. These were then allotted to the freeholders, in proportion to their holdings. This involved fractions, but the beast-gate being divided into four feet, two feet was a gate for a foal or a calf. The fractional parts of a Noble were often expressed rather

awkwardly in money—William Woolfe was amerced in 2d. for unjustly filling two gates, “over 4s. 2d. of grass.”

For the benefit of the present inhabitants I have given some idea of the intolerable complexity of the system of common fields.

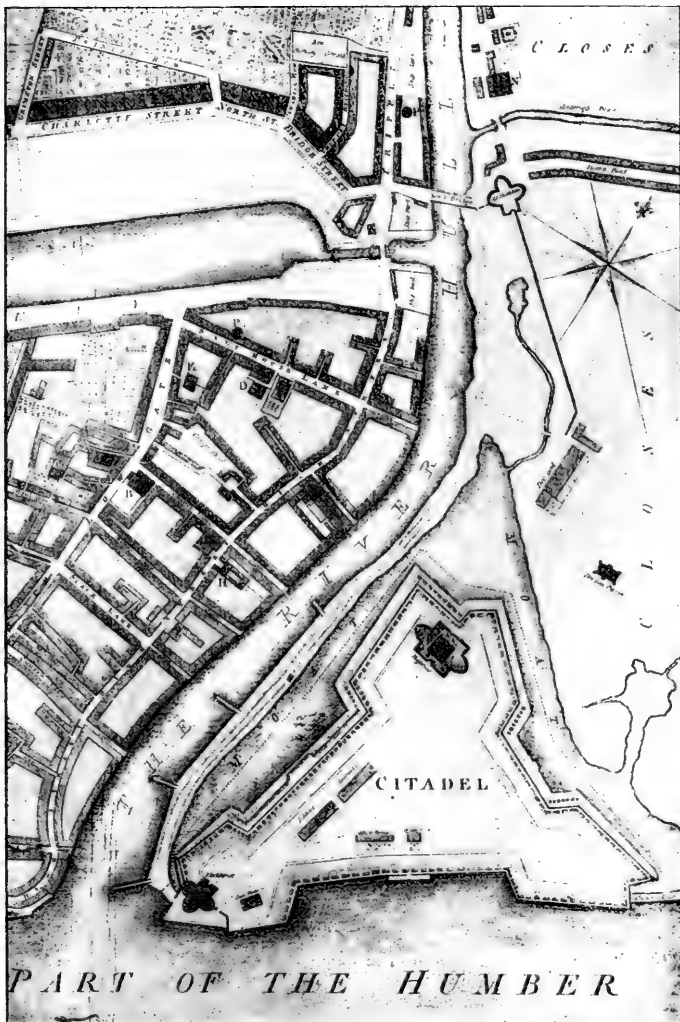
The name of Sir Philip Constable, of Everingham, whose estates were forfeited for treason against the Commonwealth, is of melancholy interest in connection with Southcoates as in Stoneferry, he being lord of a third of this manor also. In March, 1652, the survey shewed that his total annual income there was £19 19s. 6d., but the surveyors thought the value to be £3 16s. more. Among other tenants, Thomas Harrison had a cottage, and a two-acre meadow called Ember Garth, with one Noble in the East Field, and one in Humberfield. He had also “ten pence,” or the eighth of a Noble in the Wood, and 160 sheep-gates in Sommergaines. I suppose Constable's property was sold, but he was allowed to compound for his chief estates, by paying a fine of one-third of their value. The family is now represented at Everingham by Lord Herries.

John Dalton, of Swine, who had inherited a share in the manor, was a fellow-sufferer. In 1653 he complains to the Committee for Compounding that, although two-thirds of his estate is sequestered for his recusancy, his third has not been set apart for him, so that he cannot comply with the demands of his creditors. This was granted “if sequestered for recusancy only.” In 1654 he begs to contract for the two-thirds under the Recusants Act of 1653. He owned the Hastings berewic, married the Lady Mary Viscountess Dowager Dunbar, and lived at Nuttles. In 1685 he died.

The eighteenth century was the period when the great bulk of the open fields in England was enclosed, and allotted to private owners, their value being enormously increased. But very considerable enclosures had before been effected. A large piece containing nine fields in the north-east corner of the parish was treated as old enclosure in 1764. About 1590, the East Field seems to have extended to the Oxlands in Sutton, for the Court ordered the ditch between those lands to be cleansed.*

The moving spirit in the enclosures carried out in Southcoates was Charles Pool, the younger, through whose influence Sutton parish was enclosed, in 1767. He was a prominent man in Hull, a nephew of the Rev. William

* There was somewhere a little Oxland, which may be that here referred to. If so, Ewelands was an ancient meadow.



CITADEL OF 1784. FROM ROBT. THEW'S PLAN.



Mason the Vicar of Holy Trinity, and cousin of the Rev. Arthur Robinson who succeeded to the benefice.

Summergangs was enclosed in 1748, the pasture gates being then reckoned by Demain, or Stinted Commons, and Free Commons, which were of double value. The Demain Common meant pasturage for eighty sheep and four horses or beasts. Charles Pool, having acquired a large proportion, and being, also, the owner of the tithes, brought the other owners of pasturage to an agreement, whereby this wide area was cut up into sections, the tithe upon which was fixed at one shilling and sixpence per acre. Dansom Lane now runs along the western margin of Summergangs, close to old Summergangs Dike. That the flow of water along this dike had already been cut off is clear, for this lane, first called Clow Lane, and, for a short time, Mill Lane, was made to enable cattle to be taken from the Holderness Road to drink at "Mansley," or "Munsley" Clow ditch, near to Edward Hodgson's farm house, on Magnusdaile, where the water had been diverted to the river.

Of the three ancient open fields the Humber Field was the first to be enclosed. In 1717, Elizabeth Robinson conveyed to Sarah Robinson lands including a "close of meadow or pasture formerly called the Thirteen and fourpence," containing three acres in Sudcoates. In 1727, Sarah Robinson conveyed to Wm. Jarratt the same close in Humber Field, "which said field was some years ago enclosed and allotted in lieu of six beast gates, commonly called thirteen shillings and fourpence of grass." But if I have correctly identified the Humber Field, it was enclosed long before 1717. In the 11th Charles I. the commissioners in the case of Davey and Alford, who quarrelled over Bursill lands, agreed that Humber Close was a close of pasture ground of about $5\frac{1}{2}$ acres, abutting south and west on Sudcoates Humber Field, east on a pasture ground called Sudcoates South Inges, and north on a pasture ground called Sudcoates West Field. This Humber close must in 1636 have already been enclosed out of the Humber Field.

The East and West Fields, with the South Ings, which seems to have ceased to be meadowed, were enclosed in 1764 under the influence of Charles Pool, who enclosed Summergangs, and on similar terms. The total amount of pasturage dealt with was 94 nobles, one gate, one foot, and the sixth part of a gate, which would be grazing for one sheep.

To those of us who remember Southcoates two generations ago its then condition seems already ancient. At the enclosure, ditches were cut to define the allotments, the Holderness Road, having been, I think, until that time, open to the Common.

The allotment in Summergangs, made to Mr. William Constable on the north side of the Holderness Road, with adjoining lands, was within a few years occupied by a house, the property of Mr. Hall. In 1785 it was advertised for sale as "a handsome new-built house, commanding a beautiful expansive view of the Humber." It became the residence of Mr. Pickard, who sold it to Mr. John Broadley. By the kindness of Mr. Walter J. Jalland, I am able to give an illustration of the original house. In 1838 it was bought by Mr. Boswell Middleton Jalland and his brother, who erected in its place the fine Elizabethan mansion called Holderness House, two illustrations of which appear in Poulson's "Holderness."

Except Holderness House, no residence, unconnected with business premises, was erected on the north side of Holderness Road beyond Dansom Lane before 1850. About that date the site of Wilton Terrace at the corner of Dansom Lane and the Holderness Road was still a grass field. With several properties in Sutton and Hull, it was left by Thomas Mould to John Graham, afterwards Graham-Clarke, of Newcastle, the son of John Graham, of Sutton, and the maternal grandfather of the poetess, Elizabeth Barrett Browning. Nearly all the old buildings north of the road have been removed, but one long covered rope-walk is now embedded in a great joinery factory. The mills, with the smoking chimneys of distant factories, were the great features in the approach from Holderness.*

The mill, called Block House Mill, recently taken down, stood in Drypool by Summergangs, in a line with the centre of Witham. Its lower story was, in shape, like a dwarf tower or fortification. But sketches on the maps of the allotments shew only a little wooden mill. I suppose it took its name from Blockhouse Lane.

South of Holderness Road, the terrace called Somers

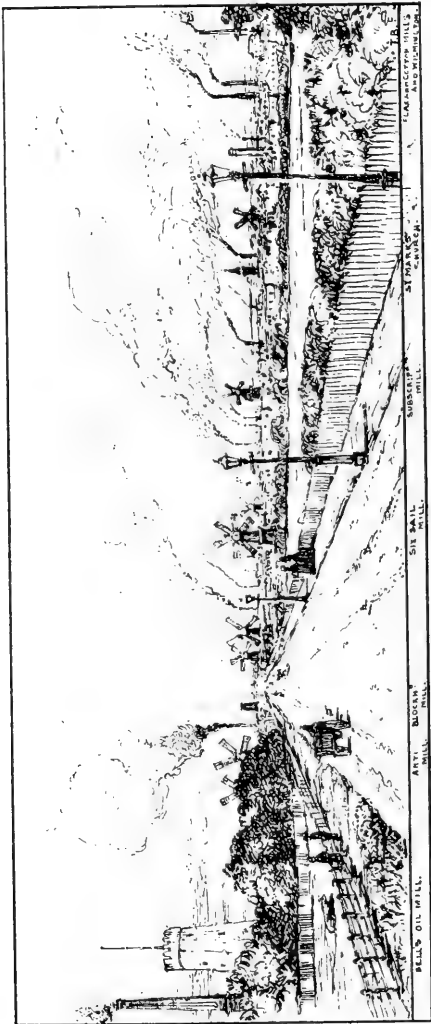
* These mills included the "Six Sail Mill," the sails of which, having caused the death of a man, were said to have revolved afterwards the contrary way! Such was the legend; but the Rev. John Ellam, formerly the Vicar of Drypool, heard as a fact that, the accident having happened during its construction, the owner had the machinery reversed as a mark of his sorrow.

Town had then been built many years, and there were better houses beyond, the last terrace being Hornsea Parade, near Marfleet Lane. But, before the days of omnibuses, build-



OLD HOUSE ON SITE OF HOLDERNESS HOUSE.

ing for residence was pretty strictly limited within the distance, to and from which a business man could walk for his early dinner, or even, in those times of long hours,



VIEW OF HOLDERNESS ROAD FROM LODGE, HOLDERNESS HOUSE.

to and from his early tea. Hull was then supposed to be finally completed, but I have since heard of far-sighted people who thought that the town might extend even beyond such limits. Its population has trebled under our eyes.

DRYPOOL IN SWINE.

Owing to the lack of efficient drainage, and to the frequent floods of early times, this remote corner of Holderness would be nearly valueless, until the great demand for wool brought every acre that would carry sheep into practical use. The old tillage of doubtful dryness would then be more valuable as meadow and pasture, and this seems to have been the case through later times. The page of evidences in Poulson's "Holderness," does not afford much help, for references to Drypool are inextricably mixed with Sutton and Southcoates; but, except as to Drypool Field, in Sutton, of 29 acres, there is little evidence of mediæval or modern tillage.

Although the Chapel of St. Peter was the mother church of Southcoates, both were included, together with the manors, in the parish of Swine. A manuscript book of the fifteenth century, in the library of the Dean and Chapter of York, records some long and complicated proceedings in various ecclesiastical courts, relating to the right of burial of the inhabitants of Sutton, Stoneferry, Dripole (in Sutton), and Lopholme at their chapel of Sutton, which was not yet separated from the mother church of Wawne. On the 23rd March, 1429, John Wylflete, of Hedon, whose family belonged to Preston and Marfleet, said that several years ago many person were drowned in the river at Hull Ferry, and their bodies were taken out in the parish of Swine, which would be the eastern bank of the river at Drypool.*

After the Reformation this parochial arrangement broke down, and, under the Commonwealth, a remedy was sought. A Survey, made in 1649, states that "Drypoole hath a Parochial Chapel depending upon Swyne; the tythes belong to the Lordship of Drypoole and Sudcoats, and are worth yearly the value of thirty pounds, out of which they should provide for a minister, but have not had one this four years and a half. We consider it fitt that it be Separate from Swyne, and made a parish of itself, being five miles distant

* Wylflete was the old name for the dike that divided Southcoates from Marfleet.

from Swyne." This scheme was carried out at a later date. A memorandum of the early part of the eighteenth century states that the advowson was bought by Alderman Johnson, of Hull, and left to his daughter, Mary Banes.

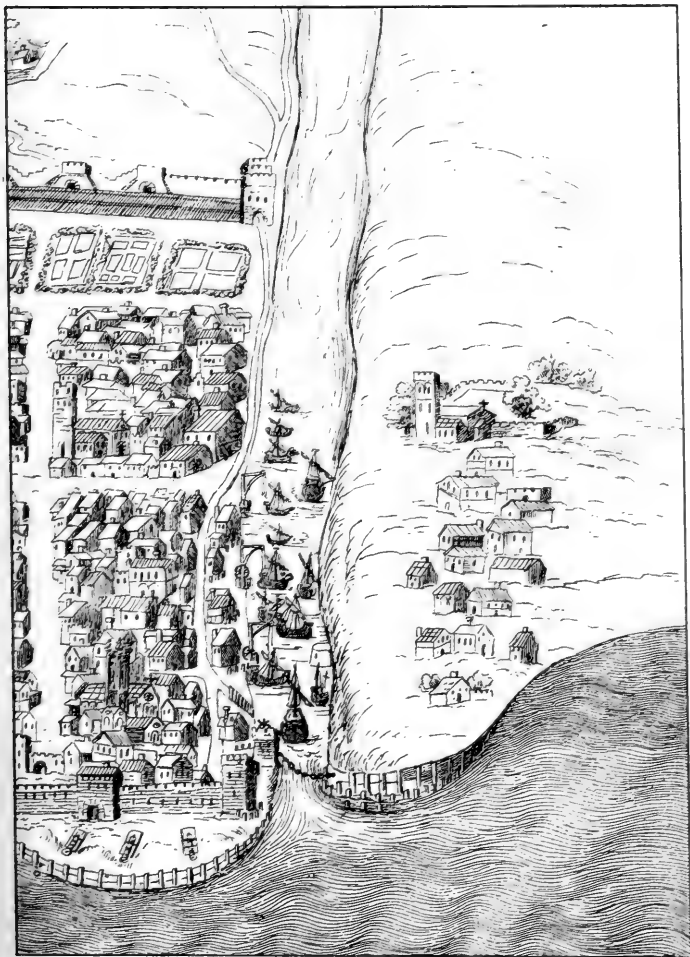
The fields or open places in Drypool were the Arnescroft Meadow, adjoining Southcoates West Field, also the Kirke Field, adjoining the Humber Field, of Southcoates. There was somewhere a Middle Field, as well as a Dripole West Field, which last agrees with the Clough Field in Sutton.*

The Arnescroft was evidently a large meadow in which all who had much interest in Drypool had shares. There is no part of Drypool that answers to this except the large piece thrust in between Summergangs and the rest of Southcoates. This leaves very little ground for Humber Field, but the Humber must have taken a breadth of land along that shore, in spite of the "lockering" done to the bank in the South Ings.

In 1579 tenants in Humber Field were fined ten shillings because they had not sufficiently dug out 20 cordes of dike or 420 feet next the Kirke Field. The Stowe MS., No. 70, in the British Museum is a grant made about 1250 by Geoffrey de Watton to the Nunnery of Swine of lands including "an acre and a half and a perch in the territory of Dripole in Neucroft, whereof one head extends to the Humber and the other head upon Arnes Croft, and an acre and a perch of meadow at Thorndaile towards the south." Neucroft was probably a recent extension of Kirke Field, which was near the Church, so as to bring it in touch with Humber Field. No. 71 is another grant, with his body for burial, by this same Geoffrey, of "those two selions (or ploughlands) which extend from the dike of Arnescroft as far as the Humber, and that acre and a perch of meadow lying next to the 'cultura' of the said Nunnery at Thornedaile." These were probably the same lands, and the term "cultura" is sometimes used for meadow.

An old enclosure in this locality is indicated in the entry in book of the Provost of Beverley of the 26th Henry VI., already quoted. The lords of the Manor of Sudcoates are said to hold of the Lord Provost a place of lands with the appurtenances in the town of Dripole, "and it lies between

* A Corporation lease of 1695, to Thos. Atkinson, includes five roods of pasture "in Drypool feild, nigh Moundscale Clough of Clough feild." This must have been their share of the wide Growths, for the Clough Field was never laid down to grass.



PART OF PLAN FROM COTTON MS., AUGUSTUS I, VOL. I., SHOWING VILLAGE SOUTH OF DRYPOOL CHURCH.

the place of the Abbot of Thornton to the north and the Outgang which leads to the pasture called Newfrith to the south." Was this upon the detached piece of Southcoates sold, as we shall see, in 1651 by Broumflitt to Popple? If so, it indicates the position of the land of Thornton Abbey. Further evidences as to localities not easy to identify are contained in the surveys made of lands acquired for the fortifications in Drypool.

To begin at the beginning:—The land sold in the first year of Richard II. by Sir Thomas de Sutton to the Mayor of Hull and others lay "on the east side of the water of Hull on the north side of the Kaye there." It consisted of one piece measuring 100 ells each way "within the lordship of the said Thomas de Sutton in Dripole;" also the land on which the Quay was situated containing 100 ells in length and 10 in breadth. There is no conclusive proof that he held land outside his Manors of Sutton and Southcoates. There is no evidence that this land was used for the expressed purpose of building a fortification. The fortifications actually made there grew out of different conditions at a later time.

The dissolution under Henry VIII. of the Priory of Nuns at Swine, the Carthusian Priory at Hull, and Thornton Abbey, brought much of the limited area of Drypool into the possession of the King. These lands had been let to tenants, and the Crown when in need of money, leased or sold them with others for large sums paid down, subject always to the existing tenancies. The chief points of interest here are the lands by the river on which were erected the Block Houses and their connecting walls. The land of the Carthusians was in Sutton, extending from the North Bridge to Dripolegate; that of the Nunnery lay to the south in Swine. The land of Thornton Abbey was in the Drypool portion of Swine, or partly in Southcoates.

I have long suspected that all the lands of the Carthusians in Sutton, Lopholme, Stoneferry, and Dripole, east of the River Hull, being those which had descended from Benedict de Sculcoates through the families of De Grey of Rotherfield and De la Pole, were, like the Hastings berewic, independent of the lords of Sutton. After the fortifications were erected the surplus land was granted to Sir Henry Gates, and upon the deed a memorandum was added that "the said Mannor of Skulcots dothe extende into ye P'ishes and hamletts of Sculcots, Sutton lord^p, Dripole and Stonefery." This condition might have been created when Henry VIII. acquired



S. E. VIEW OF CITADEL ENCLOSING SOUTH BLOCKHOUSE.



the manor, but there is some evidence that it was of older standing. As far back as the time of Sayer the second, when the Monks of Meaux desired to cut a canal in the West Carr, they asked leave, not only from the lord of Sutton and John de Meaux, the owner of the herewic, and the free tenants, but from William de Seintluce (Santa Lucia), who then held the Sculcoates Manor. Evidently he was of more importance than a free tenant. And in 1312 there is an entry upon the Close Roll (New Calendar, 5, Edw. 11, m. 16), ordering the King's Escheator to restore to the widow the lands which John de Grey, of Rotherfield, "tenant in chief, held in Scolecotes, Sutton, and Drypol." Perhaps when the course of the river was originally marked out, certain patches of dry land belonging to the Sculcoates manor were left on the eastern side.

On the surrender of Swine Priory in 1536, its Drypool property consisted of two holdings only—a grange let to John Williamson, chaplain, at £6 a year, and a close called "le pightell," with six acres of meadow, let to Robert Blassill at 18s.* Among the appurtenances to the grange there was probably meadow in "Sutton Yngs," besides 37 acres of meadow there let separately at 49s. 4d. All these lands were granted with the rest of the Swine property to Sir Richard Gresham, who was receiving the rents from the tenants in 1539. Among the Spiritualities of the Priory was the Rectory of Driepoole, worth five pounds a year, the tithe of which the Prioress had kept in her own hands.

When the King determined to make the fortifications, the lands had to be got back from Gresham by an exchange carried out under Edward VI. The grange was then said to be in the township of Drypoole adjoining the King's Majesty's edifications and fortress.†

The fortifications having been finished, Queen Mary granted to John Grene and William Jenyns, property including Drypole Grange with the appurtenances now described as 3½ oxgangs of land, 15½ acres of meadow in a close called Armscroft, 5 acres of meadow in Sutton Yngs, in a place

* He also held a lathe or barn, two stables, and two gardens in Southcoates and Stoneferry. The registers and other documents shew that this Drypool family survived there in the Eighteenth Century.

† There was also included a cottage with a close in Drypool, called Lancroft, let on lease to Agnes Squyer, widow, at 5s. 4d. She held Magnusdaile under Meaux Abbey, and if this is the Langcroft that adjoins Hedon Croft, the name of Drypool extended further into Sutton than I have supposed.

called Grym, and the tithes of the $15\frac{1}{2}$ acres in Armscroft, three cottages in Drypole, near the graveyard, a bercaria called Swynelathes, with the manure from all animals pasturing therein, and all other property let with the grange. All this was let on lease to Thomas Aldred, Esquire,* at £4 11s. 4d., and if these "appurtenances" went with the grange when the rent was £6, the difference seems to be due to the absorption of land for the fortifications. The land so absorbed would lie west and south of the church. There appears to have been already a tower there at the entrance to the Old Harbour, to which was secured one end of the chain that closed the Port, and if there were also houses there, as shewn in the plan in the Cotton Collection, they might be included in the appurtenances originally acquired with Drypool Grange.

As to Swynelathes, the charter (B.M., L.F.C., VIII., 7), which still bears the seal of Sayer the third, grants to the nuns the sheepfold "which lies next to the land called Hedoncroft in Sutton just as it is bounded by the dikes." I have placed Swynelathes on the key map with Hedon Close and Langcroft, which are so named in the Sutton Tithe Award of 1843. "Grym," or the Grimes would lie unfenced in the Ings adjacent.

Early in the Seventeenth Century the Crown was raising large sums on the remainder of the monastic lands. In 1609 Sir Baptist Hicks, a London Merchant, afterwards Lord Campden, and his associates having paid £75,000, James I., at their instance, granted to Edward Bates and Henry Ellwes lands including the pightell with 11 acres of meadow in the Ings, formerly held by Robert Blassill.

In the first year of Queen Mary the surplus lands, formerly belonging to Thornton Abbey, were granted to Domina Joan Constable, widow, and Sir John Constable, of Burton Constable. They included a cottage in Drypole, an oxgang of land and pasture in the Kirkefelde, a sheep cote and half a close of land of $1\frac{1}{2}$ acres in the fields of Drypole, land and pasture in "le Midlefelde," Drypole, called a "pyghell," half an oxgang of land and pasture in the fields of Drypole, containing $1\frac{1}{2}$ acres, $1\frac{1}{2}$ acres of land and pasture in le Midlefeld, and a close of an acre in the town of Drypole. The Middle Field would lie between the Kirkefield and the Clough Field in the Groves.

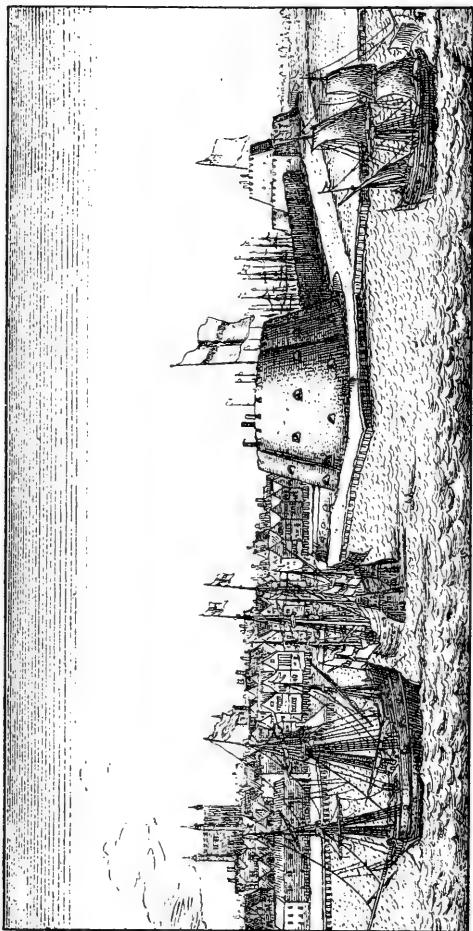
* Alrede, Aldred, or Alured—the family so long prominent in and about Hull.

On the Patent Roll, 17 Elizabeth, part 5, is a grant to John Sonkye and Percival Gunson of an acre and a half of meadow in Maunsdale, two acres of meadow in the south territory of Stoneferry and Dripole West Field, half an oxgang of land in the lordship of Drypule, called Kirkefeld, and a toft there containing an acre of meadow, and another acre and a half of meadow called Armescrofte, formerly belonging to the dissolved monastery of Thornton, co. Lincoln. At the Dissolution, Thornton Abbey held in Drypule lands of the annual value of £5 1s. 2½d.

About 1570, Mr. Robt. Ratcliffe endowed his hospital in Salthouse Lane with pasture to feed one cow in the Kirkefeld. In the 4th James I., Henry Alured held pasture there for 56 cattle. But Sir Francis Thomas purchased of him two oxgangs in the Kirke Field. This would be tillage. It may be that only one part of this field had been laid down to grass. In 1645, Jeffrey Blades of Hull, Mercer, devised to his son Edward a close of meadow of four acres and one stang in Dripole Church Field.* In 1659, Joseph Blades senior, of Hull, devised to his son William the Blockhouse close, containing 12 acres in Drypule. Also, "at Stoneferry the house wherein Ellen ffisher dwells, called the ffery house, with one garth and the groves" and a common, and a house in Drypoule with free common and a Pichell. In 1667, William Blades of Hull, Shipwright, devised to his son the same property. The family was closely connected with Sculcoats and Sutton.

The Parish Registers contain some interesting items belonging to the time before the Blockhouses of Henry VIII. were superseded by the new Citadel, and when old Drypool still existed. In 1591, Jenet Adam of the South Blockhouse was buried. In 1600, Owmfrey, the son of William Hopkinson was baptised, the "consponsors" being Humphrey Hall, rector of Patrington, Josua Hall and "Mistrees Peeke" of Hull. The fortifications were used as prisons for Popish Recusants who were very harshly treated—alive and dead. In 1602, Thomas Cletheray, a recusant of the North Blockhouse was put into his grave "by the means of Henry Garrat, without the minister and without the order of buriall according to law." In 1677, Mr. Martin Frobisher of the South Blockhouse was buried. This bearer of a distinguished name may have had no connection with the

* He also left to him his gardens, &c., near Jesus-Gate, "now called Blanket Row," lately purchased of Thomas Gaskin.



SOUTH BLOCKHOUSE AND CASTLE OF HENRY VIII. FROM HOLLAR'S ENGRAVING.

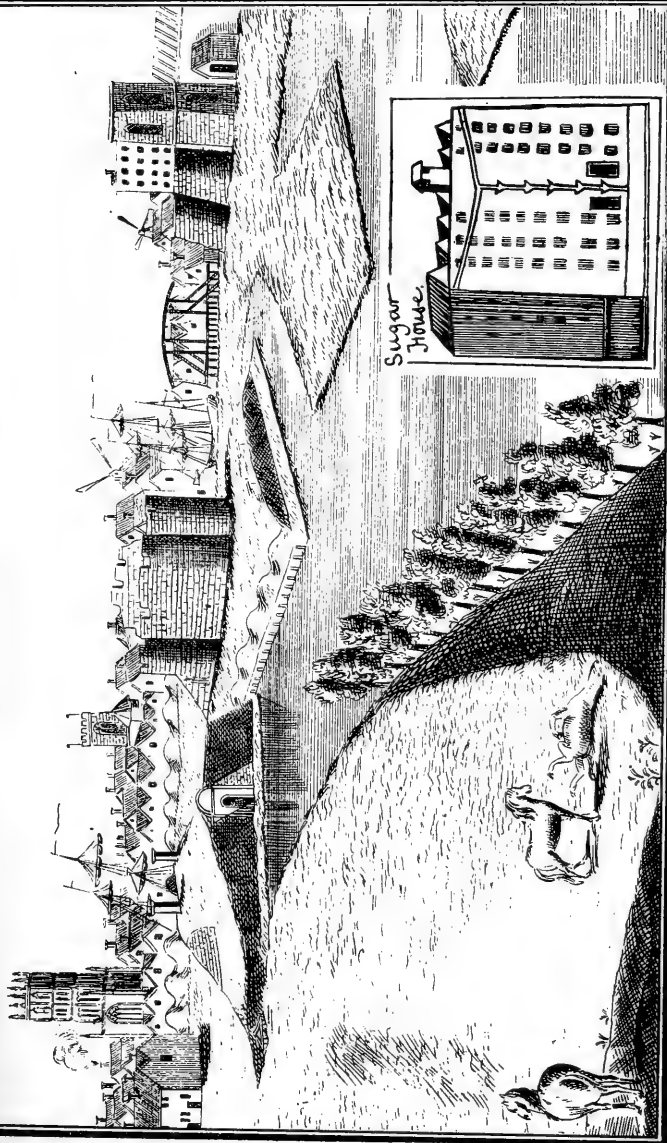
great sea captain, for the name was in common use for a person who furbished up arms or utensils. Among the expenses of the Corporation about 1522 was one shilling paid "to the Frobisher for scouring the Sword." In 1597, a suicide was buried on the north side of the church. The name of Blaides frequently appears; the Bromfleets were landowners improving their position from the sixteenth to the eighteenth century. One of the oldest local names is Schakyll or Shackles, of Stoneferry and Southcoates in the fifteenth and sixteenth centuries.

The erection, late in the seventeenth century, of the Citadel, which remained until the middle of the nineteenth century, led to many negotiations and revived old disputes between the Crown and the Corporation, extending back to their purchase from Sir Thomas de Sutton, in 1377, of land for a tower.* Questions relating to lands in that locality were dealt with in 1801, and particularly in 1861, when an action by the Corporation against the Crown was dismissed. Owing to legal proceedings now pending, points that might be of interest cannot be investigated at present, but the following item may be usefully extracted from proceedings in Chancery of about the latter date. See Chancery B. & A., 1860, page 6, and Decree No. 2259, 22 Nov., 1861.

Until 1681 there remained in use on the east side of the river the fortifications of Henry VIII., consisting of the North and South Blockhouses with the Castle standing between them, and the long connecting wall and ditch. But in that year the Ordnance Department under Charles II. determined to strengthen and extend these fortifications, and caused a new Citadel to be constructed wholly in the parish of Drypool, enclosing the Castle and the South Blockhouse, but abandoning the North Blockhouse and the connecting wall from the scheme of military defence.

On the 11th October, 1681, the Board of Ordnance submitted to Counsel "the draughts and the conveyance for the lands to the south of Drypool Church and to the east of the Castle and South Blockhouse, to be taken in of several persons for the fortifications." The works were at once pressed on by Major Beckman, who was in charge. While he was still negotiating with the Corporation, and though the conveyances were not complete, he was working on the site of the old wall and ditch on the eastern side near to the river,

* See Poulson's "Holderness" under Drypool, and Sheehan's "Hist. of Hull."



PART OF VIEW IN GENT'S HISTORY, 1730, SHOWING CASTLE AND NORTH BLOCKHOUSE, WITH DRYPOOL CHURCH AND SUGAR HOUSE.
ALSO A SEPARATE SKETCH OF SUGAR HOUSE.

which belonged to the Crown. But after some long delay the purchases of land were completed, and "the same was duly conveyed by the several owners thereof."

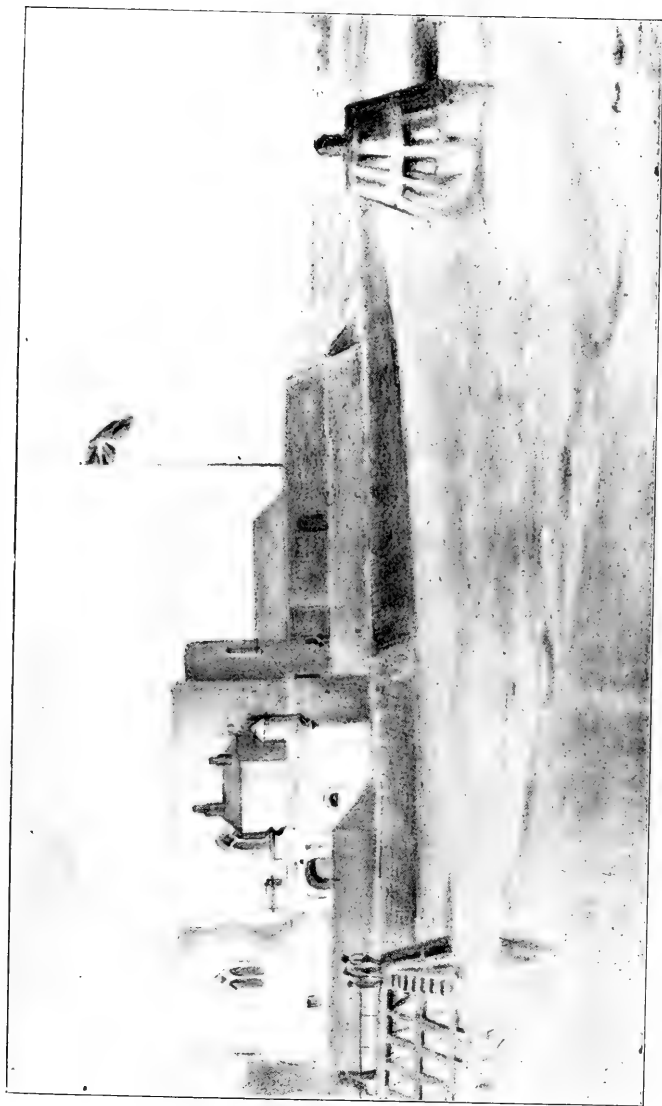
The two purchases contained about 30 acres, one part being "all that close adjoining into the blockhouse, containing by estimation about 12 acres, lying and being in the lordship of Drypool," and another part containing 19 acres of pasture ground, "abutting west upon the said close first described." The new Citadel occupied the land covered by the southern end of the old fortifications and part of the land purchased, and it projected upon the foreshore so that the tides rose from four to eight feet against the south wall. There remained, however, about 14 acres of the purchased land lying eastward of the Citadel, the surplus property of the Crown. The whole became extra parochial.

From the description there may have been two, "several," or separate owners only, or there may have been "several" or many owners of the close and the piece of pasture ground. But there is no hint of a village of Drypool such as has been assumed to have existed south of the church, and is indeed shewn upon a sixteenth century drawing in the British Museum. Better details of old Drypool may be discovered, but, whether the owners were two or many, one can be clearly identified.

In 1690, Elizabeth Truslove,* the sister of Thomas Watson, of Stoneferry, left to her daughter, Margaret Dickinson, a messuage and close in Drypool, which messuage had been lately demolished, and the ground taken from her upon the making of a citadel or fortifications near Drypool, "for which I have not as yet received any satisfaction." This seems to carry the Watson property beyond the manor of Sutton. Here was one of the purchases that were uncompleted when Major Beckman was hurrying on the works on the western side of the Citadel.

In 1651, Robert Broumflitt conveyed to Israel Popple his interest in a croft on which a tenement or toft late stood abutting on Church-Field Lane (leading from Drypool Church to the Kirke Field), on which now stand buildings north of Popple Street. The King's highway was on the west, and Churchfield Lane on the south. Farm buildings on this land have been converted into cottages. The Hedon New Road, an unprofitable undertaking, sliced a portion from the

* She was the daughter of Thomas and Margaret Watson, of Stoneferry, and was married to John Truslove, of Keingley, Wawne, at Drypool Church in October, 1650.



S.W. VIEW OF CITADEL ENCLOSING SOUTH BLOCKHOUSE.



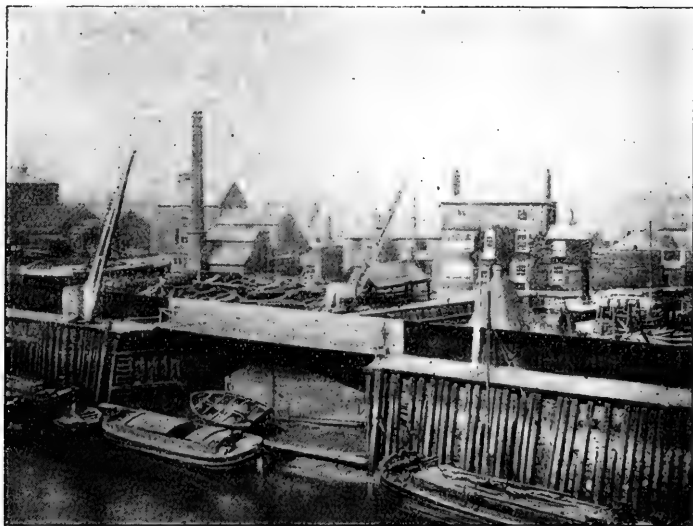
property. With this was conveyed one little close near to it, the two being shewn on Capt. Philips' map and on later maps. The Ordnance map of 1856 shews that these were detached portions of Southcoates. They had common rights in that manor. In 1665, Thomas Bromfleet was a Churchwarden. The name of Bromfleet appears in many entries in the Register, the prefix of Mr. shewing the position of the family. In 1665, Mr. Thomas Watson, of Stoneferry, who got Sir Philip Constable's share in the manor of Sutton, left the manorial rights to his sister's son, George Bromfleet, with all the privileges of the Courts, &c. Although he only got therewith a piece of ancient pasture ground, he was, as Sir Philip Constable had been, "a third lord in Sutton." In 1676, George Bromfleet joined with John Dalton, who owned a portion of the manor of Sutton, as well as the Hastings Manor, in granting to the Mayor and Burgesses of Hull liberty to set down posts and stooeps on Sutton Side for fastening such ships as should be drawn beyond the North Bridge. His share in the manor passed, by purchase, from his representatives to Charles Pool, Senior, and through the family of Mason to Mr. R. C. Broadley. Charles Pool acquired from the same source the tithes of Drypool and Southcoates.*

North-west of Church Street is a block of property, bounded, by St. Quintin's Place, close to the old course of Summergangs Dike. This was associated with a smaller piece to the north of Popple's crofts. Wills of the family of St. Quintin, long resident in Drypool, shew that it was in that family in 1729, when it consisted of a dwelling-house and garth, with two "pickels," and one free common on Summergames. Pickel here means pightle, a sheepcot or enclosure in the meadows. In 1781, William St. Quintin left the property to his sisters for life, and afterwards to a boy named William St. Quintin. In course of time it became covered with streets and houses, which are now being partially cleared away.

Hardly any of the places named in the records of old times would now be recognisable by the thinly scattered

* The lands and tithes belonging to George Bromfleet, who died in 1703, were inherited by his son, Henry. His heir was his uncle, Samuel Bromfleet, whose coheirs were the sisters, Consolation Lyth, spinster (who in 1710 sold her share to Thomas Eyres), and Jane, the wife of Noah Ellerthorpe. In 1717, both shares were bought by Charles Pool, whose son, Charles Pool the younger, brought about the enclosure of the spacious fields and commons in Southcoates and Sutton. This with much of Pool's property passed to the family of Broadley.

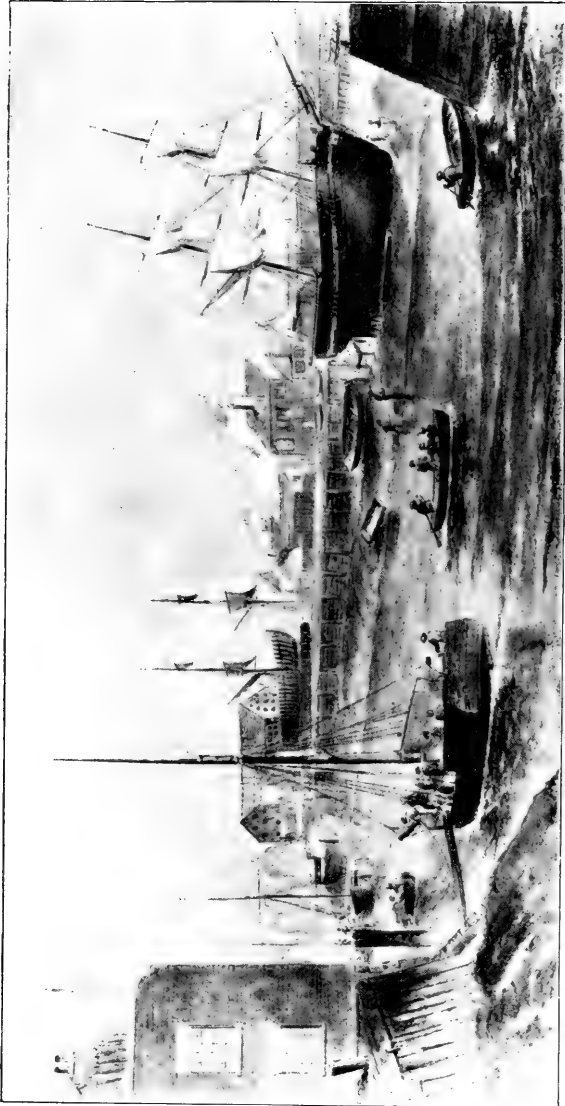
population of the cowkeepers and shepherds that were their chief occupiers. Building is reaching Stoneferry and progressing towards Sutton. The Humber Field and the Kirke Field, with much of the South Ings and the Arnescroft have been appropriated, and the eastern docks have driven back the Humber tides. Streets and terraces of houses, such as have occupied all the western parts of the Summergangs, are now invading the grass lands of the West Field, while



EAST SIDE OF OLD HARBOUR, OPPOSITE ENTRANCE TO QUEEN'S DOCK.

far away beyond the East Field, streets were, years ago, prematurely laid out. Electric Tramways having been carried beyond the East Park, with probable extensions eastward and northward the time cannot be far distant when all the old historic sites and landmarks within the eastern boundaries of the City will be known only from old records.

The western part of the City is now being intersected by noble avenues ; soon the Holderness Road will be continued by a straight thoroughfare leading to the centre of it's commerce and the centre of its Municipal life. The "Groves"



EAST SIDE OF OLD HARBOUR, NEAR THE ENTRANCE.



will be intersected by a thoroughfare as necessary for brightening the dull places of that oddly named locality as for the convenience of its trade. Then the narrow, crooked and squalid rows and lanes through which the growing traffic has struggled, will give place to fitting and dignified means of approach to the City of Kingston-upon-Hull.

Of those who have kindly given me information on particular points I must here thank Mr. Fred. A. Scott, Mr. J. Spyvee Cooper, and Mr. H. F. Smith in respect of lands in Drypool and the Groves, Councillor J. G. Hall, who has studied the Drypool Registers, Mr. G. H. Hill, who has investigated the ancient boundaries, and Mr. W. Brown, for permission to copy some drawings in his possession. I have mentioned other names in the text, particularly that of Mr. J. R. Boyle, F.S.A., in respect of the older documents which, by leave of the Corporation, I was able to consult. And I must add the name of our Editor, Mr. Sheppard, who, having set me the task, has facilitated it with a patience which I can only hope is unfeigned!

REFERENCES.

For the possessions of Meaux Abbey—the *Chronica Monasterii de Melsa*, in the Master of the Rolls' Series. For the lands of Swine Priory—the Stowe MSS. in the British Museum. For wills, except a very few that I have seen—the Registry at York. For transactions in land during the eighteenth century—the East Riding Registry at Beverley, which, as regards Drypool, might be searched with profit. I have used a few private documents. It has sometimes seemed necessary to quote from local histories, but, in general, the matter of this paper is new. I have not been able to deal with Marfleet.

NEBRIA LIVIDA AT WITHERNSEA.—In Mr. C. Russell's list of local Coleoptera, printed in the Transactions of this Club for 1900, reference is made to the former occurrence of of this rare and local species near the St. Andrew's Dock, Hull. It is also known to occur at Filey, Bridlington, and Hornsea. During the summer of 1902, Mr. Dohl has succeeded in securing a specimen at Withernsea—a new locality for it.—T. STAINFORTH.

ADDENDA TO THE FLORA OF THE EAST
RIDING.

By J. F. ROBINSON.

IT is little more than a year since the publication of the "Flora of the East Riding," yet, as was previously anticipated by its author, a considerable number of additional records already have to be noted. Several of the species mentioned below appear in Watson's "Topographical Botany" as found in vice-county 61 (S.E. Yorks.), but were overlooked, as it was gathered from Watson's work that Mr. J. G. Baker was responsible for most of the East Riding records therein set down. As Mr. Baker's Supplement to Baine's "Flora of Yorkshire," 1857, was drawn upon, it seemed unnecessary to duplicate with entries from Watson's "Topographical Botany." But evidently Watson had had other sources of information; or more likely, Mr. Baker has been able to supplement his Supplement above mentioned.

We are indebted to Mr. Ar. Bennett, F.L.S., of Croydon, for having kindly pointed out the omissions, besides giving additional records and information gathered from herbaria and MSS. not readily accessible to ourselves. Other additions are due to various observers and the unceasing vigilance of the Yorkshire Societies devoted to field work.

Observing the London Catalogue (Ninth Edition) order, the following is the list:—

(The numerals prefixed to each Species give the Catalogue Numbers.)

186. *Polygala oxyptera*, Reichb.

On tumulus in Hull Ings, June, 1900; legunt C. Waterfall and J.F.R. (teste Rev. W. R. Linton).

194. *Dianthus deltoides*, Linn.

("Maiden Pink.")

Sandy fields near Rillington. Specimens sent by W. H. St. Quintin, Esq., D.L., Scampston Hall, Oct. 12, 1902 (vide also Wats. Top. Bot.).

276. *Hypericum dubium*, Leers.

(Wats. Top. Bot.). We have no confirmation of this.

720. **Peucedanum palustre**, *Mænch.*

Incognit in Rob. Flora E.R., was gathered between Howden and the Ouse Swing Bridge about 1880 (Mr. F. A. Lees).

1038. **Calluna Erica**, *DC.* Var. *incana*.

Skipwith Common, 13th Sept., 1902; legunt Mr. H. J. Wilkinson of York, and J.F.R.

1106. **Symphytum tuberosum**, *Linn.*

(Wats. Top. Bot.).

1191. **Rhinanthus major**, *Ehrh.*

(Large Yellow Rattle.)

Incognit in Flora E.R., is recorded incidentally for Skipwith Common, E.R., in Mr. F. A. Lees' W. Yorks. Flora, p. 245.

1259. **Galeopsis ochroleuca**, *Lam.*

(Wats. Top. Bot.).

1327. **Polygonum minus**, *Huds.*

Risby, 1838 (*vide* sp. in the Motley Herb., Swansea). In a swampy place in sandy lane near Dryham, Hotham Carrs, E.R. (East "Derwentland"), 29 Aug., 1903, legit J.F.R.

1341. **Rumex limosus**, *Thuill.*

Skipwith (H.J.W. and J.F.R.), growing with *R. maritimus*; also in Brick Ponds near Hawthorn Avenue, Hull, and in the same companionship (Messrs. S. Mason and Chas. Waterfall)—first records for E.R. Yorks.

1599. **Potamogeton acutifolius**, *Link.*

Sps. labelled "Beverley, Yorkshire, Mr. R. Teesdale, July, 1798," in Herbm. of Sir J. E. Smith (*vide* Mr. Ar. Bennett).

1651. **Cladium jamaicense**, *Crantz.*

(Vel. *Mariscus*, Br.) (Wats. Top. Bot.). No locality given.

1622. **Scirpus acicularis**, *R.Br.*

Skipwith Common (F. A. Lees). (Sp. in herb. A. Bennett), 1875.

1639. *S. sylvaticus*, *Linn.*

(Wats. Top. Bot.).

1786. *Sieglingia* (vel. *Triodia*) *decumbens*, *Bernh.*

Skipwith Common, 4th July, 1903; legit J.F.R. It was one of the Top. Bot. omissions from Flora E.R. Yorks.

1904. *Phegopteris polypodioides*, *Fée.*

(Beech Fern.)

(Wats. Top. Bot.).

1921. *Lycopodium Selago*, *Linn.*

(Wats. Top. Bot.).

Besides the above, which should be added to the 1035 species recorded in the East Riding Flora, many additional stations of the less common plants have been discovered, notably on the boulder clay under-cliffs near Prinrose Valley and other places on the shores of Filey Bay, the sandy tract called Hotham Carrs to the west of North Cave, and on the old and favourite ground of Skipwith Common, near Selby.

None of the Dock Waste or Cornfield aliens are included in the above, but it may be stated that already between fifty and sixty must be added to the already copious list in the "Flora," p. 47. These additions to the "alien" list have all been made since its publication, and were determined, as previous examples were, by the most courteous and able Chief of the Botanical Gardens and Afforestation Department, Hong Kong, Mr. S. T. Dunn, B.Sc., late of the Royal Gardens, Kew, who characterised our last batch, gathered chiefly on the West Dock Reservation, as "a particularly interesting set of plants."

DISPERSAL OF SHELLS BY BEETLES.

BY REV. E. P. BLACKBURN.

EARLY in August, 1903, a small party of conchologists visited Tibthorpe Wold, to the west of Driffield. Near Mr. Piercy's farm-house, at a height of nearly 400 feet, is a pond, the nearest water to which is half a mile away, and the next a mile away. It has been in use for some time, but, in common with other ponds on Sir Tatton Sykes' estate, is frequently cleaned out, and consequently did not appear very productive from a conchologist's point of view. About six years ago it was entirely emptied and re-lined. Application of the scoop, however, quickly brought up a host of *Pisidia*, with which the pond swarmed on one side, together with a number of small water-beetles, water-boatmen, and water-bugs. A few *Limnæa peregra* were put in the pond a year ago, but had not survived for want of food. Several of the beetles were observed with something on their feet in the pond, but it could not exactly be seen what. The *pisidia* were brought home, and put in a basin with their native mud, and it was found that a number of water-bugs (*Corixa*) and beetles had been brought along with them. The next day we saw a bug (*Corixa*) in the bowl caught by the foot with a *pisidium*. A day or two later I was examining the contents of the bowl, and found three others caught. I killed the insects, and gummed them on a piece of paper. No. 1 had two *pisidia* on two back legs. No. 2 had three shells attached; one a fairly large one. No. 3 is more perfect, and has two shells, one on each side. Two days later, I found a lively little water-beetle caught, but he managed to get free. A fourth specimen, however, was secured with one *pisidium* attached. Wallis Kew (in "The Dispersal of Shells"), after explaining how ponds, similar to the above, are stocked with *pisidia* by means of flying insects, animals, &c., says: "Some of our common water-boatmen are, probably, even stronger than the *Nepa*, or water-scorpion. I have, once or twice, seen them alight upon the surface of the ponds, in the sunshine, fold their wings, and disappear in the water." With the specimens above mentioned, it is quite plain that ponds may be stocked very easily in the way described.

PRELIMINARY LIST OF MICRO-LEPIDOPTERA
OCCURRING WITHIN EIGHT MILES OF
HULL.*

By J. W. BOULT. *Walf*

THE following species of Micro-lepidoptera have been identified amongst specimens caught near Hull. We have several others, particulars of which will be published as soon as they have been identified. Records initialled "W. M." have been made by Mr. W. Mansbridge. One reason for the publication of this meagre list is that others may endeavour to fill up some of the many blanks in the lepidopterous fauna of the district.

PYRALIDES.

- Aglossa pinguinalis.*
Pyralis glaucinalis.
" *farinalis.*
Scopula lutealis.
" *olivalis.*
" *prunalis.*
Botys (flavalis) urticata.
" *ruralis.*
Ebulea crocealis.
" *stachydalis.*
Spilodes sticticalis.
Pionea forficalis.
Catacly. lemnata.
Hydrocampa nymphæata.
" *stagnata.*

PTEROPHORI.

- Pterophorus monodactylus.*
Alucita hexadactylus.

CRAMBI.

- Crambus pratellus.*
" *pascuellus.*
" *tristellus.*
" *culmellus.*

TORTRICES.

- Tortrix podana*, W. M.
" *cratægana.*
" *vibeana.*
" *coryluna.*
" *viridana.*
" *ministrana.*
" *forsterana.*
Peronea variegana.
" *hastiana.*
Penthina betulatana.
" *capræana.*
Pardia tripunctata.
Euchromia mygindana.

* A list of the Macro-lepidoptera appeared in the Transactions of the Hull Scientific and Field Naturalists' Club, Vol. I., Part II., 1899, pp. 55-64.

Sphaleroptera ictericana, W.M.
Pædisca corticana.
Ephippiphora pflugiana.
 „ *brunnichiana*.
Symæthis oxyacanthella.
Xanthosetia hamana.
Argyrolepia hartmanniana,
 W. M.
Aphelia osseana.

TINEÆ.

Diurnea fetgetella.
Tinea tapetzella.

Tinea dubiella.
Tineola biselliella, W. M.
Adela cuprella.
Hyponomeuta cagnagellus.
Depressaria flavella.
 „ *assimilella*.
 „ *angelicella*.
 „ *heracleana*.
Dasyceva sulphurella.
Æcophora pseudospretella,
 W. M.
Argyresthia ephippella, W. M.
 „ *gædartzella*, W. M.

THIRD LIST OF EAST YORKSHIRE
COLEOPTERA.*

BY T. STAINFORTH and H. E. JOHNSON.

THE following list contains, besides our own records, a compilation of species of East Riding Coleoptera, drawn from every available source.

Especially are we indebted to the "Naturalist" for the numerous records to be found in its pages, and to the "List of the Coleoptera of Yorkshire," by the Rev. W. C. Hey, M.A., which is being published in the "Transactions of the Yorkshire Naturalists' Union," but which, as yet, has only reached to the end of the *Staphylinidæ*. Other works consulted are "The Zoologist," for 1859, containing a list of Hornsea Mere records, by Mr. W. K. Bissil; the "Naturalists' Journal," for 1895, which contains a list of water beetles from Shipwith Common, in an article by the Rev. W. C. Hey. A few records have also been taken from the Rev. W. W. Fowler's "Coleoptera of the British Islands."

We are again indebted to the Rev. A. Thornley for identifying many of our records, and have also been kindly assisted by Mr. E. G. Bayford, who made us a compilation of East Riding records in the early vols. of the "Naturalist," and by Mr. M. L. Thompson.

* The first list appeared in Vol. I., No. 3 of these Transactions, and the second list in Vol. I., No. 4.

The initials, T.S., are those of Mr. T. Stainforth; H. E. J., of Mr. H. E. Johnson; E. G. B., of Mr. E. G. Bayford; W. K. B., of Mr. W. K. Bissil; W. C. H., of the Rev. W. C. Hey, M.A., and E. B. W., of Mr. E. B. Wrigglesworth.

CICINDELIDÆ.

Cicindela campestris L. Between Speeton and Filey.
H. E. J.

CARABIDÆ.

Cychrus rostratus L. Brough.
E. B. W. Nat. IV. 11-12; VI., 71.

Carabus granulatus L. Brough
E. B. W. Nat. VI., 71.

Elaphrus cupreus Duft. Hornsea Mere.

Dyschirius thoracicus Rossi.
Brid. T. S. Common.

Dyschirius politus Dej. Brid.
W. W. Fowler.

Clivina collaris Herbst.
Brough. E. B. W. Nat. VI., 71.

Chlenius nigricornis F. Hornsea Mere. W. K. B.

Chlenius holosericeus F.
Hornsea Mere formerly.
W. K. B.

Oödes helopioides F. Hornsea. W. K. B.

Bradycellus distinctus Dej.
Filey, 1903. Y. N. U.

Harpalus ruficornis Sturm.
Brough. E. B. W.

„ *calceatus* Sturm.
Brid. W. W. Fowler.
Nat. 1886.

Pterosticus anthracinus Ill.
Wolds. Naturalist 1891.
Hornsea. W. K. B.

Pterosticus gracilis Dej.
W. K. B.

„ *minor* Gyll.
W. K. B.

„ *diligens* Sturm.

„ (*strenuus* Daws).
W. K. B.

„ *striola* F. Flam-
borough Head. Hey;
List of Yorkshire Coleop-
tera.

Amara apricaria Payk. Brid.
W. C. H.

„ *consularis* Duft. Brid.
W. W. F.

„ *bifrons* Gyll. Brid.
Spurn. W. C. H.

„ *acuminata* Payk.
W. C. H. Hornsea.
W. K. B.

Calathus fuscus F. Spurn.
E. G. B. T. S.

„ *flavipes* Fourc.
W. K. B.

Taphria nivalis Panz. W. K. B.

Anchomenus gracilipes Duft.
Hornsea; doubtful.
W. K. B.

Anchomenus piceus L. W. K. B.

„ *puellus* Dej.
W. K. B.

Olisthopus rotundatus Payk.
Brough. E. B. W. Nat.
VI., 71.

Bembidium rufescens Guer.
E. B. W. Nat. VI.,
71.

Bembidium assimile Gyll.
Hornsea. W. W. F.

- Bembidium tibiale* Duft. Brid.
W. W. F. Nat., 1886.
W. K. B.
- Bembidium affine* Steph. Brid.
W. W. F. W. K. B.
- Bembidium saxatile* Gyll.
Brid. W. W. F.
- Bembidium anglicanum* Sharp.
Humber Bank; Filey.
T. S.
- Bembidium obliquum* Sturm.
W. K. B.
- Tachypus flavipes* L. Brid.
W. C. H.
- Trechus discus* F. W. K. B.
- „ *rubens* F. Hull (W.
Spence, "Stephen's Manual,"
1839, p. 50.
- Trechus minutus*, var. *obtusus*
Er. Spurn. E. G. B.
- Trechus secalis* Payk. Shores
of the Humber (W.
Spence and "Stephen's
Manual.")
- Patrobus septentrionis* Dej.
E. B. W. Nat. VI., 71.

HALIPIDÆ.

- Brychius elevatus* Panz.
Beverley. R. Hull.
W. C. H.
- Haliplus variegatus* Sturm.
Hornsea. W. W. Fowler.

PELOBIIDÆ.

- Pelobius tardus* Herbst.
Withernsea. Nat., 1892.

DYTISCIDÆ.

- Deronectes assimilis* Payk.
Beverley. W. C. H.
- Deronectes 12 pustulatus* F.
Driffield. W. C. H.

- Cælambus confluentis* F.
- Hydroporus rivalis* Gyll.
Driffield. W. C. H.
- Hydroporus umbrosus* Gyll.
W. C. H.
- „ *Gyllenhalii* Schiödte.
W. C. H.
- „ *melanarius* Sturm.
W. C. H.
- „ *mennonius* Nic.
Brough. E. B. W.
- „ *obscurus* Sturm.
W. C. H.
- „ *pubescens* Gyll.
Filey, 1903. Y. N. U.
- Agabus unguicularis* Thoms.
W. C. H.
- „ *chalconotus* Panz.
W. C. H.
- Rhantus bistriatus* Berg.
W. C. H.
- Acilius sulcatus* L.
- „ var. *scoticus* Burt.
E. B. W. Nat. VI., 71.

GYRINIDÆ.

- Gyrinus opacus* Sahl. Bever-
ley. W. C. H.

HYDROPHILIDÆ.

- Anacæna limbata* F. Filey,
1903. Y. N. U.
- Philydrus nigricans* Zett.
W. C. H.
- „ *melanocephalus* Ol.
W. C. H.
- Berosus luridus* L. Spurn.
E. G. B.
- Limnebius truncatellus* Thoms.
Brcugh. E. B. W. Filey.
- Chætarthria semimulum* Herbst
Filey, 1903. Y. N. U.

Helophorus nubilus F. Brid.
Market Weighton.
W. C. H.

Henicocerus exsculptus Germ.
Filey, 1903. Y. N. U.

Spharidium bipustulatum F.
" var. *marginatum*
F. Brough. E. G. B.
Nat., 1901.

Cercyon littoralis Gyll. Brid.
" *hemorrhoidalis* Herbst.
Common.

STAPHYLINIDÆ.

Chilopora longitarsis Er. Near
Hull, by Mr. Spence,
1832.

Astilbus canaliculatus F. Brid.
W. C. H.

Homalota gregaria Er. Brid.
W. Hey.

" *elongatula* Grav.
W. K. B.

" *graminicola* Gyll.
W. K. B.

Deinopsis erosa Steph.
W. K. B.

Conosoma littoreum L.
W. K. B.

Tachyporus solutus Er. E. B. W.
Nat. VI., 71-72.

" *pusillus* Grav.
W. K. B.

Mycetoporovus longulus Mann.
W. K. B.

Heterothrops binotata Er.
Banks of the Humber.
Steph. Ill. V., 257.

Quedius cruentus Ol. With-
ernsea. Nat. 1892.

" *cinctus* Payk (*impres-
sus* Panz.). Horn-
sea, W. K. B.
Withernsea,
W. C. H.

Quedius tristis Grav.
E. B. W. Nat. VI.,
71-72.

" *molochinus* Grav.
Market Weighton.
Nat. 1888.

" *nigriceps* Kr. Horn-
sea. W. K. B.

" *maurorufus* Grav.
W. K. B.

" *semicæneus* Steph.
Brid. W. C. H.

" *boops*. Grav. Brid.
W. C. H.

Staphylinus erythropterus L.
Sledmere. Nat. 1891.

Ocypus brunnipes F. E. B. W.
Nat. VI., 71-72.

Philonthus æneus Rossi. Brid.
W. C. H.

" *umbratilis* Grav.
W. K. B.

" *corvinus* Er.
W. K. B.

" *discoideus* Grav.
Brid. W. C. H.

" *nicans* Grav.
W. K. B.

Cafus xantholoma Grav. Brid.
W. W. Fowler.

Actobius cinerascens Grav.
W. K. B.

Xantholinus fulgidus F. With-
ernsea. Nat. 1892.

Othius læviusculus Steph.
Brid. W. C. H.

Lathrobium quadratum Payk.
W. K. B.

" *multipunctum* Grav.
Brid. W. W.
Fowler.

Pæderus littoralis Grav.
Brough. E. B. W.

Stenus guttata Müll. Brid.
Nat. 1886.

- Stenus bimaculatus* Gyll.
W. H. B.
- „ *juno* F. W. K. B.
Brid. W. C. H.
- „ *melanopus* Marsh.
Brid. W. W.
- „ Fowler.
- „ *vafellus* Er. W.H.B.
- „ *pubescens* Steph. Filey,
1903. Y. N. U.
- „ *pallitarsis* Steph.
W. K. B.
- „ *latifrons* Er. W.K.B.
- Oxyporus rufus* L. Market
Weighton. E. G. B.
- Bledius tricornis* Herbst. Sunk
Island: Archdeacon
Hey.
- „ *arenarius* Payk. Brid.
Nat. 1886.
- „ *opacus* Block. Brid.
Canon Fowler.
- „ *dissimilis* Er. Brid.
Canon Fowler.
- Oxytelus laqueatus* Marsh.
Filey, 1903. Y. N. U.
- Deliphrum tectum* Payk.
Beverley, taken in cow-
dung, by Mr. Spence,
Kirby M.S. Steph. Ill.,
V., 341.
- Omalius læviusculum* Gyll.
Brid. W.C.H.
- „ *iopterum* Steph.
E. B. W. Nat.
VI., 71-2.
- Eusphalerum primulae* Steph.
Brid. W. C. H.

HISTERIDÆ.

- Saprinus maritimus* Steph.
Spurn. W. W. Fowler.
- Hister bimaculatus* L. Horn-
sea. Nat. VII., 16.

COCCINELLIDÆ.

- Anisosticta 19 punctata* L.
Brough. E. B. W. Nat.
VI., 72.

NITIDULIDÆ.

- Carpophilus hemipterus* L.
- „ *mutilatus* Er.
Foreshore, Marfleet, both
species from decaying
onions in tidal refuse.
H. E. J. and T. S.
- Epuræa melina* Er. As pre-
ceding. H. E. J. and
T. S.
- Meligethes picipes* Sturm.
Filey, 1903. Y. N. U.
- Cychramus luteus* F. Brough.
Nat. VI., 71.

LATHRIDIIDÆ.

- Corticaria denticulata* Gyll.
Filey, 1903. Y. N. U.

CRYPTOPHAGIDÆ.

- Micrambe vini* Panz. Filey,
1903.- Y. N. U.
- Atomaria fimetarii* Herbst.
Flamb. W. W.
Fowler.
- „ *elongatula* Er. Brid.
W. W. Fowler.
- „ *fuscipes* Gyll. Brid.
and Flamboro'.
W. W. Fowler.
- „ *berolinensis* Kr.
Flamboro. W.
W. Fowler.
- „ *mesomelas* Herbst.
Filey, 1903.
Y. N. U.

MYCETOPHAGIDÆ.

Mycetophagus piceus F. Beverley. T. S.

GEORYSSIDÆ.

Georyssus pygmaeus F. Brid. Nat. 1886. W. W. Fowler.

PARNIDÆ.

Elmis æneus Müll. Brough. Nat. 1891.

LUCANIDÆ.

Lucanus cervus L. A specimen was brought alive to the Hull Museum which had been taken in the town.

Dorcus parallelipedus L. Kirkella. J. Porter. Brough. E. B. W.

Sinodendron cylindricum L. Brough. Nat. 1901. E. G. B.

SCARABÆIDÆ.

Aphodius erraticus L. Brough. Nat. VI., 71. E. B. W.

Aegialia arenaria F. Spurn. E. G. B.

Geotrupes mutator Marsh. Flamb. Nat. VI., 71.

E. B. W.

„ *vernalis* L. Brough. Nat. VI., 71.

Phyllopertha horticola L. Spurn C. Russell.

Anomala frischii F. Spurn; common.

BUPRESTIDÆ.

Trachys minuta L. Brough. Nat. VI., 71. E. B. W.

ELATERIDÆ.

Lacon murinus L: Hornsea Mere. H. E. J.

Agriotes pallidulus Ill. Filey, 1903. Y. N. U.

Corymbites cupreus F. Duns- well. T. S.

Dolopius marginatus L. Filey, 1903. Y. N. U.

DASCILLIDÆ.

Dascillus cervinus L. Common.

Helodes minuta L. Brough. Nat. 1891. E. G. B.

Microcara livida F. var. *bohemani* Mann. Duns- well. T. S.

MALACODERMIDÆ.

Ancistronycha abdominalis F. Brough. Nat. VI., 71. E. B. W.

Telephorus lividus L. var. *dispar* F.

Brough. Nat. VI., 71. E. B. W.

„ *bicolor* F. Brough. Nat. VI., 71. E. B. W.

Malachius bipustulatus L. Hornsea Mere. T. S. H. E. J.

PTINIDÆ.

Hedobia imperialis L. Brough. Nat. 1901.

CISSIDÆ.

Cis fuscatus Mell. Spurn.
E. G. B.

CERAMBYCIDÆ.

Gracilia minuta F. Hull.
T. S.

Rhagium bifasciatum F.
Brough. Nat. III., 191;
VI., 72.

Strangalia armata Herbst.
Brid. Nat. VII., 162.

Monochammus sartor F.
Several specimens from
the docks.

CHRYSOMELIDÆ.

Orsodacna lineola Panz. Very
common in a wooded
valley on the Yorkshire
Wolds (Allan Harker).
W. W. Fowler.

Donacia thalassina Germ.
Hornsea. H.E.J.
T. S.

„ *impressa* Payk.
W. K. B.

Chrysomela marginalis Daft.
Wetwang. Nat. 1891.

Gastroidea viridula De G.
Brough. Nat. VI., 72.

Hydrothassa marginella L.
Pulfin Bog. H.E.J. T.S.

Lochmea capree L. Brough.
Nat. VI., 72.

„ *suturalis* Thoms.
Skipwith Com-
mon.

Galerucella sagittariæ Gyll.
Hornsea. H. E. J.

Sphæroderma testaceum F.
Brough. Nat. VI., 72.

Crepidodera rufipes L. Filey,
1903. Y. N. U.

Psylliodes marcida Ill. Spurn.
W. W. Fowler.

Cassidu flaveola Thumb. Brid.
T. S.

„ *equestris* F. Brough.
Nat. VI., 72.

TENEBRIONIDÆ.

Alphitobius piceus Ol. Im-
ported with grain to
Hull.

Gnathocerus cornutus F. Hull;
tidal refuse.

Tribolium ferrugineum F.
Hull; tidal refuse.

OEDEMERIDÆ.

Oedemera lurida Marsh. Horn-
sea. Nat. VII., 159.

MORDELLIDÆ.

Anaspis frontalis L. Horn-
sea Mere.

„ *geoffroyi* Müll. Horn-
sea Mere.

CURCULIONIDÆ.

Apion miniatum Germ.
Brough. Nat.
VI., 72.

„ *pallipes* Kirby.
Withernsea. Nat.
1892.

„ *bohemani* Thoms.
Spurn, 1898.
E. G. B.

„ *radiolus* Kirby. Wet-
wang. Nat. 1891.

| | |
|---|--|
| <i>Apion ononis</i> Kirby. Spurn, 1898. E. G. B. | <i>Barynotus elevatus</i> Marsh. Brough. Nat. VI., 72. |
| <i>Exomias pellucidus</i> Boh. Spurn 1898. E. G. B. | <i>Sitones suturalis</i> Steph. Brough. Nat. VI., 72. |
| <i>Phyllobius pomonæ</i> Ol. Brough. Nat. VI., 72. | <i>Cleonus sulcirostris</i> L. Spurn. Withernsea. |
| <i>Philopodou geminatus</i> F. Spurn, Withernsea. H.E.J., T.S. | <i>Tanysphyrus lemnae</i> F. Filey, 1903. Y. N. U. |
| <i>Barynotus obscurus</i> F. Com- mon. | <i>Poophagus sisymbrii</i> F. |

ADDITIONS TO THE LIST OF THE DIATOMACEÆ OF THE HULL DISTRICT.

BY R. H. PHILIP.

SINCE the List of Diatomaceæ of the Hull District was published in the Transactions of this Society for 1901, a constant search has been maintained for fresh additions. As was pointed out at that time, the branch of the Diatomaceous Flora to which the late George Norman had paid the least attention was the littoral, or sea-shore species, and consequently it is not surprising that most of my new records are from this group.

East of Cleethorpes, along the Lincolnshire coast, there is an area of broad, grassy flats, intersected with narrow channels, which at high water are filled by the tide and when it is low become a network of mud troughs with a trickle of land drainage along the bottom. The cul-de-sacs and back waters of these channels have proved to be so many traps for the capture and retention of floating masses of Diatoms, in lumps of rusty-looking, flocculent matter. Placed under the microscope, this repulsive-looking stuff yields many beautiful and interesting forms to reward the searcher, among which special mention may be made of *Navicula abrupta*, *N. vacillans*, *N. Scandinavica* (a very fine form, of which I only found a single frustule), *Surirella Comis*, &c. The last named species was fairly abundant, even more so than *S. fastuosa*, to which it is nearly allied. *Navicula blanda* A. Schm., an interesting form recorded by Cleve in the North Sea, and by Peragallo in the English Channel, was very abundant at Cleethorpes.

The rock pools at Filey have also proved a good collecting ground, yielding amongst large quantities of *Fragilaria striatula*, such interesting forms as *Amphora inflexa* and *Thalassionema nitzschioides*—both rather anomalous and troublesome to classify. Van Heurck includes the former under *Amphora* on the authority of Cleve, reserving his own opinion, and Peragallo, who describes the genus *Amphora* as “actuellement le cauchemar (nightmare) du diatomiste,” follows suit, with evidently some doubt, since he gives almost equal honour to the old specific name *Okedenia*, which was given to it by Eulenstein in honour of Okeden, an English diatomist, contemporary and correspondent of Norman.

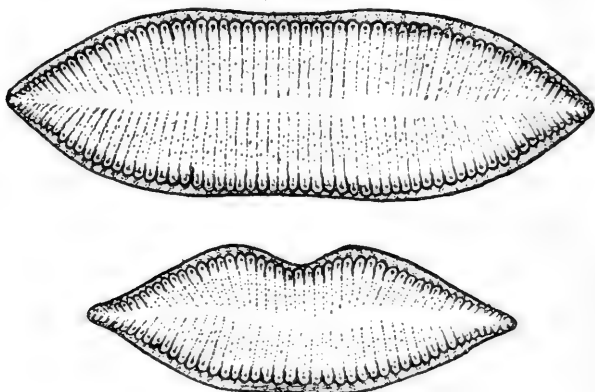
Thalassionema nitzschioides is the name approved by Peragallo for the latter, and Van Heurck, while retaining it among the *Synedras*, says “It is not a true *Synedra*. Perhaps a new genus should be created for it.”

The inland waters have been so well worked by Norman and others, that many new discoveries can hardly be expected. *Pinnularia sublinearis*, which I record here for the first time in this district, was, I have no doubt, frequently found by Norman, as I observe in looking through his note-book, he two or three times mentions having noticed a *Pinnularia* “like *P. viridis*, but with finer striæ,” which is an exact description of this form. *Pinnularia Hilseana*, which I found in a ditch in Houghton Wood, is a small but beautiful form of infrequent occurrence.

Perhaps my most interesting find was taken from a ditch in the low-lying country between the Wolds and the Market Weighton Canal, described on the map as Hotham Carrs. This gathering consisted largely of a beautiful form of *Surirella*, figured and described in Peragallo’s “*Diatomées Marines de France*” as *Surirella medulica* Per. It appears to be a variety of *S. constricta* WSm. (*S. Smithii* Ralfs.), distinguished from the type form by its straighter sides. Peragallo records this variety as found by him in brackish water at Médoc, a place in the south of France well known to claret drinkers.

Van Heurck states that *Surirella Smithii* is recorded for brackish waters in England by Wm. Smith, Comber and Stolt, and in Ireland by O’Meara. No previous freshwater records appear to be known, yet here we find it abundantly in a ditch about five miles from the Humber, and in country that has not been overflowed by the tide for at least a century. It should, however, be noted that the Jurassic rocks

of this district are very rich in salt, so much so, that some sanguine people have proposed to mine for it as in Cheshire, but have so far met with little encouragement from the East Yorkshire landed proprietor, and also that prior to the cutting of the Market Weighton Canal, over a century ago, the country consisted of saline marshes to which the tide had frequent access. Still the fact that I find it associated with such freshwater forms as *Cymatopleura Solea*, *Gomphonema acuminatum*, and *Vanheurckia vulgaris*; and that there are no purely brackish water forms in the same gathering



Surirella medulica.

—unless *Navicula integra* can be regarded as such—renders its survival under present conditions for so long a time an interesting puzzle.

A small percentage of the frustules shows a curious distortion caused by an indentation on one side of the valve, as shown in the lower figure. Peragallo's plates show similarly distorted forms of *Surirella* labelled as distinct species, *S. reniformis* Grun. being a distortion of *S. gemma* Ehr., and *S. Neumeyeri* Jan. of *S. fastuosa* Ehr.

I am indebted for the drawings for the accompanying plate to the able pencil of Mr. T. Stainforth.



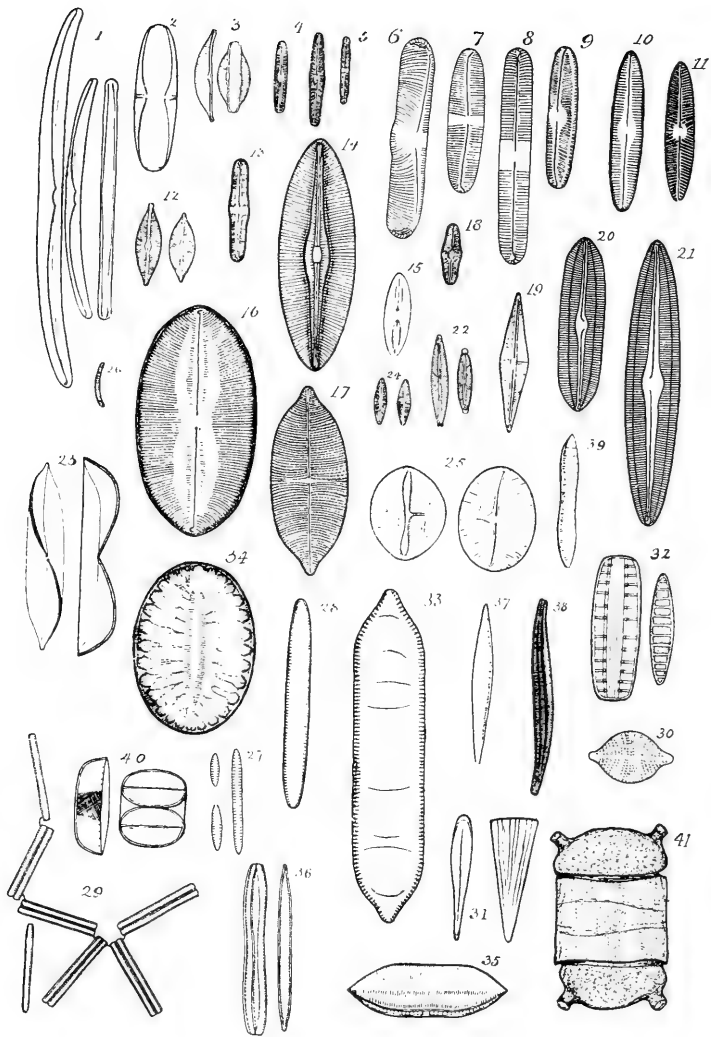


PLATE XI.

PLATE.

- Amphora inflexa*, Breb., f. 1.
 „ *lævissima*, Greg., Cleethorpes, f. 2.
 „ *exigua*, Greg., Hedon, Cleethorpes, f. 3.
Pinnularia sublinearis, Grun., Hessele, Ganstead, Anlaby
 Road, f. 4.
 „ *Hilseana*, Jan., Ditch in Houghton Wood, f. 5.
 „ *Stauntonii*, Grun., Cleethorpes, f. 6.
 „ *cruciformis*, Donk., Cleethorpes, f. 7.
 „ *quadratarea*, A. Schm., Cleethorpes, f. 8.
Navicula blanda, A. Schm., Cleethorpes, f. 9.
 „ *pseudo-retusa*, Per., Cleethorpes, f. 10.
 „ *Reinhardtii*, var. *gracilior*, Grun., Hotham carrs,
 f. 11.
 „ *salinarum*, Grun., Cleethorpes, f. 12.
 „ *ventricosa* (Ehr.) Donk., Market Weighton Canal,
 f. 13.
 „ *vacillans*, A. Schm., Cleethorpes, f. 14.
 „ *hyalina*, Donk., Cleethorpes, f. 15.
 „ *abrupta*, Greg., Cleethorpes, f. 16.
 „ *Scandinavica* (Lag.) A. Schm., Cleethorpes, f. 17.
 „ *Schumanniana*, Grun. (N. Trochus, Ehr.), Ingle-
 mire Lane, f. 18.
 „ *halophila*, Grun., Hedon, Cleethorpes, f. 19.
 „ *Liburnica*, Grun., Cleethorpes, f. 20.
 „ *formosa*, Greg., River Hull, Cleethorpes, f. 21.
 „ *inflexa* (Greg) Ralfs, Filey, f. 22.
Amphiprora venusta, Grev., Cleethorpes, f. 23.
Achnanthes delicatula, Kutz., Newland, f. 24.
Cocconeis dirupta, Greg., River Hull, f. 25.
Eunotia lunaris, var. *subarcuata* (Naeg.) Grun., Immingham,
 f. 26.
Synedra investiens WSm., Newland, Stoneferry, f. 27.
 „ *affinis* var. *arcus*, Marfleet, f. 28.
Thallassionema nitzschioides, Grun., Filey, f. 29.
Raphoneis amphicerus var. *rhombica*, Grun., Filey, f. 30.
Licmophora gracilis, var. *minor*, Kutz., Filey, f. 31.
Denticula elegans, Kutz., Kelsey Hill, f. 32.
Cymatopleura Solea, var. *regula* (Ehr.) Ralfs., Spring
 Head, Swine Moor, Newland, f. 33.
Surirella Comis, A. Schm., Cleethorpes, f. 34.
 „ *medulica*, Per., Hotham Carrs, page 112.

- Nitzschia litoralis, Grun., Cleethorpes, f. 35.
 ,, thermalis (Kutz.) Grun., Stoneferry, Wawne,
 Hornsea Mere, f. 36.
 ,, subtilis, Grun., Hotham Carrs, f. 37.
 ,, incurva, Grun., Cleethorpes, f. 38.
 ,, epithemioides, Grun., Cleethorpes, f. 39.
 Druridgea geminata, Donk., Victoria Dock timber pond,
 f. 40.
 Biddulphia lævis, Ehr., Filey, f. 41.

NOTES ON THE PROGRESS MADE BY THE
 CLUB IN 1901-1902.

*(Being the Secretary's Report, read at the Annual Meeting,
 October 1st, 1902).*

THE Society is to be congratulated on the completion of a most successful year's work. In no previous part of the Club's history has it accomplished so much. The members have devoted particular attention to the Natural History of the East Riding, resulting in many most important discoveries being made. In addition to the fact that new "finds" are recorded in the sections already well worked by the Club, some of our members have taken an interest in hitherto neglected branches of study, and thus our knowledge of the fauna and flora of our neighbourhood has been materially increased.

Since the last Annual Meeting, Volume I., Part IV., with Index, &c., and Volume II. complete, of the Transactions, have been issued to the members. The first of these was distributed last December, and one-half of it was occupied by a most valuable Memoir on the Diatomaceæ of the Hull District, by Messrs. F. W. Mills and R. H. Philip. This, through the energy and generosity of Mr. Mills, was illustrated by no fewer than 17 plates, containing drawings of about six hundred species of diatoms—an invaluable work of reference for students of this interesting subject. Reprints of this work are sold by Messrs. Wesley & Sons, Essex Street, Strand, at 4s. 6d. each.

The other publication is the "Flora of the East Riding of Yorkshire," which, by an arrangement with the publishers,

has recently been issued to the members as Volume II. of our Transactions. It contains about 250 pages, and has an admirable map of the Riding, geologically coloured, by Mr. W. H. Crofts.

It is gratifying to find that both the publications referred to have been favourably reviewed all round, the scientific press being particularly free in praising our work, especially in regard to the *local* nature of the articles and notes.

Lectures.—Four syllabuses have been issued, one for the six winter months, October, 1901 to March, 1902, and three covering two months each during the summer. These latter also contained the Excursion Programmes. It is gratifying to find that, with one exception, all the Lectures were delivered by members of the Club. The following is a list of the addresses given :—

1901.

- Oct. 9.—“Flightless Birds.”—Mr. T. Audas, L.D.S.
 Oct. 23.—“Coal Products.”—Mr. A. R. Warnes, M.S.C.I.
 Nov. 6.—“The Chrysanthemum, its History, Cultivation, and Development.”—Mr. J. W. Wilson, F.R.H.S., &c.
 Nov. 27.—“Some Types of Weather in the British Isles” (Lantern).—Mr. G. H. Gore, M.A.
 Dec. 4.—“The Diatoms of the Humber.”—Mr. R. H. Philip.
 Dec. 18.—“A Ramble along the Yorkshire Coast” (Lantern).—Mr. T. Sheppard, F.G.S.

1902.

- Jan. 8.—“Insanity.”—Dr. J. Hollingworth, M.R.C.S.
 Jan. 22.—“Birds” (Lantern).—Mr. H. M. Foster.
 Feb. 5.—“Notes on the Early History of Hull.”—Mr. E. Lamplough.
 Feb. 19.—“The Birds of Bempton Cliffs” (Lantern).—Mr. E. W. Wade.
 Mar. 5.—“Functions of Leaves.”—Mr. J. Schofield.
 Mar. 19.—“Plant Movements.”—Mr. J. F. Robinson.
 April 2.—“Cellulose.”—Mr. A. R. Warnes, M.S.C.I.
 April 16.—“Birds and their Nests” (Lantern).—Mr. E. W. Wade.
 April 30.—“Aquatic Generations of Terrestrial Plants” (Lantern).—Mr. H. Knight.
 May 14.—“Odontology.”—Mr. H. Wallis, L.D.S.
 May 28.—“Notes on the Flora of Japan.”—Mr. J. W. Wilson, M.A., F.R.H.S.
 June 11.—“Holderness Water Sculpture, Part I.”—Mr. G. H. Hill.
 June 25.—“Notes on Coleoptera.”—Mr. T. Stainforth.
 July 23.—Microscopical Evening, “Pond Life.”—Members.
 Aug. 6.—“Holderness Water Sculpture, Part II.”—Mr. G. H. Hill.
 Aug. 20.—“Marine Zoology of the Humber” (Lantern).—Mr. T. Petch, B.Sc., B.A.
 Sept. 3.—“Yorkshire Naturalists at Sedbergh.”—Mr. R. H. Philip.
 Sept. 17.—“Water Beetles, their Natural History and Evolution.”—Mr. H. E. Johnson.

Most of these Lectures were illustrated by specimens, diagrams, &c.

During the winter months the Members of the Microscope Section met on alternate Wednesdays, in connection with which the following special syllabus was prepared :—

1901.
 Nov. 20.—“Microscopic Forms of Vegetable Life.”—Mr. R. H. Philip.
 Dec. 11.—“Microscopic Structure of Algæ, &c.”—Mr. J. Schofield.
1902.
 Jan. 15.—“Microscopic Structure of Phanerogamia.”—Mr. J. F. Robinson.
 Feb. 12.—“Foraminifera, &c.”—Mr. H. E. Johnson.
 Feb. 26.—“Zoophytes.”—Dr. J. Hollingworth.

On July 9th the members spent an evening at the Municipal Museum, in Albion Street, which had recently been opened to the public. The Curator described the most interesting exhibits, and also read a paper on “The Educational Advantages of Museums.”

Excursions.—All through the summer, Saturday afternoons, Bank Holidays, &c., have been devoted to field work, and though we have for many years been traversing East Yorkshire in pursuit of Natural History, the excursions during the past summer have been well attended, and many new records have been made in the different sections. The following is a list of the places visited :—North Cave, Filey and Scarborough (with Hull Geological Society), Hall Ings, Wawne, Kelsey Hill, Barton and South Ferriby, North Ferriby, Immingham, Haltemprice Lane, North Grimston (with Yorkshire Naturalists' Union), Paull, Pulfin Bog and Driffeld (by invitation of the Driffeld Naturalists' Society), Hornsea Mere and Aldborough (with Hull Geological Society), Kirby and Bentley, Newport and Walling Fen, Leven Canal and Beverley (by invitation of the President, Mr. T. Audas, L.D.S.), Sutton, South Cave, &c. (with Hull Geological Society), Western Reservation, Hedon and Saltend, Brock-o-dale and Askern, Little Weighton, and Ferriby and Hessele.

On the occasion of the Driffeld excursion we were hospitably entertained by our members there, tea being kindly provided by Mr. and Mrs. Dry. The visit to Leven Canal and Beverley will also long be remembered by those who were there, partly on account of the glorious walk along the Canal and Hull Bank, and partly on account of the excellent manner in which the President had arranged to appease the appetites acquired during the afternoon.

Natural History Survey of Hornsea Mere.—The Committee having decided to thoroughly investigate the Natural History

of Hornsea Mere, several visits have been made to that locality by the members, collectively and individually. During the next twelve months it is hoped to devote much attention to this interesting locality, with the view of eventually publishing a memoir dealing with all aspects of the Mere.

Membership.—Twenty-nine new members have been elected during the year, which brings the present total to 176, only a slight increase, however, upon last year's number, owing to the number struck from the rolls and resigned being so great. We have also to record the death of the Rev. J. T. Harwood, of Driffild, who was an excellent botanist.

The Attendance at both summer and winter meetings has been up to the usual standard, averaging about 40 during the winter months and 30 during the summer.

British Association Meeting.—Your Secretary attended the Conference of Representatives of Scientific Societies, at the British Association Meeting at Belfast last month, as delegate from this Society. Many matters were brought forward of interest to our members, mainly in reference to the lines upon which Scientific Societies should work.

NOTES ON THE PROGRESS OF THE CLUB DURING 1902-3.

*(Being the Annual Report of the Secretary, read at the
Annual Meeting, held on September 30th, 1903).*

IT is once more my pleasant duty to record that the work of the Society during the past twelve months has been quite up to the usual standard.

Transactions.—It was announced at our last Annual Meeting that the "Flora of East Yorkshire" has just been completed and issued to the members as Vol. 2 of our Transactions.

For the present year a volume is in preparation and will be in the hands of the members very shortly. Part of the volume has already been issued as a reprint, viz., Wade's "Birds of Bempton Cliffs."

Four papers read at our meetings have been printed elsewhere:—Mr. Philip's on a "Ramble round Bowes" appearing in the *Leeds Mercury Supplement* for August 15th, and the Secretary's on "Hull's Contribution to Science" in

the "Naturalist" for June, July, and August, 1903; Mr. J. Nicholson's "Loose Leaves from Driffield," privately printed, and the Rev. W. C. Hey's "Shore Collecting at Filey and Scarborough," in the "Naturalist" for September.

Valuable as the contents of past publications have been, there yet remains much to be done in the direction of publishing local lists. We still require a list of Land, Fresh-Water, and Marine Shells of East Yorkshire; a list of the various Fungi of the district; and there are other particulars, mostly referring to the Microscopical section, which require working in a similar manner. It is pleasing to find that several of the members are taking up work in this connection, and we hope before long to publish the results in our annual volume.

In addition to the income derived from the sale of Mr. Wade's pamphlet, the Society has received financial assistance from the sale of Transactions and the "List of Diatoms" previously published.

Lectures.—Since the last Annual Meeting three Syllabuses have been issued; one for the Winter Session, October, 1902, to March, 1903, and two Summer Syllabuses of three months each. The Lectures given during the year have been as under:—

1902.
 Oct. 15.—Presidential Address.—Mr. J. Fraser Robinson.
 Oct. 29.—"A Swiss Ramble with the Hand Camera" (*Lantern*).—
 Dr. J. Hollingworth, M.R.C.S.
 Nov. 12.—"East Yorkshire Boulders and their Sources" (*Specimens*).—
 Mr. J. W. Stather, F.G.S.
 Nov. 26.—"A Chat about Beetles" (*Lantern*).—Mr. E. G. Bayford,
 Barnsley.
 Dec. 3.—"The Micro-Organisms and Disease" (*Lantern*).—Dr. J.
 Wright Mason, M.B., D.P.H., Medical Officer of Health.
 Dec. 17.—"Loose Leaves from Driffield."—Mr. J. Nicholson, F.R.H.S.
 1903.
 Jan. 7.—"Some Records of East Hull."—Mr. T. Blashill, F.R.I.B.A.
 Jan. 21.—"The Mammalia" (*Lantern*).—Mr. H. M. Foster.
 Feb. 4.—"Notes concerning the Perfume of Plants."—Mr. W. Mans-
 bridge.
 Feb. 18.—"Some Notable Local Conchological Records."—Mr. F. W.
 Fierke, M.C.S.
 Mar. 4.—"Some Stray Thoughts on Birds."—Mr. F. Boyes.
 Mar. 18.—"Hull's Contribution to Science."—Mr. T. Sheppard, F.G.S.
 April 1.—"Photo-Micrography" (*Lantern*).—Mr. A. Assert.
 April 15.—"The Blowpipe in Geology and Mineralogy" (*Experiments*).—
 Mr. A. R. Warnes, M.S.C.I.
 April 29.—"A Ramble between North Cave and Newport."—Mr. R. H.
 Philip.
 May 13.—"Myxomycetes."—Mr. J. F. Robinson.
 May 27.—"Fresh-Water Rhizopods."—Mr. H. R. Philip.

- June 10.—“Shore Collecting at Filey and Scarborough,” by the Rev. W. C. Hey. Read by the Secretary.
- June 24.—“Ants” (*with Diagrams*).—Mr. T. Stainforth.
- July 8.—“Micro-Lepidoptera.”—Mr. W. Mansbridge.
- July 22.—“The Delta of the Hull.”—Mr. G. H. Hill.
- Aug. 5.—“Holiday Notes.”—Mr. R. H. Philip.
- Aug. 19.—“Some Conchological Studies.”—Rev. E. P. Blackburn.
- Sept. 2.—“Poduræ.”—Mr. H. M. Foster.
- Sept. 16.—“Adaptation of Flowering Plants to their Seasons.”—Mr. H. Knight.

Most of these Lectures were illustrated by specimens, diagrams, &c.

During the winter months, in addition to the fortnightly Lectures, meetings have been held on the alternate Wednesday nights, which were chiefly of a practical and informal character. For these nights the following Syllabus was carried out:—

- ^{1902.}
- Nov. 5.—Exhibition of Botanical Specimens by Members.
- Nov. 19.—Conversational Evening.
- ^{1903.}
- Jan. 14.—Exhibition of Photographs of Local Bird Life by Mr. C. W. Mason.
- Jan. 28.—“Mounting Diatoms in Phosphorus.”—Mr. H. M. Foster.
- Feb. 11.—“Fred Good on Paul.”—Read by Mr. E. Lamplough.
- Feb. 25.—Conchological Evening.
- Mar. 11.—Conversational Evening.

Mr. C. Crossland, F.L.S.—In October, 1902, Mr. C. Crossland, F.L.S., of Halifax, the Secretary of the Yorkshire Mycological Committee, spent a week-end in the district, and also delivered an address on “The Structure and Classification of the Fungi” at a special meeting held at the Museum. Mr. Crossland’s enthusiasm has certainly done good to our Society, and already several members are working at the Fungi as a result of his visit.

Yorkshire Naturalists’ Union.—On December 10th, 1902, the Annual Meeting of the Yorkshire Naturalists’ Union was held at Hull, when the President’s Address was delivered by Mr. P. F. Kendall, F.G.S., entitled “Some Problems in the Distribution of Animals and Plants.” By the permission of the Hull Corporation, a *Conversazione* was afterwards held in the Museum; the members of the Union being entertained by the Hull Geological Society and ourselves. A special Exhibition was also held in the Museum, which was highly appreciated, and on the following day a visit was paid to the new section at Kelsey Hill.

Excursions.—The following Excursions have been held during the summer:—From April 4th to June 27th, 1903, the

Club visited Sutton and Wawne, Bridlington (with Hull Geological Society), Hornsea Mere, Newport, Ferriby and Brough, Leconfield, Patrington, Hornsea Mere (with Leeds Conchological Society), Swine, Filey (with Yorkshire Naturalists' Union), Sproatley, Barton and South Ferriby, Pulfin Bog, and Hornsea Mere again.

From July 4th to September 25th the Club visited:—Skipwith Common, Driffild, Barton and South Ferriby, Hornsea (for the beach), Birkhill Wood, Filey, Bowes (Y.N.U.), Kelsey Hill, North Cave (for Snake Hall), Hornsea Mere, West Dock Reservation, Hutton Cranswick (for Watton Abbey), Wharnccliffe Crags (Y.N.U.), Hornsea Mere, Helmsley.

One of the earliest of these was in connection with the Y.N.U. visit to Filey, which in point of numbers was one of the best attended meetings of the Union. At some of our Excursions, the newly-formed East Riding Nature Study Committee has taken part, to the mutual advantage of our Society and the Committee. Monthly visits have been paid to Hornsea Mere in connection with the proposed Monograph of the Natural History of the Mere, which the Club proposes to issue.

Membership.—During the past year the usual disagreeable duty of erasing the names of certain members from our list on account of arrears of Subscription and other causes has had to be performed, but this has been counterbalanced by an increase of 20 members, leaving the present total 177, as against 176 last year.

Attendance.—The attendances at the indoor meetings have been most satisfactory, but on the Excursions, with a few exceptions, it has not been what might have been expected, although to a large extent this is no doubt due to the glorious uncertainty of our "Summer" weather.

Press.—It is our duty to thank the local press for the assistance they have given the Club in the matter of reports of our Excursions and Meetings.

Finances.—One particularly pleasant feature in connection with this Society is that, notwithstanding the amount of work its members have accomplished, and the number of pages taken up thereby in our annual Publications, the Club's finances remain in a satisfactory condition. This is principally due to the fact that its Publications have been of such value that there has been a demand for them amongst the scientific public, and to the fact that we have a hard-working Treasurer.

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Amongst the Short Notes are:—

Cottingham Churchwardens' Accounts.—Gamekeeper's Hoard at Kirk Smeaton.—Fork-tailed Petrel at Grimsby.—Little Bustard at Kilsea.—White's Thrush in Yorkshire.—Moles and their Fortresses.—Ringing Bees.—Albino Birds in Yorkshire.—The Birds of Yorkshire.—Diatoms near Grimsby.—Nature Study.—Beetles and Electric Light.—A Scarborough "Naturalist."—Seal at Ulrome.—Scottish Rocks in East Yorkshire.—Birds of Bempton Cliffs.—Relics of the Stone Age.—An East Yorkshire Erratic.—*Bos primigenius* in Holderness.—Coast Erosion.—British Bronze Axes.—Great Spotted Woodpecker near Spurn.—Hepatics new to Yorkshire.—Mammoth's Tusk at Brough.—Pike at the Hempholme Lock.—A New Yorkshire Fossil.—Ancient Earthworks.—Woodchat Shrike at Speeton.—Lepidoptera near Selby.—Beluga at Scarborough.—Albino Hedgehog and Mole.—An Early Scandinavian Relic.—Pre-historic Bone Disease.—In Memory of Samuel Chadwick.—The Yorkshire Chalk.—Snails on Bridlington Priory Tower.—Pigmy Flints.—Partridge Motherhood.—Early Burials in East Yorkshire.—Diatoms at Filey Brig, &c.

The Articles are illustrated by numerous plates and illustrations in the text.

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TRANSACTIONS

OF THE

Hull Scientific and 

 Field Naturalists' Club

FOR THE YEAR 1904.

VOL. III. PART II.



EDITED BY THOMAS SHEPPARD, F.G.S.

PRICE 2/6 NET

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1904.

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TRANSACTIONS

OF THE

Bull Scientific

AND

Field Naturalists' Club.

EDITED BY

T. SHEPPARD, F.G.S.

THE PUBLISHED RECORDS OF THE LAND AND
FRESH WATER MOLLUSCA OF THE EAST
RIDING, WITH ADDITIONS.

By T. PETCH, B.Sc., B.A.

THE earliest records of the Land and Fresh Water Mollusca of the East Riding are to be found in the "Historiæ Animalium Angliæ" of Dr. Martin Lister (1678-81), though the only definite East Riding locality is that for *Viviparus contectus*, "near Bubwith Ferry," in the immediate neighbourhood of our present stations for this species. Several of Lister's records for the York district were repeated by Pennant (Brit. Zool. 1812), Maton and Rackett (Linn. Trans. vol. viii., 1807), and others, but no additions were made till 1840, when the Rev. W. Hincks, in a criticism of Gray's Turton (Annals of Nat. Hist. ser. i., vol. v., p. 366), enumerated six species, four of which were not given by Lister. The same observer furnished several records in Forbes and

Hanley's "History of British Mollusca" (1853), but apparently he did not publish a list.

In 1844 Captain Thomas Brown included in his "Illustrations of the Recent Conchology of Great Britain," records of three species from the neighbourhood of Hull. These are *Neritina fluviatilis*, "in many of the slow-running rivers, as the Humber;" *Dreissensia polymorpha*, "in many places in the canal between Manchester and Hull;" *Unio rostrata* (= *U. pictorum*), "I found this species in the canal near Hull." Needless to say, there is no such canal, while the description of the Humber suggests that Captain Brown never saw it. This record of *Unio pictorum* is repeated by Forbes and Hanley to justify their synonyms, and they also give the first reliable record for the eastern division of the Riding, *Cyclas lacustris*, "Hornsea," on the authority of H. Strickland, who later contributed "*Helix ericetorum m. sinistrorsum*, Bridlington," to Jeffrey's British Conchology (1862-69).

Since 1860 the following lists relating wholly or in part to the East Riding have been published:—

S. W. North.—L. and F.W. Mollusca found near York. Magazine of Natural History and Naturalist vol. i. (1860), p. 139. This includes species which occur within a radius of two or three miles, generally without localities.

W. C. Hey (Rev.).—Contributions to a better knowledge of Yorks. L. and F.W. Mollusca. Journal of Conchology vol. ii. (1879), pp. 310-314.

J. D. Butterell.—(1) List of the L. and F.W. Mollusca of Hull and Vicinity. Naturalist vol. iv. (1878-9), pp. 70-75. (2) List of L. and F.W. Mollusca found at Hornsea, July, 1880. J. of C. vol. iii. (1880-82), pp. 136-7. (3) List of L. and F.W. Mollusca observed in the neighbourhood of Beverley. J. of C. vol. 3, pp. 289-296

R. M. Christy.—L. and F.W. shells of the neighbourhood of York. Zoologist series 3, vol. v. (1881), pp. 175-185, 242-249.

J. S. Gibbons, M.D.—List of shells collected at Burlington, Bempton, Speeton, and Flamborough Head, Yorks. J. of C. vol. iii., p. 238.

C. Reid.—Mollusca of Hornsea Mere in "Geology of Holderness," 1885.

- G. Roberts (and J. Beanland).—Mollusca of Wressle and neighbourhood. Nat. vol. xi. (1886), pp. 311-314.
- Wm. Nelson and J. W. Taylor.—List of Yorkshire Mollusca : pt. 1, 1877, *Sphærium* to *Anodon* ; pt. 2, 1880 (published 1883), *Dreissensia* to *Valvata* ; pt. 3, 1883 (published 1885), *Valvata* to *Pl. spirorbis* ; pt. 4, 1884 (published 1886), *Pl. vortex* to *Pl. contortus* ; pt. 5, 1890 (published 1891), *Physa* to *L. peregra*. (Trans. Yorks. Nat. Union).
- E. P. Blackburn (Rev.).—Mollusca of Driffield and neighbourhood. Nat. vol. xxix. (1904).

The above are referred to in the list by initials or name only.

Additional records are to be found in the many notes and papers contributed to the Journal of Conchology and the Naturalist by Messrs. J. W. Taylor, Wm. Nelson, W. Denison Roebuck, W. C. Hey, L. B. Ross, F. W. Fierke, and others ; and Messrs. Hey and Fierke have written articles on the Mollusca of Flamborough and Hornsea for "Flamborough, Village and Headland" (1894), and Fretwell's Guide to Hornsea (no date) respectively. Notes by the compiler of the present list have been published in the "Transactions of the Hull Scientific and Field Naturalists' Club," vols. i. and iii.

The accounts of the visits of the Yorkshire Naturalists' Union to various localities in the East Riding furnish many records or confirmatory evidence of the existence of rare species, on the authority of Messrs. J. W. Taylor, W. D. Roebuck, and other West Riding conchologists. The following table gives what information it has been possible to collect with regard to these excursions ; but in estimating the value of records in excursion circulars, it must be remembered that the more recent of these merely summarise the recorded mollusca of a wide area, often without definite localities and in many cases not in the district visited :—

| CIRCULAR. | LOCALITY. | DATE. | MOLLUSCA BY. | REPORT IN NAT. | MOLLUSCA BY. |
|--------------|---|------------------|---------------------------------|---------------------------|----------------------|
| 3rd for 1878 | Riccall | Aug. 1875 | ... | Vol. i., pp. 37-40 | W.D.R. |
| 6th for 1879 | Brough | June 10, 1878 | ... | Vol. iii., pp. 190-192 | J.W.T. |
| | Riccall | Sept. 6, 1879 | (No records) | Vol. v., 47-48 | W.D.R. |
| 3rd for 1881 | Market Weighton for Londesborough and Houghton Moor | Sept. 4, 1880 | (Not seen) | Vol. vi., pp. 194-196 | W.D.R. |
| 1st for 1882 | Hornsea | June 6, 1881 | { "90 species and varieties." } | Vol. vi., pp. 204-206 | (No records) |
| 2nd for 1883 | Beverley | May 29, 1882 | { No names. } | Vol. vii., pp. 216-219 | W.C.H. |
| | Filey (from Speeton) | June 11, 1883 | W.C.H. | Vol. ix., p. 72 | W.C.H. |
| 5th for 1884 | Spurn | Sept. 3, 1884 | ... | Vol. x., pp. 307-309 | J.D.B. |
| 3rd for 1885 | Pocklington for Wäter and Kildwick Percy | June 24, 1885 | W.C.H. | Vol. xi., pp. 216-219 | W.C.H. |
| 63 | Bridlington for Flamborough, &c. | June 14, 1886 | ... | Vol. xii., pp. 45-48 | W.C.H. |
| 63 | Welton Dale, Wauldby Wood, and Humber Bank | Aug. 27, 1887 | J.D.B. | Vol. xiii., pp. 277-282 | A.H.T. |
| 75 | Market Weighton for Goodmanham and Londesborough | Aug. 6, 1888 | J.D.B. | Vol. xiv., pp. 340-344 | L. B. Ross |
| 83 | Malton for Kirkham Abbey | Sept. 4, 1889 | A. H. Taylor | Vol. xv., pp. 203-209 | L. B. Ross |
| 84 | Driffield for Lowthorpe | May 26, 1890 | L. B. Ross. | Vol. xvi., pp. 299-336 | F.W.F. |
| 93 | Wetwang for York Dale and Siedmere | Aug. 3, 1891 | W.D.R. | Vol. xvii., pp. 293-299 | F.W.F. |
| 99 | Withersea and Sandlemere | Aug. 1, 1892 | F.W.F. & J.D.B. | Vol. xix., pp. 61-67. | --- |
| 106 | Pocklington for Allerthorpe | Sept. 7, 1893 | J.D.B. & W.D.R. | --- | --- |
| 111 | South Cave for DREWTON DALE, &c. | Aug. 6, 1894 | F.W.F. | --- | --- |
| 116 | Flamborough | June 29, 1895 | F.W.F. | --- | --- |
| 120 | Filey (Marine Zoology) | Sept. 21, 1895 | (No records) | Vol. xxi., pp. 355-365 | --- |
| 124 | Skipwith Common | June 20, 1893 | ... | --- | --- |
| 127 | Selby (Fungus Foray) | Sept. 19 23 1896 | (No records) | --- | --- |
| 133 | Everingham Park | Aug. 2, 1897 | (No records) | --- | --- |
| 140 | Spurn and Kilnsea | Aug. 1, 1898 | L.B.R. & J.D.B. | --- | --- |
| 145 | Driffield for Wansford, &c. | July 8, 1899 | F.W.F. | --- | --- |
| 150 | Hornsea for Skipsa, &c. | May 19, 1900 | F.W.F. | --- | --- |
| 157 | Brough, Welton, Brantingham | May 27, 1901 | F.W.F. | Vol. xxvi., pp. 219-229 | J. E. Crowther |
| 165 | North Grimston and Birdsall | June 14, 1902 | A. H. Taylor | Vol. xxvii., pp. 203-301 | Rev. E. P. Blackburn |
| 172 | Filey and Cliffs to South | June 1, 1903 | T.P. | Vol. xxviii., pp. 241-251 | J. E. Crowther |
| 180 | Spurn | July 2-4, 1904 | T.P. | Vol. xxix., pp. 233-238 | Rev. E. P. Blackburn |

Lists of species found in the lacustrine deposits of Holderness have been given by J. Phillips (Geology of Yorks. 1829: 3rd ed., 1875), H. F. Hall (Proc. Liverpool Geol. Soc. 1866-7, pp. 38-45), C. Reid (Geology of Holderness, 1885), and the Rev. W. C. Hey (Nat. 12, p. 374). Messrs. Wood and Rome (Quart. Jour. Geol. Soc. 24, p. 154), give genera only, without localities. In August 1892, Mr. F. W. Fierke and myself spent several days in exploring the deposits between Kilnsea and Barmston, and specimens obtained then are deposited in the Hull Museum; we did not find any land shells.

I have not been able to consult the *Bootham Observer*, mentioned by Mr. R. M. Christy, nor the *Yorks. Naturalists' Recorder*, referred to by Mr. J. E. Harting in "Rambles in Search of Shells." Neither is included in the British Museum Catalogue. The various publications of the Yorkshire Societies are in most cases represented in the British Museum Library by odd numbers only, and for this reason I have not seen "Forms of pond snails in Yorkshire," W. C. Hey (Ann. Rep. York Phil. Soc. for 1883, 1884, pp. 32-35). Doubtless other records exist in the many natural history periodicals which have perished on the *via media* of popular science and field work, but every effort has been made to render the list a complete summary of all that have been published.

The East Riding divides naturally into three well marked regions—the Plain of Holderness, the Wolds, and Derwentland. Full details of the physiography of these divisions will be found in Mr. J. F. Robinson's "Flora of the East Riding;" roughly they consist of boulder clay, chalk, and alluvium respectively. The rainfall lies between 25 and 30 inches per annum over the greater part of the Riding, falling below 25 inches on the Patrington-Spurn peninsula, and exceeding 30 in the neighbourhood of North Grimston and Sledmere. This variation has apparently no effect on the distribution of mollusca.

From a conchologist's standpoint Derwentland is remarkable for the number of natural and artificial watercourses, which intersect it in all directions. The Ouse on the west, the Derwent and its tributaries, the Foulney, the Market Weighton and Pocklington canals, and the many agricultural drains combine in making it specially rich in aquatic forms, thirty-eight species being recorded for this division, two of which, *Viviparus contectus* and *Sphærium rivicola*, are not found in the other two. This abundance has attracted the

attention of several West Riding conchologists, and the neighbourhood of Howden, Wressle, and Newport has been well searched for aquatic species by Messrs. G. Roberts, J. Beanland, and Wm. Nelson, but probably for the same reason terrestrial mollusca have been in most cases neglected, and we have few records of the smaller land species. An additional reason may be found in the fact that the "waste" land of this division, though more extensive than in the other two, consists of large sandy commons whose molluscan fauna may be concisely enumerated as in the Skipwith circular (124), "no mollusca are to be found on the common itself." Yet, granting this, it is not obvious why alluvium shall be less productive than boulder clay; and the absence of records may be attributed to lack of workers rather than to a real difference in distribution. Of the northern and central portions of Derwentland very little has been recorded. The mollusca of York and district have been tabulated many times, and few works on British Conchology fail to cite York as a locality for rare species, but the majority of recorders have preferred to follow Dr. Martin Lister in the North and West rather than the East Riding. General records for the Ouse below York have been included here; a more exact investigation may remove them from the East Riding list. No records have been found for that part of the valley of the Derwent which lies to the north of the Wolds.

In the central division, which includes all the elevated land of the Riding, aquatic mollusca are rare since the porosity of the chalk precludes the formation of natural ponds and the artificial ponds are usually barren or contain *Pisidia*, *L. peregra*, and *L. truncatula* only. Its list of aquatic species, however, reaches 30, chiefly from the ponds on the boulder clay in the neighbourhood of Filey and Flamborough, and it has its own peculiar form in *Ancylus fluviatilis*, which is almost confined to the small streams of its slopes. The numerous dales, chalk pits, and beech woods make this region richer in land species than the other two, and even fir woods on chalk are not barren: *Clausilia laminata*, *Pupa anglica*, *Limax cinereo-niger*, *Limax arborum*, and *Amalia soverbyi* are found in this division only, while *Helix granulata* and *Clausilia rugosa* have only been found outside it at Wressle and Langwith respectively. It is characterised by the presence of *Helix rufescens* and *Clausilia*, and the relative abundance of *Helix hortensis*, *H. arbustorum*, and *H. itala*. The investigation of this area commenced with the

visits of the Goole Scientific Society to Brough and Welton Dale in 1876, and the work of the Rev. W. C. Hey in the Filey district, and of Mr. J. D. Butterell near Hull about the same date. More recently various localities in the south have been frequently visited by Hull naturalists. The coast from Filey to Bridlington, the neighbourhood of Beverley, and the southern extremity of the Wolds have all been thoroughly searched, but, with the exception of a few places along the Driffield and Malton Railway, the central and northern parts have not received any attention. It is highly probable that careful search in these parts, especially along the northern and western slopes would add several species to the list, e.g., *Helix lapicida*, *H. fusca*, *Hyalinia glabra*, *Hy. excavata*, *Azeca tridens*, *Acicula lineata*, *Cyclostoma elegans*, *H. lamellata*, all of which are found in the North Riding. From the present records, many of the more primitive species appear to have been entirely driven out of the East Riding by more highly organised forms. *Pupa anglica*, however, still exist in small numbers on the cliffs of Filey and Speeton.

The Plain of Holderness resembles Derwentland in the number of its watercourses and the abundance of aquatic species, though the ditches of the boulder clay on the east are not very productive. In the hollows of the boulder clay, however, where the agricultural drains traverse the sites of former marshes (e.g., between Marton and Aldborough), the conditions are similar to those which prevail in the valley of the Hull, and consequently aquatic forms are well distributed throughout the district. As large areas lie below the level of spring tides, and nearly the whole of the surface drainage finds its way to the sea *viâ* the River Hull, the importance of maintaining an unobstructed passage for it has been appreciated from the earliest times. Mr. J. D. Butterell's observation that the constant cleansing of ditches and drains prevented the arrival at maturity of the larger species is confirmed by Mr. F. W. Fierke (Fretwell's Guide, p. 56), and probably the same fact may account for the absence of some; cleaning an agricultural drain involves not only the cutting and removal of weeds, but the periodic excavation of the entire bed of the stream.

Forty-two species of fresh water mollusca have been recorded for this division, four more than for Derwentland, though the advantage is somewhat doubtful as the occurrence of *Viviparus viviparus*, *Unio tumidus*, and *Unio pictorum* needs confirmation. *Pisidium milium*, *Segmentina nitida*,

Limnæa glutinosa, and *Paludestrina jenkinsi* have not been found in the other two divisions. The scarcity of *Planorbis vortex* and abundance of *P. spirorbis* is a marked feature, and a similar contrast is seen between *P. fontanus* and *P. nautilæus*. *P. umbilicatus* is very common, and all gradations between this and *P. carinatus* may be found. If the determination of *P. parvus* is correct, it is the only species found in the lacustrine deposits which does not exist in the East Riding at the present time. *Limnæa auricularia*, *L. stagnalis*, and *L. palustris* are local. Both limpets are uncommon, *Ancylus* being found on the west only, while *Velletia* occurs also sporadically on the east; only one of the localities recorded for *Neritina* is east of the Hull. As indicated above, *Unio* is rare. *Dreissensia* has not been found in the Hull docks or timber ponds, where the water is salt except in the new Alexandra Dock. Conchology seems to have been neglected by the earlier Hull naturalists: a small collection made by George Norman, now in the Hull Museum, contains land, freshwater, and marine shells, British and Foreign, without names or localities. Mr. J. D. Butterell's lists for Hull, Hornsea, and Beverley (1879-1883) form the foundation of our knowledge of the mollusca of this area, and his thorough investigation of the valley of the River Hull has afforded a sufficient reason for the absence of detailed lists by later workers. Mr. L. B. Ross is responsible for many records in the neighbourhood of Driffield, but has not published a full list; and the work of Mr. F. W. Fierke, whose knowledge of the Hull district is unrivalled, is represented by brief notes only.

With the exception of a small area in the neighbourhood of Brandesburton, the whole of this district has been well investigated, and for this reason the smaller land species appear as numerous as in the central division. *Helix hortensis*, *H. arbustorum*, *H. rufescens* are rare or local, and *H. granulata* is not known. The small plantations of Holderness yield better results in the winter months than in the summer, *H. aculeata*, *H. pygmæa*, *Vertigo edentula*, *Pupa umbilicata*, &c., being then more easily found, but they are not rich in woodland species, probably because all are of recent growth. There is no record of *Clausilia*, and *Bulea* has only been found in small numbers on trees in hedgerows; these are, however, the only East Riding stations for this species. On the coast, *H. virgata* and *H. caperata* abound, but *H. itala* occurs more frequently on the gravels inland, approaching the coast only at Hornsea.

Omitting *Helix lapicida* and *Azeca tridens*, which are included in the Census, but of which no record has been found, 100 species have been recorded for the Riding. These are distributed as follows :—

| | Derwentland. | The Wolds. | Plain of Holderness. | Found in all. |
|---------------|--------------|------------|----------------------|---------------|
| Land . . . | 39 | 52 | 47 | 37 |
| Fresh water . | 38 | 30 | 42 | 28 |
| | — | — | — | — |
| | 77 | 82 | 89 | 65 |
| | — | — | — | — |

Derwentland only: (2), *Viviparus contectus*, *Sphærium rivicola*.

Wolds only: (7), *Limax cinereo-niger*, *L. marginatus*, *Amalia sowerbyi*, *Testacella scutulum*, *Clausilia laminata*, *Pupa anglica*, *Hyalinia lucida*.

Holderness only: (8), *Amalia gagates*, *Testacella haliotideae*, *Balea perversa*, *Vertigo minutissima*, *Segmentina nitida*, *Limnæa glutinosa*, *Paludestrina jenkinsi*, *Pisidium milium*.

Derwentland and Wolds: (2), *Helix granulata*, *Clausilia rugosa*.

Derwentland and Holderness: (8), *Viviparus viviparus*, *Bythinia leachii*, *Neritina fluviatilis*, *Unio tumidus*, *U. pictorum*, *Anodonta anatina*, *Pisidium amnicum*, *P. henslowanum*.

Wolds and Holderness: (8), *Arion subfuscus*, *A. intermedius*, *Agriolimax lævis*, *Helix itala*, *H. pygmæa*, *Vertigo antivertigo*, *Planorbis fontanus*, *Sphærium lacustre*.

Initials only, without references, are used to indicate records in the tabulated lists, thus:—"W.C.H." refers to Mr. Hey's paper in the Journal of Conchology; "W.C.H. in R.M.C." refers to a record by Mr. Hey included in Mr. Christy's list; and "W.C.H. circular 62" to one on the Yorks. Naturalists' Union excursion circular bearing that number. "Y.N.U. 1883" signifies that the species was found on the East Riding excursion for that year, and is included in the report of such excursion. Records initialled "T.P." have not been previously published.

LIST OF ABBREVIATIONS.

| | | |
|-----------------------------------|--|--------------------------------------|
| E.P.B. . . . Blackburn, | | G.R. . . . Roberts, G. |
| the Rev. E. P. | | W.D.R. . . . Roebuck, W. Denison |
| J.W.B. . . . Boulton, J. W. | | J.W.T. . . . Taylor, J. W. |
| J.D.B. . . . Butterell, J. D. | | N. & T. . . . Nelson & Taylor. |
| R.M.C. . . . Christy, R. M. | | J. of C. . . . Journal of Conchology |
| F.W.F. . . . Fierke, F. W. | | Nat. . . . The Naturalist. |
| J.S.G. . . . Gibbons, J. S., M.D. | | Y.N.U. . . . Yorkshire Naturalists' |
| W.C.H. . . . Hey, the Rev. W. C. | | Union. |
| S.W.N. . . . North, S. W. | | Mon. . . . Monograph. |
| T.P. . . . Petch, T. | | |

Arion ater (Linn).

Generally distributed throughout the Riding.

Derwentland.—York district, very abundant (R.M.C.). Allerthorpe (Y.N.U. 1893). Wressle, banks of Derwent (G.R.).

Wolds.—Howsham Woods (Y.N.U. 1889). Kildwick Percy (J.D.B. 3rd circular, 1885; Y.N.U. 1885; circular 106). Sledmere (Y.N.U. 1891) North Grimston, plentiful (Y.N.U. 1902). Filey (W.C.H. 2nd circular, 1883; Y.N.U. 1883; Y.N.U. 1903). Flamborough (F.W.F. circular 116). Danes Dyke (Y.N.U. 1886). Brough (Y.N.U. 1901).

Holderness.—Driffeld, banks of canal, "all five species of *Arion*" (J.D.B. circular 145). Beverley, generally distributed; abundant in Pighill Lane (J.D.B. 3). Hornsea, common (J.D.B. 2; Y.N.U. 1881). Hull district, very common (J.D.B. 1). Withernsea (F.W.F. circular 99); on the cliffs (J.D.B. Nat. vol. 17, p. 253). Common in Holderness; Spurn (T.P.).

Var. *albolateralis* Roebuck:—Danes Dyke (Y.N.U. 1886). Flamborough (F.W.F. circular 116), probably refers to the previous record. Railway Bridge, Hedon, three specimens, April 1904 (T.P.).

Var. *brunnea* Rbk:—Aldborough (T.P.).

Arion subfuscus Drap.

Not included in the Census (J. of C., vol. 10, pp. 217, &c.).

Wolds.—Filey (Y.N.U. 1903).

Holderness.—Driffeld, banks of canal, "all five species of *Arion*" (J.D.B. circular 145).

Arion intermedius Normand.

Wolds.—Filey, first ravine south (Y.N.U. 1903). North Grimston, several (Y.N.U. 1902). Sledmere (Y.N.U. 1891). Welton Dale (Y.N.U. 1901). Drewton Dale (T.P.). North Cave (T.P.).

Holderness.—Driffeld, banks of canal, "all five species of *Arion*" (J.D.B. circular 145); fairly common in the district (E.P.B.). Hornsea (Leeds Conch. Soc., *Yorkshire Weekly Post*, July 11th, 1903). Withernsea (F.W.F. circular 99). Not uncommon amongst moss or dead leaves in marshy places: Roos Bog; Bale Wood, Aldborough; Tansterne; Hedon; Kelsey Hill; Spurn (T.P.).

Arion circumscriptus Johnst.

Derwentland.—Allerthorpe (Y.N.U. 1893).

Wolds.—Filey, first ravine south (Y.N.U. 1903). Lowthorpe (Y.N.U. 1890). Sledmere (Y.N.U. 1891). North Grimston, common (Y.N.U. 1902). Brough (Y.N.U. 1901). Drewton Dale (T.P.).

Holderness.—Driffeld, banks of canal, "all five species of *Arion*" (J.D.B. circular 145). Hornsea, woods north of mere; Bale Wood, Aldborough; Hedon; Burstwick; Humbleton; Cottingham (T.P.).

Arion hortensis Fér.

Derwentland.—York district, abundant beneath logs of wood (R.M.C.).

Wolds.—Filey, cliffs (W.C.H. 2nd circular, 1883; Y.N.U. 1883). Flamborough (F.W.F. circular 116). Danes Dyke (Y.N.U. 1886). Sledmere (Y.N.U. 1891). North Grimston, several (Y.N.U. 1902). Kildwick Percy (J.D.B. 3rd circular, 1885; Y.N.U. 1885; J.D.B. circular 106). Brough (Y.N.U. 1901). Drewton (T.P.).

Holderness.—Driffeld, banks of canal, "All five species of *Arion*" (J.D.B. circular 145). Hornsea, common (J.D.B. 2). Beverley, everywhere (J.D.B. 3). Hull district, very common (J.D.B. 1). Common in Holderness (T.P.).

Amalia gagates (Drap.).

Holderness.—Withernsea (J.D.B. circular 99); on the cliffs (J.D.B. Nat. vol. 17, p. 253).

Amalia sowerbyi Fér.

Not in the Census.

Wolds.—Filey, "in the ravine," (Y.N.U. 1883; Y.N.U. 1903).

Holderness.—Hull, "*Limax sowerbyi*?" in gardens (J.D.B. 1).

Limax maximus Linn.

Derwentland.—York district, common (R.M.C.). Newport nr. Staddlethorpe, abundant (T.K. Skipwith, in Taylor, Mon. 2, p. 49). Allerthorpe, var. *fasciata* (Y.N.U. 1893).

Wolds.—Howsham Woods (Y.N.U. 1889). Kildwick Percy (Y.N.U. 1885; circular 106). Flamborough (F.W.F. circular 116). Danes Dyke (Y.N.U. 1886). Lowthorpe (Y.N.U. 1890). Sledmere (Y.N.U. 1891). North Grimston, var. *fasciata*, plentiful (Y.N.U. 1902).

Holderness.—Driffeld, banks of canal (J.D.B. circular 145): in garden (E.P.B.). Beverley (F. Boyes, Nat. 7, p. 171); not common, Long Lane (J.D.B. 3); common in gardens, Westwood (J.D.B. in Taylor, loc. cit.). Hornsea (J.D.B. 1); in cellars and outhouses (J.D.B. 2). Withernsea (Y.N.U. 1892). Hull, common in gardens (J.D.B. 1). In stickheaps, &c., fairly common, Aldborough; Burstwick; Hedon; Kelsey Hill, var. *fasciata*; Humbleton (T.P.).

The following varieties are quoted from J. W. Taylor, Mon. ii. pp. 41-49.

Var. *vinosa* Baud. Beverley, Oct. 1884 (J.D.B.). Var. *fasciata* Raz. Beverley, Oct. 1884 (J.D.B.); Sledmere, Aug. 1891. (F.W.F.).
 Var. *tetrazona* Taylor, Beverley, Sept. 1884 (J.D.B.). Var. *cellaria* D'Arg., gardens, Westwood, Beverley, Sept. 1884 (J.D.B.). Var. *tigris* Adams ms., Beverley, Oct., 1884 (J.D.B.).

Limax cinereo-niger Wolf.

Var. *maura* Held.

Not in the Census. Probably overlooked in other localities on the Wolds.

Wolds.—Brantinghamthorpe (Y.N.U. 1901; Taylor, Mon. ii. p. 69).

Limax flavus Linn.

The absence of records of this species is no doubt due to its preference for the neighbourhood of houses.

Derwentland.—Newport, near Staddlethorpe, abundant in gardens, Aug. 1883 (T.K. Skipwith, Taylor, Mon. ii. p. 86).

Wolds.—Kildwick Percy (Y.N.U. 1885; circular 106).

Holderness.—Beverley, abundant in gardens, Westwood, Sep., 1884, (J.D.B., Taylor, loc. cit.). Hornsea, (J.D.B. 1); in cellars, rather common (J.D.B. 2). Hedon; Aldborough (T.P.). Driffield in garden (E.P.B.).

Limax marginatus (Mull.).

Not in the Census. Probably limited to the central division.

Wolds.—Howsham Woods, (Y.N.U. 1889). Sledmere (Y.N.U. 1891). Both confirmed by Mr. J. W. Taylor (Mon. ii. p. 99).

Agriolimax agrestis Linn.

Derwentland.—York district, "abounds" (R.M.C.). Allerthorpe (Y.N.U. 1893). Wressle (G.R.).

Wolds.—Filey, cliffs (W.C.H. 2nd circular, 1883; Y.N.U. 1883; Y.N.U. 1903). Flamborough (F.W.F. circular 116). Danes Dyke (Y.N.U. 1886). Lowthorpe (Y.N.U. 1890). Sledmere (Y.N.U. 1891). North Grimston, (Y.N.U. 1902). Kildwick Percy (J.D.B. 3rd circular, 1885; Y.N.U. 1885; circular 106). Brough (Y.N.U. 1901).

Holderness.—Driffield, banks of canal (J.D.B. circular 145); everywhere (E.P.B.). Beverley, common everywhere (J.D.B. 3). Hornsea, very common (J.D.B. 2; Y.N.U. 1881). Withernsea (F.W.F. circular 99); on the cliffs (J.D.B. Nat. 17, p. 253). Hull district, very common (J.D.B. 1). Abundant everywhere; Spurn (T.P.; Y.N.U. 1904).

Var. *nigra* Morelet:—Beverley (F. Boyes Nat. 7, p. 202); in gardens (J.D.B. Nat. 8, p. 185); described as new (J. of C. 4, p. 27).

Agriolimax lævis Müll.

Wolds.—Filey, first ravine south (Y.N.U. 1903). Flamborough (F.W.F. circular 116). Danes Dyke (Y.N.U. 1886). Kildwick Percy (Y.N.U. 1885; circular 106). Drewton Dale (T.P.).

Holderness.—Driffield, banks of canal (J.D.B. circular 145). Beverley district, in moist places; generally distributed, but not numerous; Leckonfield, Meaux, Risby, and banks of R. Hull (J.D.B. 3). Hornsea (Leeds Conch. Soc., *Yorkshire Weekly Post*, July 11th, 1903). Generally distributed in damp woods and marshy places throughout Holderness; Bale Wood, Aldborough; Roos Bog; Hedon; Humbleton (T.P.).

Testacella haliotidea Drap.

This and the following species are obvious introductions.

Holderness.—Beverley, Swailes' Nursery Gardens (J.D.B. Nat. vol. 8, p. 185; J. of C. vol. 4, p. 67).

Testacella scutulum Sby.

Wolds.—Woodleigh, Hessle, F. Mason (Webb, J. of Malac. vol. 6, p. 26).

Vitrina pellucida (Müll.).

This species is most active in the winter months. A search then would probably show that it is as common in Derwentland and the Wolds as in Holderness.

Derwentland.—York district (S.W.N.); very general, but not abundant (R.M.C.).

Wolds.—Howsham Woods (Y.N.U. 1889). North Grimston, a few (Y.N.U. 1902). Sledmere (W.D.R. circular 93; Y.N.U. 1891). Lowthorpe (Y.N.U. 1890). Filey (W.C.H. 2nd circular 1883; Y.N.U. 1883; Y.N.U. 1903). Brough and Welton (Goole Sc. Soc., Nat. 2, p. 179; J.D.B. circular 69; F.W.F. circular 157; Y.N.U. 1901). Drewton Dale (T.P.).

Holderness.—Driffield (L.B. Ross circular 145); all over, some of them uncommonly beautiful (E.P.B.). Beverley district, abundant if sought for early in spring; Westwood; plantations near Rowley, and Meaux (J.D.B. 3). Meaux, long plantation (J.D.B., J. of C. 3, p. 332). Hornsea, in woods near the Mere (J.D.B. 2). Spurn (5th circular 1884; Y.N.U. 1884). Hull district, generally distributed (J.D.B. 1). Abundant in Holderness in plantations and thorn fences, especially during the winter; it may be found crawling on the under side of branches in stickheaps when the upper side is coated with ice; Hedon, abundant Dec. 24, 1902; Thearne, Jan. 1, 1904 (keen frost); Tansterne, Lelley, Humbleton, Aldborough, Jan. 5, 1904 (T.P.). Cottingham (J.W.B.).

Hyalinia lucida (Drap.).

Wolds.—Tibthorpe (E.P.B.); identification confirmed by Mr. J. W. Taylor.

***Hyalinia cellaria* (Müll.).**

Derwentland.—York district, abundant (S.W.N.); generally distributed (R.M.C.). Wressle (G.R.).

Wolds.—Howsham Woods (Y.N.U. 1889). Sledmere (Y.N.U. 1891). North Grimston, plentiful (Y.N.U. 1902). Filey, cliff (W.C.H. 2nd circular 1883; Y.N.U. 1883; Y.N.U. 1903), Flamborough, in copses (W.C.H. circular 62; F.W.F. circular 116). Bempton (W.C.H.; J.S.G.). Danes Dyke (Y.N.U. 1886). Lowthorpe (Y.N.U. 1890). Brough and Welton (J.D.B. circular 69; Y.N.U. 1901). Hessle, fine (J.D.B. 1.)

Holderness.—Driffild, banks of canal (L.B. Ross, circular 145); abundant (E.P.B.). Beverley district, common almost everywhere; Cherry Tree Lane (fine), Meaux, Westwood, Molescroft, and in gardens (J.D.B. 3). Hornsea, in woods, plentiful under decayed wood (J.D.B. 2). Meaux, long plantation (J.D.B. J. of C. 3, p. 332). Withernsea (F.W.F. circular 99). Hull district, common (J.D.B. 1). Common in Holderness (T.P.).

***Hyalinia alliaris* (Miller).**

A common species in at least two divisions.

Derwentland.—York district, rare, though well distributed (R.M.C.) Allertorpe (Y.N.U. 1893).

Wolds.—Howsham Woods (Y.N.U. 1889). Kildwick Percy (Y.N.U. 1885; circular 106). Sledmere (W.D.R. circular 93). Lowthorpe (Y.N.U. 1890). Filey, cliff (W.C.H. 2nd circular 1883). Bempton (W.C.H.; J.S.G.). Flamborough, in copses (W.C.H. circular 62). Risby (J.D.B. 1), plentiful (J.D.B. 3). Skidby; Hessle (J.D.B. 1). Harland Rise (J.D.B. 3). Brough (Y.N.U. 1901). North Cave (T.P.).

Holderness.—Driffild, banks of canal (J.D.B. circular 145); abundant (E.P.B.). Molescroft; Meaux (J.D.B. 3). Meaux, long plantation (J.D.B., J. of C. 3, p. 332). Hornsea, in woods sparingly (J.D.B. 2). Swan Island (F.W.F. Fretwell's Guide, and circular 150). Withernsea (F.W.F. circular 99), Common in Holderness plantations and stickheaps; Birkhill Wood; Thearne; Coniston; Burstwick; Thorp Garth, Aldborough; Skeffling; Spurn; Hedon, &c. (T.P.). Cottingham (J.W.B.).

***Hyalinia nitidula* (Drap.).**

Generally distributed, but not as common as the last species except in the neighbourhood of York.

Derwentland.—York district, common (S.W.N.); commoner than I have ever seen it elsewhere (R.M.C.). Allertorpe (Y.N.U. 1893). Wressle, river bank (G.R.).

Wolds.—Howsham Woods (Y.N.U. 1889). Kildwick Percy (Y.N.U. 1885; circular 106). North Grimston, common (Y.N.U. 1902). Sledmere (W.D.R. circular 93; Y.N.U. 1891). Filey cliffs (W.C.H. 2nd circular, 1883). Flamborough (F.W.F. circular 116). Danes Dyke (Y.N.U. 1886). Lowthorpe (Y.N.U. 1890). Brough and Welton Dale (Goole Sc. Soc., Nat. 2, p. 179; J.D.B. circular 69; J.D.B. 1; Y.N.U., 1901). Ferryby, on the Humber bank (J.D.B. circular 69). Hessle (J.D.B. 1). Drewton Dale (T.P.).

Holderness.—Beverley district, not common, Westwood, Cherry Tree Lane (J.D.B. 3). Hornsea, hedgerows, not frequent (J.D.B. 2). Anlaby Road, Hull (J.D.B. 1). Keyingham (J.D.B. 1). Withernsea (J.D.B. J. of C. 6, p. 397). Sparingly in hedges and plantations; Sutton; Hedon; Kelsey Hill; Cherry Cob Sands; Patrington; Aldborough (T.P.). Driffield district abundant (E.P.B.). Cottingham (J.W.B.).

Hyalinia radiatula (Alder).

Rare, even if all the records are correct.

Derwentland.—York district, common round York (R.M.C.).

Wolds.—Flamborough, in copses (W.C.H. circular 62). Sledmere (W.D.R. circular 93 and J. of C. 6, p. 395). Risby (Beverley F.N. and Sc. Soc. Nat, 7, p. 170); sparingly (J.D.B. 3).

Holderness.—Hornsea (Leeds Conch. Soc., *Yorkshire Weekly Post*, July 11th, 1903); south side of Mere (E.P.B.). Hull district, banks of Barmston Drain (J.D.B. 1).

Hyalinia pura (Alder).

Rare, except on the Wolds; apparently a characteristic shell of elevated districts.

Derwentland.—York district, scarce (R.M.C.). Allerthorpe (Y.N.U. 1893). Wressle (G.R.).

Wolds.—North Grimston, a few (Y.N.U. 1902). Sledmere (T.P.). Harland Rise; Westwood; plentiful (J.D.B. 3). Risby (Beverley F.N. and Sc. Soc. Nat. 7, p. 170; J.D.B. 3). Skidby; Hessele (J.D.B. 1). Brough and Welton (J.D.B. circular 69; F.W.F. circular 157). Welton (J.D.B. 1). Brantingham Dale (Y.N.U. 1901). South Cave (F.W.F. circular 111). Drewton Dale (T.P.).

Holderness.—Meaux (J.D.B. 3). Hornsea, in woods sparingly (J.D.B. 2). Wassand end of mere (F.W.F. Fretwell's Guide and circular 150). Withernsea (J.D.B. 1). Driffield district, common (E.P.B.).

Var. margaritacea (Jeff.):—North Grimston (Y.N.U. 1902). Sledmere (T.P.). Beverley Westwood (J.D.B. Nat. 8, p. 185).

Hyalinia crystallina (Müll.).

Common throughout the Riding.

Derwentland.—Common at York (W.C.H.). Allerthorpe (Y.N.U. 1893).

Wolds.—Howsham Woods (Y.N.U. 1889). North Grimston, a few (Y.N.U. 1902). Sledmere (W.D.R. circular 93; Y.N.U. 1891). Filey, cliff (W.C.H. 2nd circular, 1883; Y.N.U. 1883; Y.N.U. 1903). Speeton (J.S.G.). Flamborough (F.W.F. circular 116). Danes Dyke (Y.N.U. 1886). Lowthorpe (Y.N.U. 1890). Londesborough (J.D.B. circular 75). Brantingham Dale (Y.N.U. 1901). Brough and Welton (J.D.B. circular 69; F.W.F. circular 157). Drewton Dale (T.P.).

Holderness.—Beverley district, common; Harland Rise; Leckonfield; drift, Beverley Beck; Westwood; Risby; Meaux (J.D.B. 3). Withernsea (F.W.F. circular 99). Hull district, pretty generally distributed (J.D.B. 1). Common in Holderness; Hornsea; Aldborough; Spurn; Hedon; Patrington; Birkhill Wood (T.P.). Driffield district, pretty nearly anywhere (E.P.B.).

Hyalinia fulva (Müll.).

A common East Riding shell on all soils and even on pure sand.

Derwentland—York district, very well distributed but far from being common: Langwith Wood (R.M.C.). Dryham Plantation (T.P.).

Wolds.—Filey, cliff (W.C.H. 2nd circular 1883; Y.N.U. 1883; Y.N.U. 1903). Flamborough (F.W.F. circular 116). Danes Dyke (Y.N.U. 1886). Lowthorpe (Y.N.U. 1890). Sledmere (W.D.R. circular 93; Y.N.U. 1891). North Grimston, one (Y.N.U. 1902). South Cave (F.W.F. circular 111). Harland Rise (J.D.B. 3). Skidby (J.D.B. 1). Risby (Beverley F.N. and Sc. Soc. Nat. 7, p. 170; J.D.B. 3). Welton (J.D.B. 1). Brough and Welton (J.D.B. circular 69; F.W.F. circular 157; Y.N.U. 1901). Drewton Dale; Brantingham; North Cave (T.P.).

Holderness.—Drift, Beverley Beck (J.D.B. 3). Meaux, very abundant (J.D.B. 3); long plantation, abundantly, (J.D.B. J. of C. 3, p. 332). Hornsea, woods at Wassand end of Mere (F.W.F. Fretwell's Guide and circular 150). Hull district, banks of Barmston drain (J.D.B. 1). Spurn (T.P. Trans. I. 99). Birkhill Wood (T.P.). Common in Holderness plantations and stickheaps; Thorp Garth, Aldborough; Tansterne; Bale Wood; Roos Bog; Hedon (T.P.). Driffield district, common everywhere (E.P.B.).

Hyalinia nitida (Müll.).

This species is usually found among wet moss in marshy places, and such localities are not common.

Derwentland :—York, common (S.W.N.). Allerthorpe, in a ditch at the entrance to the common (Y.N.U. 1893).

Wolds.—Filey (Y.N.U. 1883). South Cave (F.W.F. circular 111, probably referring to Weedley Springs). Weedley Springs (T.P.). Kelleythorpe (T.P.).

Holderness.—Hornsea (J.D.B. 1): in marshy places near the mere, plentiful (J.D.B. 2; Y.N.U. 1881; F.W.F. Fretwell's Guide and circular 150; T.P. Trans. I. 99). Hull District, banks of Barmston drain (J.D.B. 1). Drift, Beverley Beck; Cottingham (J.D.B. 3). Roos Bog (T.P.).

[*Hyalinia excavata* (Bean).

This species is recorded for the North Riding from York (R.M.C.) and Scarborough, but has not yet been found in the East Riding. It is probable that a search on the northern slope of the Wolds would add it to our list.]

***Helix rotundata* Müll.**

A common species in plantations and hedgerows in all parts of the Riding.

Derwentland.—Common everywhere (W.C.H.). York District, common (S.W.N.); everywhere (R.M.C.). Allerthorpe (Y.N.U. 1893). Wressle, frequent (G.R.).

Wolds.—Howsham Woods (Y.N.U. 1889). Kildwick Percy (Y.N.U. 1885; circular 106). North Grimston, common (Y.N.U. 1902). Sledmere (Y.N.U. 1891). Filey plantation (W.C.H. 2nd circular, 1883). Hessle; Skidby; Risby (J.D.B. 1). Ferriby, Humber bank (J.D.B. circular 69). Brough (F.W.F. circular 157; Y.N.U. 1901). Hessle (J.D.B. in Taylor Mon. 1, p. 281). Fairly general but not in large numbers; Scarborough Road; Cowlam; Sledmere; Bainton; (E.P.B.).

Holderness.—Beverley district, Harland Rise; Risby; Cherry Tree Lane; Molescroft; plantation near Long Lane; locally abundant (J.D.B. 3). Drift, Beverley Beck (J.D.B. 3). Withernsea (F.W.F. circular 99). Abundant in hedgerows and plantations in Holderness; Hedon; Burstwick; Boreas Hill; Enholmes; Bale Wood; Aldborough; Humbleton; Hornsea, woods north of Mere, &c. (T.P.). Wansford Road, Driffeld (E.P.B.).

Var. *turtoni* Flem. :—York district, a few examples (S.W.N.); fairly common (R.M.C.).

Var. *alba* Moq. :—Howsham Woods (Y.N.U. 1889). Hessle (J.D.B. 1); five specimens (J.D.B. Nat. 4, p. 25).

***Helix pygmaea* Drap.**

Wolds.—Sledmere (Y.N.U. 1891). South Cave (F.W.F. circular 111). Brough (F.W.F. circular 157). Ferriby, on the Humber bank, at roots of furze (J.D.B. circular 69). Beverley Westwood, scarce (J.D.B. 3). Driffeld (L. B. Ross, J. of C. 4, p. 356). Welton Dale; Drewton Dale (T.P.).

Holderness.—Hornsea, woods north of mere; Spurn (T.P. Trans. I. 99). Generally distributed in Holderness, but never abundant; most easily found in the winter; Roos Bog; Preston, on hedge clippings on the Lelley Road; spinney on roadside, Lelley; spinney north of the railway, Twyers; Hedon; Kelsey Hill; Humbleton (T.P.).

[*Helix lamellata* Jeff. -

Not recorded for the East Riding. It occurs sparingly among *Luzula* at Raincliff Woods and Hackness, a few miles beyond the Riding boundary, and abundantly among *Luzula* at Hayburn Wyke and among beech leaves in Mulgrave Woods (F.W.F. and T.P. Sept. 1894.)]

Helix aculeata Müll.

Not in the Census, though recorded for all three divisions. It is fairly common in plantations in Holderness and on the Wolds.

Derwentland.—York district, rare (S.W.N.); rare, Langwith (J. Backhouse in R.M.C.).

Wolds.—Sledmere (Y.N.U. 1891). South Cave (F.W.F. circular 111), probably referring to Drewton Dale. Drewton Dale (T.P.). Brough (F.W.F. circular 157). Chalk pit at Tibthorpe (E.P.B.).

Holderness.—Beverley Westwood, scarce; plantation near Long Lane, moderately common on decayed wood (J.D.B. 3). Hornsea, woods at Wassand end of mere (F.W.F. Fretwell's Guide and circular 150); woods north of mere (T.P.). Bale Wood, Aldborough (T.P. Trans. I. 99). Twyers, Hedon, spinney north of the railway, Dec. 31, 1903; Kelsey Hill, April 4, 1904; Tansterne; Birkhill Wood; Humbleton (T.P.).

Helix pulchella Müll.

Derwentland.—York district, common about York (W.C.H.); rather rare, hedgebanks, Heslington (H. Richardson in R.M.C.). Allertorpe (Y.N.U. 1893).

Wolds.—Filey (Y.N.U. 1903). Bempton station (W.C.H. Nat. 12, p. 374, and "Flamborough," p. 136). Flamborough (F.W.F. circular 116). North Grimston station, several (Y.N.U. 1902). Hessle, Beverley, Skidby, Welton (J.D.B. 1). Brough and Welton, (Goole Sc. Soc. Nat. 2, p. 179; J.D.B. circular 69; F.W.F. circular 157). Drewton Dale; Brantingham; Sledmere (T.P.).

Holderness.—Drift, Beverley Beck (J.D.B. 3). Hornsea, under moss in a field near the mere (J.D.B. 2). Withernsea (F.W.F. circular 99). Generally distributed throughout Holderness, but seldom abundant; frequent under stones on roadsides near the sea; Kelsey Hill, abundant among wet moss; Marton, footpath to Withernwick; Spurn; Mappleton; Hedon; Lelley; Tansterne; Aldborough (T.P.). Driffeld, in great quantities on Wansford Road and generally (E.P.B.). Cottingham (J.W.B.).

Var. *costata* Mull. :—Skidby; Welton (J.D.B. 1). Brough and Welton (J.D.B. circular 69; F.W.F. circular 157). Harland Rise and Westwood, abundant (J.D.B. 3). Drewton Dale; Sledmere (T.P.). Mappleton; Kelsey Hill; Hornsea; the usual form under stones in dry places (T.P.). Cottingham (J.W.B.).

Sub-fossil; Hornsea beach, (H. F. Hall). Sewerby cliff (W.C.H. "Flamborough," p. 136).

[Helix lapicida Linn.

Included in the Census. No published records of this species have been found relating to the East Riding. Helmsley seems the nearest locality.]

Helix aspersa Müll.

Derwentland.—York district; everywhere (S.W.N.); far too common (R.M.C.). Wressle (G.R.).

Wolds.—Filey, cliffs (W.C.H. 2nd circular 1883; Y.N.U. 1903). Bempton (J.S.G.). Flamborough (F.W.F. circular 116). Burlington (W.C.H.). Bridlington (W.C.H. circular 62; Y.N.U. 1886). Lowthorpe (L. B. Ross, circular 84; Y.N.U. 1890.) Sledmere (Y.N.U. 1891). North Grimston (Y.N.U. 1902). Kildwick Percy (Y.N.U. 1885; circular 106). Sancton (Y.N.U. 1888). Brough and Welton (J.D.B. circular 69; F.W.F. circular 157; Y.N.U. 1901). Ferriby, Humber bank (J.D.B. circular 69).

Holderness.—Driffield (T. W. Bell, J. of C. 5, p. 221); banks of canal (L. B. Ross and J.D.B. circular 145); found generally (E.P.B.). Leckonfield; Long Lane, Pighill Lane, Cherry Tree Lane, Queensgate Road, and gardens, Beverley (J.D.B. 3). Meaux (J.D.B. 3). Hornsea, extremely abundant, especially near the sea (J.D.B. 2). Withernsea (J.D.B. Nat. 17, p. 253). Spurn (5th circular 1884; Y.N.U. 1884; Y.N.U. 1904). Hull district, common (J.D.B. 1). Everywhere (T.P.).

Var. *conoidea* Picard:—Bridlington Quay, road to Flamborough (W.C.H. in J.W.T., J. of C. 4, pp. 89, &c.; W.C.H. circular 62).

Var. *minor* Moq.:—Riccall (J.W.T. loc. cit.). Filey; Spurn (T.P.).

Var. *tenuior* Shuttl.:—York district; common (R.M.C.). "This variety has been several times recorded for Yorkshire, but without sufficient foundation" (J.W.T. loc. cit.).

Var. *flammea* Picard:—Burstwick (T.P.).

Var. *exalbida* Menke:—Bridlington, road to Flamborough (W.C.H. in J.W.T. loc. cit.; W.C.H. circular 62; Y.N.U. 1886; F.W.F. circular 116; W.C.H. "Flamborough" p. 136). Hornsea (F.W.F. Fretwell's Guide and circular 150; T.P. Trans. I. 100); first found by Mr. J. W. Boulton; it occurs here on a hedge bank faced with cobbles; though the bank is about four hundred yards in length, it is only found over a distance of two or three yards, and seldom more than two specimens at once; 1891-1903 (T.P.).

Helix nemoralis Linn.

Interesting details of the differences in colouring, weight, &c., between specimens from the Wolds and from Scarborough are given by Mr. W. Gyngell, Science Gossip, n.s., vol. 7, 1900-01, p. 286. It appears to be equally common in all districts; perhaps most abundant in Holderness though this is uncertain since the number seen depends altogether upon the weather. It is very abundant on Spurn Point—a range of sandhills with the smallest rainfall in England.

Derwentland.—York district; abundant (S.W.N.); not nearly so common as might be expected; Heslington (R.M.C.). Fulford (H. Richardson in R.M.C.). Allertorpe (Y.N.U. 1893). Howden (Wm. Nelson, J. of C. v. pp. 262-67). Wressle (G.R.).

Wolds.—Howsham Woods (Y.N.U. 1889). Pocklington (3rd circular 1885). Kildwick Percy (Y.N.U. 1885; circular 106). Wharram Grange, a few (Y.N.U. 1902). Sledmere (W.D.R. circular 93; Y.N.U. 1891). Filey, cliffs (W.C.H. 2nd circular 1883; Y.N.U. 1883; Y.N.U. 1903). Speeton and Flamborough (W.C.H. circular 62; F.W.F. circular 116). Danes Dyke, "the smallest I possess, having deep black bands" (W. Gyngell, loc. cit.). Sewerby (W.C.H. "Flamborough" p. 135). Bridlington (Y.N.U. 1886). Lowthorpe (Y.N.U. 1890). Sancton (Y.N.U. 1888). Brough and Welton (J.D.B. circular 69; F.W.F. circular 157; Y.N.U. 1901).

Holderness.—Driffeld, (T. W. Bell J. of C. v. p. 221; L. B. Ross and J.D.B. circular 145); common (E.P.B.). Beverley district, plentiful off the chalk; Cottingham; Leckonfield; Pighill Lane (in company with *hortensis*) Cherry Tree Lane, Grovehill Road, Meaux (J.D.B. 3). Hornsea, very common (J.D.B. 2). Withernsea (F.W.F. circular 99). Abundant at Spurn (J. Cordeaux, Nat. 10; 5th circular 1884; Y.N.U. 1884; Y.N.U. 1904); with interrupted bands (W. E. Clarke, Taylor Mon. I. p. 32); with transverse bands and no markings below the periphery (W.D.R. J. of C. iv. p. 15). Hull district, very common (J.D.B. 1). Common in Holderness (T.P.). With broken banding, Nafferton (E.P.B.).

Var. *minor* Moq. :—Brough, on the foreshore (Y.N.U. 1901). Hedon; Spurn (T.P.).

Var. *roseolabiata* Taylor :—Lowthorpe (Y.N.U. 1901). Burstwick (F.W.F. J. of C. vi. p. 398; *rubella roseolabiata* ooooo, F.W.F. J. of C. vi. p. 307; F.W.F. The Conchologist I. p. 55). Ridgmont (T.P. Trans. I. p. 101). These two refer to the same locality, *i.e.*, the trees by the side of the Halsham road, east of Ridgmont, where the varieties listed here are common (T.P.).

Var. *albolabiata* Von Mart. :—Bridlington (Y.N.U. 1886; F.W.F. circular 116). Chalk pit on the Wolds (W. Gyngell loc. cit.). Wressle, bank of Derwent, one specimen (G.R.). Railway Bridge, Hedon, several (T.P.). Ridgmont (T.P. Trans. I. p. 101). Sledmere, *rubella albolabiata* (T.P.).

Var. *hyalozonata* Taylor :—Burstwick (F.W.F. The Conch. I. p. 55). Ridgmont (T.P. Trans. I. p. 101). Hedon, drainbank (T.P.). Chalk pit on the Wolds (W. Gyngell loc. cit.). Railway Bridge, Hedon (T.P.). Bridlington (W.C.H. "Flamborough" p. 135).

Var. *roseozonata* Ckl. :—Ridgmont (T.P.). Cottingham (J.W.B.).

Var. *conica* Pascal :—Spurn (T.P.).

Var. *undulata* Gentiluomo :—Spurn (T.P.).

Var. *bimarginata* Picard :—Driffeld (L. B. Ross in J.W.T. J. of C. iv., pp. 28, &c.). Wressle (G.R.). Hedon (T.P.).

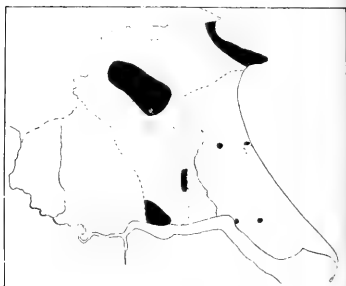
m. *scalariforme* Taylor :—Carnaby, (W.C.H. in J.W.T., J. of C., iv., p. 53; W.C.H. J. of C. iii., p. 178).

Var. *hybrida* Poiret :—These are now designated *H. nemoralis*, var. *roseolabiata* or *H. hortensis*, var. *fuscolabiata*. Settrington, near York (H. Pollard Nat. 3, p. 44). York, common but local (S.W.N.). Fulford (W.C.H., J. of C. 3, p. 178; R.M.C.). Speeton and Flamborough (W.C.H. circular 62). Beverley Road and Anlaby Road, Hull; Springhead (J.D.B. 1).

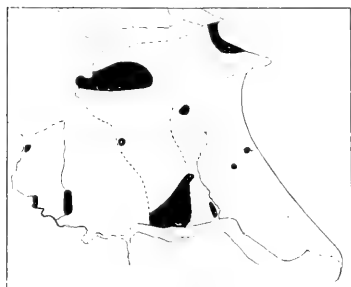




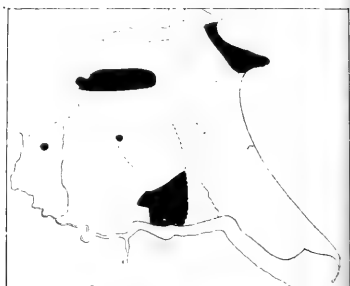
Helix hortensis.



Helix itala.



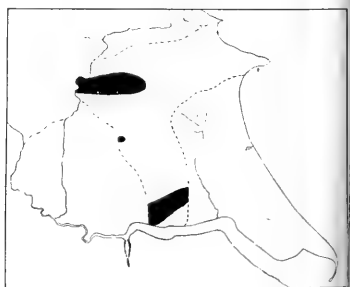
Helix arbustorum.



Clausilia perversa.



Helix rufescens.



Clausilia laminata.

The following have also been recorded:—Shell straw colour with white bands, Brough (J.D.B. 1). With straw coloured bands, Bridlington (W.D.R., J. of C. 5, p. 134). Var. *citronozonata*, chalk pit on the Wolds (W. Gyngell, loc. cit.). Var. *petiveria*, Wressle, common with and without bands (G.R.). Var. *trochoides* Clessin, Wressle (G.R.). The common colours in Holderness are *libellula* and *rubella*; I have *olivacea* from Hedon (T.P.).

Helix hortensis Müll.

The recorded stations suggest that the distribution of this species is determined by altitude, though it is found at low elevations in other districts. It is apparently common near York and in the central division, but is only known to occur in Holderness on the western edge at Beverley and Cottingham, though it has been carefully looked for elsewhere. Probably some of the records refer to *H. nemoralis* var. *albolabiata*.

Derwentland.—York district, common (S.W.N.); more abundant than *nemoralis* (R.M.C.). Fulford (W.C.H. in R.M.C.).

Wolds.—Settrington, near York (H. Pollard, Nat. 3, p. 44). North Grimston, a few (Y.N.U. 1902). Sledmere (Y.N.U. 1891); my specimens are *nemoralis albolabiata* (T.P.). Kildwick Percy (Y.N.U. 1885; circular 106). Filey (Y.N.U. 1883). Bampton (J.S.G.). Speeton and Flamborough (W.C.H. circular 62; T.P. circular 172). Not east of Bridlington Quay (W.C.H. "Flamborough" p. 135). South Cave, var. *lilacina* (F.W.F. circular 111). Welton Dale (F.W.F. circular 157; Y.N.U. 1901). Skidby (J.D.B. 1). Not common; King's Mill, Driffield; Bainton; Kirkburn Road, Tibthorpe; Lund Wold (E.P.B.). North Cave, with var. *lilacina* (T.P.).

Holderness.—Cottingham, var. *castanea* 00000 (F.W.F. J. of C. 6, p. 306; p. 398). Beverley (J.D.B. 1); extremely abundant in Pighill Lane, Long Lane, Queensgate Road, Cherry Tree Lane; in Pighill Lane a series of specimens may sometimes be found running by fine gradations from this species to *nemoralis*; *H. hortensis* var. *hybrida*, Pighill Lane, perhaps not quite typical but intermediate between *hortensis* and *nemoralis* (J.D.B. 3). Hedon Railway Bridge (T.P. Trans. i., p. 101) recorded in error. Clough Road, Newland (J.W.B.). Cottingham, New Village, and banks of Cottingham Beck, with var. *lilacina* (J.W.B.). Kilnsea, one specimen (Y.N.U. 1904).

Helix arbustorum Linn.

Like the last species, this is rare in the eastern division except at Beverley and Cottingham. References to J.W.T. here refer to Mr. Taylor's "Life history of *H. arbustorum*" (J. of C. 5, pp. 241-259, and 302-305). The altitudes given require correction in many cases, thus Bubwith is about 20 ft., but it is certainly more abundant in the central division than in the less elevated districts.

Derwentland.—York district, common (S.W.N.); rare as a general rule (R.M.C.). Fulford gravel pits (W.C.H.); 300 ft. (W.C.H. in J.W.T.); (H. Richardson in R.M.C.). Between Selby and Barlby (Y.N.U. 1875). Bubwith, 200 ft. (Grassham in J.W.T.). Wressle, abundant on river side (G.R.).

Wolds.—Howsham Woods (Y.N.U. 1889). Settrington, near York (H. Pollard Nat. 3, p. 44); 300 ft. (Pollard in J.W.T.). North Grimston, common (Y.N.U. 1902). Sledmere (W.D.R. circular 93; Y.N.U. 1891; Welburn in J.W.T.). Kildwick Percy (circular 106; R. Standen, J. of C. 6, p. 272). Driffield, 300 ft. (Pollard in J.W.T.). Filey, cliffs (W.C.H. 2nd circular 1883; Y.N.U. 1903); 200 ft. (Bailey in J.W.T.). Speeton cliffs (W.C.H. Nat. 12, p. 374 and "Flamborough," p. 135); 200 ft. (Bailey in J.W.T.); (T.P. circular 172.). Brantingham (Y.N.U. 1878); 300 ft. (Butterell in J.W.T.). Brough (J.D.B. 1; J.D.B. circular 69); 200 ft. (Butterell in J.W.T.); (F.W.F. circular 157). Welton (J.D.B. circular 69). Hessle (J.D.B. 1); 100 ft. (Butterell in J.W.T.). Carey chalk pit (T.P.). Skidby (J.D.B. 1). Risby (Beverley F.N. & Sc. Soc., Nat. 7, p. 170). Croombe near Sledmere (E.P.B.).

Holderness.—Beverley (J.D.B. 1), very abundant, Pighill Lane, Kitchen Lane, and Long Lane; found also at Queensgate Road, Cherry Tree Lane, and Leconfield; one of our commonest shells (J.D.B. 3; Butterell in J.W.T.). Hornsea, woods Wassand end of Mere (F.W.F. Fretwell's Guide and circular 150; T.P. Trans. I. p. 101). Rise (T.P. Trans. I. p. 101). Dunswell (T.P.). Newland, Hull, formerly, locality now built over (T.P.). The altitudes of these localities are Rise, 60 ft.; Hornsea, 20 ft.; Dunswell and Newland, 8 ft. Cottingham New Village (J.W.B.).

Var *flavescens* Moq.:—Brough (J.D.B. 1; J.D.B. circular 69; Butterell in J.W.T.). Welton (J.D.B. circular 69). Brantingham (Y.N.U. 1878). Sledmere (Y.N.U. 1890). Fulford (W.C.H. in R.M.C.; W.C.H. in J.W.T.). Beverley, Queensgate Road and Long Lane (J.D.B. 3; Butterell in J.W.T.). Carey chalk pits (T.P.). Cottingham (J.W.B.).

Var. *fuscescens* D. & M.:—Beverley (J.D.B. 3; Butterell in J.W.T.). Sledmere (Welburn in J.W.T.; Y.N.U. 1891). One, Wressle (J. Beanland). Cottingham (J.W.B.).

Var. *cincta* Taylor:—Wressle, one in 1884 (G.R.). Sledmere (T.P.). Cottingham (J.W.B.).

Var. *fusca* Fér:—Wressle, ditch near station, 1884, none in 1886; occurs also on the Derwent banks (G.R.); *fusca* + *roseolabiata*, Wressle (G.R.).

Var. *major* Pfr.:—Fulford gravel pits (W.C.H. in J.W.T.).

Var. *conoides* Westerl.:—"Probably," Fulford (W.C.H. in J.W.T.). "(?)," Wressle (G.R.).

Var. *depressa* Scholtz:—Wressle (J. Beanland).

Var. *trochoidalis* Roffiaen:—Wressle, on the artificial bank, one in 1884, three in 1886 (G.R.).

Helix cantiana Mont.

Common in all three divisions ; in South Holderness it is more abundant than *nemoralis*.

Derwentland.—York district, common but local (S.W.N.): hedgerows near York (W.C.H.); very abundant, between York and Dunnington common the whole way (R.M.C.). Allerthorpe (Y.N.U. 1893). Lund, near Osgodby (Wm. Nelson, Taylor, Mon. I. 101). Newport (W. Nelson J. of C. 5, pp. 262-267.). Wressle, bank (G.R.).

Wolds.—Filey (Y.N.U. 1903). Bampton (J.S.G.; J.S.G. J. of C., I. p. 369; W.C.H. circular 62, and "Flamborough" p. 135). Flamborough Head, in great profusion on brambles (W.C.H.; F.W.F. circular 116). Bridlington (Y.N.U. 1886; Overton, J. of Malac. 8, p. 53). Lowthorpe (L. B. Ross circular 84; Y.N.U. 1890). Sledmere (Y.N.U. 1891). North Grimston, abundant (Y.N.U. 1902). Kildwick Percy (Y.N.U. 1885; circular 106). Market Weighton (Y.N.U. 1888). Brough and Welton (J.D.B. circular 69; F.W.F. circular 157; Y.N.U. 1901). North Cave (T.P.). Bainton; Rudston; Lund Wold; Kelleythorpe (E.P.B.).

Holderness.—Driffield, banks of canal (L. B. Ross circular 145). Beverley, Queensgate Road, abundant and fine (J.D.B. 3). Hornsea (Leeds Conch Soc., *Yorkshire Weekly Post*, July 11th, 1903). Hull district, common (J.D.B. 1). Hedon (W.C.H.; T.P., Trans. I., p. 100). Paull: Cherry Cob Sands; Kilnsea; Aldborough, &c. (T.P.). Cottingham (J.W.B.). Foston; N. Frodingham; Skipsea; Hornsea; Driffield (E.P.B.).

Var. *rubescens* Moq.:—Wressle, with type (G.R.).

Var. *albida* Taylor:—Allerthorpe, type not seen (Y.N.U. 1893). Dunnington, a few (R.N.C.). Hedon (T.P.).

Var. *albicincta* Ckll.:—Lund, near Osgodby (W. Nelson, Taylor, Mon. I., p. 101).

Helix rufescens Penn.

This species is practically confined to the central division, being common only in the Flamborough district. If, as has been stated, it is approaching here its northern limit, perhaps the fact that chalk is the most favourable ground for mollusca generally influences its distribution.

Derwentland.—York district, common (S.W.N.); scarce (W.C.H.); "very scarce near the city, never taken it myself" (R.M.C.). Wressle, "appears to be rare, one specimen in 1884" (G.R.).

Wolds.—Filey, cliffs (W.C.H. 2nd circular 1883; Y.N.U. 1903). Bampton (J.S.G.); common (W.C.H.). Flamborough, "abounds" (W.C.H. circular 62 and "Flamborough," p. 135; F.W.F. circular 116). Speeton (T.P. circular 172). Danes Dyke (W.C.H. circular 62; Y.N.U. 1886). Bridlington (Rev. R. D. Maxwell, Nat. 4, 90). Lowthorpe (L. B. Ross circular 84; Y.N.U. 1890). Driffield (T. W. Bell, J. of C., 5, p. 221). Sledmere (Y.N.U. 1891). Brough and Welton, in gardens (J.D.B. circular 69; F.W.F. circular 157). Ferriby, Humber bank (J.D.B. circular 69).

Holderness.—Barmston, garden on cliff (T.P.). Skipsea (T.P.). Fokerleys, Hedon, one dead (T.P. Trans. I. p. 101). Driffeld district, found pretty generally; in great abundance on the reeds near the canal on the Wansford Road (E.P.B.).

Var. *alba* Moq.:—Danes Dyke (W.C.H.; W.C.H. circular 62, and "Flamborough," p. 135). Driffeld (T. W. Bell, J. of C. 5, p. 221).

Var. *rubens* Moq.:—Driffeld (T. W. Fell, loc. cit.).

Helix hispida Linn.

H. hispida Linn. = *H. concinna* Jeff.; *H. hispida* Jeff. = var. *hispidosa* Mousson. Most of the quoted records refer presumably to the latter, though no distinction has been made by the majority of recorders.

Derwentland.—York district, common (S.W.N.); *H. concinna* abundant, *H. hispida* less abundant (R.M.C.). Wressle, river bank, *hispidosa*, a few, *concinna* frequent (G.R.). Allerthorpe (Y.N.U, 1893).

Wolds.—Howsham Woods (Y.N.U. 1889). Kildwick Percy (3rd circular, 1885; Y.N.U. 1885; circular 106). Market Weighton (Y.N.U. 1888). North Grimston (Y.N.U. 1902). Sledmere (W.D.R. circular 93; Y.N.U. 1891). Filey, cliff (W.C.H. 2nd circular, 1883; Y.N.U. 1883; Y.N.U. 1903). Bempton (W.C.H. Nat. 12, p. 374). Flamborough (F.W.F. circular 116). Danes Dyke (Y.N.U. 1886). Lowthorpe (Y.N.U. 1890). Brough and Welton (J.D.B. circular 69; F.W.F. circular 157; Y.N.U. 1901). Ferriby, Humber bank (J.D.B. circular 69).

Holderness.—Driffeld, banks of canal (L. B. Ross and J.D.B. circular 145); *hispidosa* and var. *hispidosa*, very common (E.P.B.). I eckonfield, Cherry Tree Lane, Rowley, Westwood, Molescroft, Risby, Figham, Swinemoor, Meaux (J.D.B. 3). Hornsea, frequent (J.D.B. 2). Hull district, very common (J.D.B. 1). Withernsea (F.W.F. circular 99; *H. concinna* Y.N.U. 1892). Common in Holderness (T.P.). Kilnsea Warren, one (Y.N.U. 1904).

Var. *albida* Jeff.:—Banks of Spring Dyke, Hull (J.D.B. 1). Newland, Hull (T.P.). Speeton (T.P.). Ferriby, Humber bank (J.D.B. circular 69).

Var. *subrufa* Moq.:—Keyingham (J.D.B. 1). Danes Dyke (Y.N.U. 1886). Beverley district, with type, localities above (J.D.B. 3).

Var. *fusca* Menke:—Wressle, "one or two sent to Mr. Cockerell" (G.R.).

Subfossil. Hornsea (H. F. Hall).

Helix granulata Alder.

Wolds.—Howsham Woods (Y.N.U. 1889). Sledmere (Y.N.U. 1891, not seen by F.W.F. or myself).

Derwentland.—Newsholme (June 12, 1886, J. Beanland).

[*Helix fusca* Mont.

This species occurs abundantly in Yedmandale, a few miles beyond the Riding boundary, and still nearer, "near the Derwent at Castle Howard Railway Station" (W.D.R. J. of C. vii., p. 131), but it has not yet been recorded for the East Riding. "No *Helix fusca*," Howsham Woods (Y.N.U. 1889).]

Helix itala Linn.

This species has not been recorded for Derwentland, and is rare in Holderness, where all its known stations are on the drier glacial gravels. It is a characteristic shell of the central division.

Wolds.—Filey, cliff (W.C.H. 2nd circular, 1883; Y.N.U. 1883; Y.N.U. 1903). Bampton (W.C.H.; W.C.H. "Flamborough," p. 135). Speeton Road, in one place only (J.S.G.). Flamborough Head (W.C.H.). Flamborough, near chalk pits (W.C.H. circular 62 and "Flamborough," p. 135; F.W.F. circular 116). Settrington, near Malton (H. Pollard, Nat. 3, p. 77). North Grimston, common (Y.N.U. 1902). Fimber, chalk pit near railway (W.D.R. circular 93), abundant along the railway (Y.N.U. 1891; W.D.R. J. of C. 6, p. 395). Beverley Westwood, old quarry near the mill (J.D.B. 3). Skidby (J.D.B. 1). Drewton Dale (Goole Sc. Soc., Nat. 2, p. 41; T.P. Trans. I., 100). South Cave (F.W.F. circular 111). Welton (Goole Sc. Soc., Nat. 2, p. 179; J.D.B. 1; Y.N.U. 1901). Brough and Welton (J.D.B. circular 69). Ferriby, Humber bank (J.D.B. circular 69). Driffeld district, rather rare; Tibthorpe; Scarborough Road; Cowlam; Fimber; plentiful where found but very local (E.P.B.). Kelleythorpe (T.P.).

Holderness.—Hornsea, in a field near the sea (J.D.B. 2); towards the coast (F.W.F. Fretwell's Guide and circular 150); Seaton Road, hedge bank (T.P. Trans. I., 100). Keyingham, very plentiful (J.D.B. 1). Paull, gravel pit on the Humber bank (T.P. Trans. I. 100). Spurn, common on the sand hills (J. Cordeaux, Nat. Aug., 1884), is an error. Brandesburton (E.P.B.).

Var. *alba* Charp.:—Bampton (W.C.H.). Flamborough, near chalk pits (W.C.H. circular 62). Beverley Westwood (J.D.B. 3). Hornsea, (F.W.F. Fretwell's Guide and circular 150); Seaton Road (T.P.).

Var. *minor* Moq.:—Beverley (J.D.B. 3). Ferriby, Humber bank (J.D.B. circular 69).

m. sinistrorsum Jeff.:—Bridlington (H. Strickland, Jeffreys' Brit. Conch. I., p. 217).

Helix caperata Mont

Apparently rare in Derwentland, though common elsewhere, especially on the Wolds, along the coast, and on the Holderness gravel hills.

Derwentland.—York, common (S.W.N.); "I am surprised by its almost entire absence; bleached specimens in ploughed fields beyond Dunnington Common" (H. Richardson, in R.M.C.). Allerthorpe (Y.N.U. 1893).

Wolds.—Filey, cliff (W.C.H. 2nd circular, 1883). Bempton (J.S.G.). Flamborough, near chalk pits (W.C.H. circular 62 and "Flamborough," p. 135; F.W.F. circular 116). Burlington (W.C.H.). Bridlington, cliff (Y.N.U. 1886). North Grimston, common (Y.N.U. 1902). Fimber, chalk pit near railway (W.D.R. circular 93). Market Weighton (Y.N.U. 1888). Lime quarry near Westwood, Beverley; abundant, Pot and Ladle Quarry, Walkington (J.D.B. 3). Hessle; Skidby; Welton (J.D.B. 1). Brough and Welton (J.D.B. circular 69; F.W.F. circular 157; Y.N.U. 1901). Dæwton Dale; North Cave (T.P.). Somewhat local; Flamborough; Cowlam; Tibthorpe; Scarborough Road and Pockthorpe Road, Driffield (E.P.B.).

Holderness.—Auburn (W.C.H. Nat. 12, p. 374). Driffield, banks of canal (J.D.B. circular 145). Hornsea, on thistles and herbage on the cliffs near the promenade, very common (J.D.B. 2; Y.N.U. 1881); (E.P.B.), Keyingham (J.D.B. 1). Withernsea (F.W.F. circular 99). Spurn (Y.N.U. 1884; F.W.F. circular 140; T.P. Trans. I. 100). Kelsey Hill; Hedon; Paull (T.P. Trans. I. 100). Common in Holderness on the gravels and along the coast; Patrington Haven, Humber bank and old beach; Cherry Cob Sands; Sunk Island, bank of 1800; Humbleton; Aldborough (T.P.). Kilnsea Warren (Y.N.U. 1904). West Dock Reservation, Hull (J.W.B.).

Var. *ornata* Picard:—Cliff north of Bridlington (W.C.H. "Flamborough," p. 135). Bridlington (W.C.H. Nat. 12, p. 374). Flamborough (F.W.F. circular 116). Lime quarry near Westwood, Beverley (J.D.B. 3). Market Weighton (Y.N.U. 1888). Brough and Welton (J.D.B. circular 69). Welton Dale (J.D.B. 1). Hornsea, with the type, less common (J.D.B. 2; Y.N.U. 1881). Spurn, abundant (Y.N.U. 1884). Kelsey Hill (T.P.).

***Helix virgata* Da Costa.**

The distribution of this species practically coincides with that of the last.

Derwentland.—York district, common (S.W.N.); "less common than if we were near the sea" (R.M.C.). Allerthorpe (circular 106; Y.N.U. 1893).

Wolds.—Filey, cliff (W.C.H. 2nd circular, 1883; Y.N.U. 1883; Y.N.U. 1903). Speeton Road (J.S.G.). Flamborough (W.C.H. circular 62 and "Flamborough," p. 135; F.W.F. circular 116). Burlington (W.C.H.). Bridlington, cliffs (Y.N.U. 1886). Fimber, chalk pit near railway (W.D.R. circular 93; Y.N.U. 1891). North Grimston, abundant (Y.N.U. 1902). Lime quarry near Westwood, and Queensgate Road, Beverley (J.D.B. 3). Dæwton Dale (Goole Sc. Soc., Nat. 2, p. 41). Brough (Goole Sc. Soc., Nat. 2, p. 171; J.D.B. circular 69; F.W.F. circular 157). Welton (J.D.B. 1; J.D.B. circular 69). Hessle (J.D.B. 1). Kelleythorpe (E.P.B.).

Holderness.—Driffeld, banks of canal, abundant (L. B. Ross and J.D.B. circular 145). Auburn (W.C.H. Nat. 12, p. 374). Hornsea (J.D.B. 1); monochrome variety approaching var. *carinata* in form plentiful near sea (J.D.B. 2); cliff and hedgerows near the sea, abundant (J.D.B. 2); roads to cliffs (F.W.F., Fretwell's Guide and circular 150). Withernsea (F.W.F. circular 99). Spurn (3rd circular, 1884); "Not observed" (Y.N.U. 1884); common (T.P.); a few (Y.N.U. 1904). Anlaby Road and Spring Head Road, Hull (J.D.B. 1). Very common along the coast and frequent inland; Paull; Patrington; Sandlemere; Aldborough, &c. (T.P.). In great profusion; at Nafferton the roadside is alive with it (E.P.B.). West Dock Reservation, Hull (J.W.B.).

Var. *lineata* Olivi:—Withernsea (F.W.F. circular 99). Flamborough (F.W.F. circular 116). Sledmere; Hornsea; Atwick; Paull; common (T.P.).

Var. *nigrescens* Grat.:—Spurn (F.W.F. circular 140). = Kilnsea Warren (T.P. Trans. I. 99; Taylor Mon. 1, p. 94). Form approaching *nigrescens*, Barmston, Aug. 1901. (T.P.).

Var. *alba* Taylor.—Skipsea, on the cliffs south of the lacustrine deposit; sandhills north of Barmston (T.P.). A white form with a dark peristome is common with the type (T.P.).

Var. *hyalozona* Taylor:—In great abundance on the cliffs between Hornsea and Skipsea (F.W.F., Fretwell's Guide and circular 150); should be locality given above (T.P. Trans. I. 100). Barmston (T.P.).

Buliminus obscurus (Müll.).

This species is practically confined to the central division; the occurrence of a dead specimen at Welwick in the extreme south-east is inexplicable.

Derwentland.—Two along the Dunnington Road (R.M.C.).

Wolds.—Filey, cliffs (W.C.H. 2nd circular 1883). Speeton (J.S.G.; W.C.H.; W.C.H. circular 62 and "Flamborough" p. 136). Flamborough (W.C.H. circular 62). Lowthorpe (Y.N.U. 1890). Sledmere (Y.N.U. 1891). North Grimston, a few (Y.N.U. 1902). Kildwick Percy (Y.N.U. 1885; circular 106). Brough and Welton (3rd circular 1878; Goole Sc. Soc., Nat. 2, p. 171; J.D.B. circular 69; F.W.F. circular 157). Brantinghamthorpe (Y.N.U. 1901). Ferriby, Humber bank (J.D.B. circular 69). Cottingham; Drewton Dale (J.W.B.). Scarborough Road, Driffeld; near Middleton Ings; Tibthorpe; York Dale (E.P.B.).

Holderness.—Driffeld, near canal (L. B. Ross, circular 145; L. B. Ross J. of C. 4, p. 306); Wansford Road (E.P.B.). Drift, Beverley Beck (J.D.B. 3). Welwick, one dead shell, (T.P. Trans. I. 99).

Pupa anglica (Fér.).

Is abundant on the cliffs in the North Riding and extends southward as far as the cliffs are favourable; it has not been found on the clay cliffs of Holderness.

Wolds.—Filey, one specimen in the ravine (Y.N.U. 1883); first ravine south, three specimens (Y.N.U. 1903). Flamborough Head (W.C.H. Nat. 27, p. 271; E.P.B.).

***Pupa cylindracea* (Da Costa).**

Is common over the greater part of the Riding, though absent or overlooked in Derwentland.

Derwentland.—York, common (S.W.N.).

Wolds.—Filey, cliff (W.C.H. 2nd circular 1883; Y.N.U. 1903). Speeton (W.C.H.; J.S.G.; W.C.H. circular 62 and "Flamborough" p. 136). Flamborough (W.C.H. circular 62; F.W.F. circular 116). North Grimston, the mill, one (Y.N.U. 1902). Bishop Burton; Pot and Ladle quarry, Walkington; plentiful (J.D.B. 3). Beverley (J.D.B., Taylor, Mon. I. p. 255). Risby (J.D.B. 1; Beverley F.N. and Sc. Soc. Nat. 7, p. 170; J.D.B. 3). Hessle (J.D.B. 1). Brough (F.W.F. circular 157). Welton Dale (Y.N.U. 1901). Ferriby, Humber bank (J.D.B. circular 69). South Cave; Brantingham; North Cave (T.P.). Tibthorpe (E.P.B.).

Holderness.—Driffield, near canal (L. B. Ross, circular 145); Wansford Road (E.P.B.). Meaux (J.D.B. 3). Hornsea (Leeds Conch. Soc. *Yorkshire Weekly Post*, 11th July, 1903; E.P.B.). Swan Island, common (T.P.). Withernsea (F.W.F. circular 99; T.P. Trans. I. p. 99). Spurn; Patrington, road to Welwick; Burstwick (T.P. Trans. I. 99). Thearne; Tansterne, common; Bale Wood, Aldborough, common; stickheap, Thorp Garth, Aldborough; Rose Hill, near Hedon; Kelsey Hill, among gravel; Humber bank at Paull, Cherry Cob Sands and Welwick; Skeffling; Humbleton (T.P.). In its localities on the Humber it has probably been introduced with the chalk used in making the banks.

***Pupa muscorum* (Linn.).**

Is abundant in a few localities on the Wolds, and occurs in small numbers in the other two divisions in places where chalk has been used in the construction of banks, &c.

Derwentland.—Pocklington, on bridge over the canal (Y.N.U. 1893).

Wolds.—Bempton, plentiful (W.C.H. Nat. 12, p. 374, and "Flamborough," p. 136). Flamborough (F.W.F. circular 116). Danes Dyke (W.C.H.). Driffield (L. B. Ross, J. of C. 4, p. 356). Birdsall, a few (Y.N.U. 1902). South Cave (F.W.F. circular 111). Brough (J.D.B. circular 69; J.W.T. J. of C. 4, p. 28). Welton, wall near (J.D.B. 1 and circular 69). Brantingham (T.P.). Tibthorpe (E.P.B.).

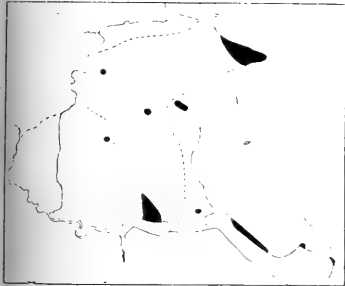
Holderness.—Road to Spring Head, near Hull, on chalk laid to support sleepers (J.D.B. 1). Spurn (Y.N.U. 1884; T.P. Trans. I., 98). Paull Holme, on the Humber bank (T.P. loc. cit.). Cherry Cob Sands, on the Humber bank; Welwick beach, three specimens under an old basket (T.P.). Wansford Road, Driffield (E.P.B.).



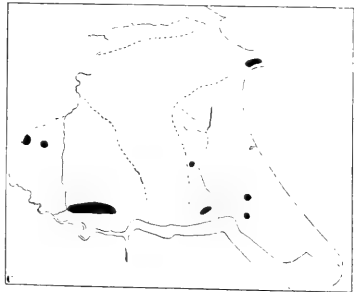
Pupa cylindracea.



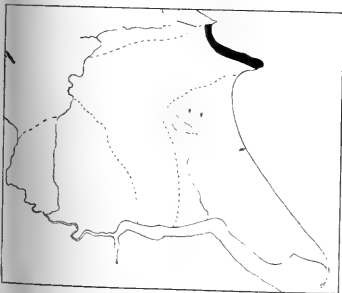
Ancyclus fluviatilis.



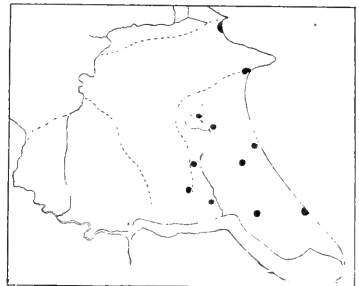
Pupa muscorum.



Limnæa glabra.



Pupa anglica



Planorbis fontanus.



Var. *indentata* C. Pfr.:—Brough or Welton (J.D.B. circular 69), recorded as *P. marginata*, and distinguished from var. *edentula* which is the type of *P. muscorum*.

Subfossil:—Hornsea (H. F. Hall). Sewerby, cliff (W.C.H. "Flamborough," p. 136; G. W. Lamplugh, Nat. 28, p. 447).

Vertigo antivertigo (Drap.).

Wolds.—Filey, cliff (W.C.H. 2nd circular 1883). Risby, one specimen (J.D.B. 3). South Cave (F.W.F. circular 111), probably referring to Weedley Springs. Weedley Springs (T.P.). Kelleythorpe (T.P.).

Holderness.—Hornsea, among moss near the Mere (F.W.F. Fretwell's Guide and circular 150; T.P. Trans. I., 90).

Vertigo pygmæa (Drap.).

Not included in the Census, though forwarded to the Conchological Society in 1891; probably generally distributed over the Wolds.

Derwentland.—York district, general (W.C.H. in R.M.C.).

Wolds.—Speeton (W.C.H.; J.S.G.; F.W.F. J. of C. 6, p. 398). Flamborough (F.W.F. circular 116), probably refers to Speeton. Pocklington (Y.N.U. 1893). Beverley Westwood, var. *quadridentata*, scarce (J.D.B. 3). Drewton Dale (F.W.F. J. of C. 6, p. 398). South Cave (F.W.F. circular 116), probably refers to Drewton Dale. Kelleythorpe (T.P.).

Holderness.—Withernsea, on road to Holmpton, "probably *pygmæa*" (J.D.B. circular 99). Waxholme, in the cutting (Y.N.U. 1892). Hedon, railway bridge, among moss, var. *quadridentata* (T.P.).

[Vertigo substriata (Jeff.).

Recorded for Hedon in error (T.P. Trans. I., 99).]

[Vertigo pusilla Müll.

Occurs about two miles beyond the Riding boundary on a wall at West Ayton, where it was first found by the Rev. W. C. Hey.]

Vertigo edentula (Drap.).

The commonest of the East Riding *Vertigines*, being found in plantations throughout the district. It is not included in the Census.

Derwentland.—Langwith (J. Backhouse in R.M.C.).

Wolds.—Speeton (exhibited for F.W.F. at the Conch. Soc., J. of C. 6, p. 398). Flamborough (F.W.F. circular 116), probably refers to Speeton. Sledmere (Y.N.U. 1891). Brough and Welton (Y.N.U. 1878; H. F. Parsons, Nat. 4, 90; J.D.B. circular 69).

Holderness.—Meaux, very abundant (J.D.B., 3); long plantation near Meaux, abundant (J.D.B., J. of C. 3, p. 332). Hornsea (F.W.F. Fretwell's Guide and circular 150); woods, north of Mere (T.P. Trans. I., p. 99). Bale Wood, Aldborough, fairly common (T.P. Trans. I., p. 99). Spurn (Y.N.U. 1884, one specimen taken by R. D. Darbshire).

Vertigo minutissima (Hartm.).

Not in the Census. It is hardly probable that this is indigenous on Spurn; the nearest recorded locality in the Humber basin is Went Vale.

Holderness.—Spurn (Kilnsea Warren), three specimens under an old basket, Aug. 4th, 1894; (T.P. Trans. I., 99); identification confirmed by Mr. J. W. Taylor.

Balea perversa (Linn.).

Not in the Census. Ash trees are common in Holderness hedgerows, but *Balea* is rare.

Holderness.—Ash trees near Wansford (J.D.B. circular 145). Anlaby Road, Hull, 1891 (F.W.F.), locality since destroyed. Humbleton, one young specimen on elm on the road to Aldborough, Jan. 5th, 1904; after a long search on May, 26th, 1904, a full grown specimen was found in the same locality, again on elm, though ash and beech also grow here (T.P.). Hedon, on willows near footpath to Paull (T.P.).

Clausilia perversa (Pult).

Practically confined to the central division, where it is abundant.

Derwentland.—York district, common near York (W.C.H.). Langwith (R. Backhouse in R.M.C.).

Wolds.—Howsham Woods (Y.N.U. 1889). North Grimston, common (Y.N.U. 1902). Kildwick Peacy (Y.N.U. 1885; circular 106). Sledmere (W.D.R. circular 93). Filey, plantation close to (W.C.H. 2nd circular, 1883; Y.N.U. 1903). Speeton (W.C.H. circular 62, and "Flamborough" p. 136). Flamborough (W.C.H. circular 62; F.W.F. circular 116). Danes Dyke (Y.N.U. 1886). Bridlington Quay (L. B. Ross, J. of C. 4, p. 356). Harland Rise; Rowley; Risby; Bentley (J.D.B. 3). Hessele; Skidby (J.D.B. 1). Brough and Welton (J.D.B. circular 69; F.W.F. circular 157; Y.N.U. 1901). South Cave; Drewton Dale; Carey chalk pit; North Cave (T.P.). Between Cottingham and Skidby (J.W.B.) Croom; Sledmere; York Dale (E.P.B.).

[Clausilia biplicata (Mont.).

Recorded for Welton or Brough by the Goole Sc. Society, Nat. 2, p. 179, but undoubtedly an error].

***Clausilia laminata* (Mont.).**

Found only in the central division, and more local than *perversa*.

Wolds.—Howsham Woods (Y.N.U. 1889). North Grimston, common (Y.N.U. 1902). Kildwick Percy (Y.N.U. 1885; circular 106). Sledmere (W.D.R. circular 93; Y.N.U. 1891). Skidby (J.D.B. 1). Rowley and Harland Rise (J.D.B. 3). South Cave (F.W.F. circular 111). Brough and Welton Dale (Goole Sc. Soc. Nat. 2. p. 179; 3rd circular 1878; Y.N.U. 1878; J.D.B. circular 69; Y.N.U. 1887; F.W.F. circular 157; Y.N.U. 1901). Drewton Dale (T.P). Between Cottingham and Skidby (J.W.B.). Croom; Sledmere; York Dale (E. P. B.).

Var. *tumidula* :—Sledmere (W.D.R. circular 93).

Var. *albina* Moq. :—Welton Dale (Y.N.U. 1887).

[*Azeca tridens* (Pult.).

Is included in the Census. No published records have been found].

***Cochlicopa lubrica* (Mull.).**

Derwentland.—York district, common (S.W.N.) abundant everywhere (R.M.C.). Allertorpe (Y.N.U. 1893).

Wolds. Howsham Woods (Y.N.U. 1889). Kildwick Percy (Y.N.U. 1885; circular 106). North Grimston, common (Y.N.U. 1902). Sledmere (Y.N.U. 1891). Filey, cliff (W.C.H. 2nd circular 1883; Y.N.U. 1883; Y.N.U. 1903). Speeton (J.S.G). Flamborough (F.W.F. circular 116). Danes Dyke (Y.N.U. 1886). Harland Rise; Westwood; Risby; Molescroft (J.D.B. 3). Brough and Welton Dale (Goole Sc. Soc., Nat. 2, p. 179; J.D.B. circular 69; F.W.F. circular 157). Brantinghamthorpe (Y.N.U. 1901). Everywhere, in isolated specimens (E. P. B.).

Holderness.—Driffeld, banks of canal (L. B. Ross circular 145). Drift, Beverley Beck; Cherry Tree Lane; Meaux (J.D.B. 3). Hornsea, woods near the Mere (J.D.B. 2). Withernsea (F.W.F. circular 99). Spurn (Y.N.U. 1884). Hull district, common (J.D.B. 1). Common (T.P).

Var. *lubricoides* Fer. :—Harland Rise (J.D.B. 3).

Subfossil, in blue clay, below the shell marl :—Bridlington, one specimen (W.C.H. Nat. 12, p. 374).

***Cæcilioides acicula* (Müll.).**

Not in the Census; probably common on the chalk and gravels.

Derwentland.—Fulford, gravel pits, dead (H. Richardson in R.M.C.).

Wolds.—North Grimston, not uncommon on the station wall (Y.N.U. 1902). Very common, six or eight feet deep in the ground, in Yorkshire, on the top of gravel pits and in Saxon coffins (Gray's Turton 1857, p. 159). Wolds, specimens from barrows in Mortimer's Museum, Driffeld (Nat. 15, p. 209). Harland Rise and Beverley Westwood, scarce (J.D.B. 3). Hessle, Welton, Skidby, dead shells, scarce (J.D.B. 1). Brough, on an old wall (J.D.B. circular 69). South Cave (F.W.F. circular 111), probably referring to Drewton Dale. Drewton Dale (T.P. Trans. I. p. 100).

Holderness.—Paul, gravel pit east of battery, dead shells, abundant (T.P. Trans. I. p. 98); not found in similar situations at Boreas Hill and Kelsey Hill (T.P.).

* *Succinea putris* (Linn.).

Derwentland.—York district, common (S.W.N.). Pocklington, canal (Y.N.U. 1893). Wressle, common on mud near the Fleet (G.R.).

Wolds.—Howsham Woods (Y.N.U. 1889). North Grimston, several very small specimens at the mill (Y.N.U. 1902). Market Weighton (Y.N.U. 1888). Filey (Y.N.U. 1883; Y.N.U. 1903). Speeton (J.S.G.). Flamborough (F.W.F. circular 116). Danes Dyke (Y.N.U. 1886). Kelleythorpe (T.P.).

Holderness—Driffeld, canal (L. B. Ross, circular 145). Leckonfield; Long Lane and Swinemoor; Figham; Cottingham, very fine; Meaux; common (J.D.B. 3). Hornsea, in damp places, common (J.D.B. 2; Y.N.U. 1881). Withernsea (F.W.F. circular 99). Hull district, very common (J.D.B. 1). Fine in ditches between Hull and Dunswell; Hedon; Kelsey Hill; Burstwick; Swine; Aldborough; Barmston; generally distributed (T.P.). River Hull, near Hull Bridge; Endyke Lane (J.W.B.). Hornsea; Wansford Road; Foston; Rotsea (E.B.P.).

Var. *vitrea* Moq. :—Banks of Barmston drain near Hull (J.D.B. 1). Wressle (G.R., T. D. A. Cockerell, Ann. and Mag. Nat. Hist. Ser. 5, vol. 19, p. 175).

Subfossil. Hornsea (H. F. Hall, p. 45). Bridlington (W.C.H. Nat. 12, p. 374). Nevilles Dyke (T.P.).

Succinea elegans Risso.

Derwentland.—York district, common (S.W.N.). Wressle, *S. pfeifferi* and var. *brevispirata* Baud (G.R.).

Wolds.—Filey, cliffs (W.C.H. 2nd circular 1883; T.P.). Flamborough (W.C.H. J. of C. 3, p. 178; F.W.F. circular 116).

Holderness.—Driffeld, debris from canal (J.D.B. circular 145). Beverley district, "*S. elegans* or more probably *pfeifferi*," generally distributed (J.D.B. 3). Withernsea (Y.N.U. 1892). Swine; Lambwath stream between Marton and Aldborough; Leven Canal; Hornsea Mere and Stream Dyke; Hedon; Sutton drain; Dunswell; not uncommon (T.P.). Endyke Lane (J.W.B.). Common along the canal bank and in streams and ponds in the Driffeld neighbourhood (E. P. B.).

Var. *albida* Taylor :—Beverley, Pighill Lane, 3 specimens (J.D.B. 3; J.D.B. J. of C. 3, p. 240; J. W. Taylor, J. of C. 4, pp. 28, &c.).

Var. *virescens* Morel. :—Wressle, *Succinea virescens*, one specimen identified by T. D. A. Cockerell (G.R.); *S. vitrea* (T. D. A. Cockerell, Nat. World, 4, p. 43); *S. vitrea* (Jeff), with figures (T. D. A. Cockerell, Ann. and Mag. Nat. Hist. ser. 5, vol. 19, p. 175).

Carychium minimum (Müll.).

Derwentland.—Very common about York (W.C.H.); “swarms” (R.M.C.). Snake Hall (T.P.).

Wolds.—Filey, cliffs (W.C.H. 2nd circular, 1883). Speeton (J.S.G). Flamborough (F.W.F. circular 116). Danes Dyke (Y.N.U. 1886). Lowthorpe (Y.N.U. 1890). Sledmere (Y.N.U. 1891). North Grimston, not uncommon (Y.N.U. 1902). Kildwick Percy (Y.N.U. 1885; circular 106). Abundant, Westwood, Risby, Molescroft, &c. (J.D.B. 3). Very abundant at Skidby (J.D.B. 1). Risby (Beverley F.N. and Sc. Soc. Nat. 7. p. 170). Brough and Welton (J.D.B. circular 69; F.W.F. circular 157; Y.N.U. 1901). South Cave; Drewton Dale (T.P.). In plenty at Flamborough Head and Sledmere (E.P.B.).

Holderness.—Driffield (L. B. Ross, J. of C. 4, p. 356); banks of canal (L. B. Ross, circular 145). Cottingham; banks of R. Hull (J.D.B. 3). Hull district, common in suitable localities (J.D.B. 1). Hornsea, woods near the Mere, common (J.D.B. 2). Withernsea (F.W.F. circular 99). Common in plantations, among moss, and under stones by the roadside; Hedon; Mappleton; Roos; Aldborough; Cherry Cob Sands, &c. (T.P.). Wansford Road (E.P.B.).

Segmentina nitida (Mull.).

This local species is found in one locality in Holderness: it has not been discovered in the lacustrine deposits.

Derwentland.—“The *Bootham Observer* states that in 1855 it was found in ponds on Tilmire . . . but I have met with it nowhere except at Askham.” (R.M.C.).

Holderness.—Hornsea Mere (Y.N.U. 1881; W.D.R. J. of C. 4, p. 13; F.W.F. Fretwell’s Guide and circular 150; T.P. Trans. I. p. 103). This species seems to prefer the shelter of the reeds, and may best be found along the first plantation on the Seaton Road or near the snipe ground on the south.

Planorbis fontanus (Lightfoot).

Occurs sparingly in a few localities in Holderness and the neighbouring parts of the Wolds.

Derwentland.—York district, very local (S.W.N.); sparingly distributed (R.M.C.). No East Riding localities are given near York; not recorded for the Wressle and Howden districts.

Wolds.—Filey, on caddis cases (Y.N.U. 1903). Burlington (W.C.H. G. Wingate in N. & T.); (W.C.H. circular 62); pond filled up (W.C.H. "Flamborough" p. 137). Risby, in the *Acorus calamus* pond, Aug. 1902 (T.P.).

Holderness.—Leckonfield Moat, sparingly (J.D.B. 3). Hornsea Mere (J.D.B. in N. & T.; C. Reid, p. 83; F.W.F. Fretwell's Guide and circular 150; E.P.B.; T.P.). Burstwick, ditch on side of road to Burton Pidsea; Withernsea, pond on cliff; Rise (T.P. Trans. I. p. 102). North Frodingham; Wansford (E.P.B.). Salt Ings Lane (J.W.B.).

Subfossil. Skipsea (F.W.F. Fretwell's Guide; T.P. Trans. I. p. 102).

Planorbis nautilus (Linn).

Very common in South Holderness near the Humber, but apparently becoming rarer further inland: it is one of the first shells to appear on recent reclamations.

Derwentland.—York district (S.W.N.); ponds near York (W.C.H.); rare in the Ouse (H. Richardson in R.M.C.). Cowbridge, near Newport: pond near Sleight's House (Wm. Nelson, J. of C. 5, pp. 262-267).

Wolds.—Flamborough, (F.W.F. circular 116). Pond near Danes Dyke House (Y.N.U. 1886; W.C.H. "Flamborough" page 137).

Holderness.—Hornsea Mere (Y.N.U. 1881; C. Reid p. 83). Withernsea (F.W.F. circular 99). Holderness ponds and dykes (F.W.F. circular 140). Pond at Springhead, Hull (J.D.B. 1). Ditch bordering Swinemoor, Beverley (J.D.B. 3). Ditches and ponds, Marfleet to Patrington: ponds on the Humber bank and inland, Marfleet (T.P. Trans. I. 102). Hedon; Patrington; Waxholme; Kilnsea; pond, roadside between Sutton and Wawne (H. E. Johnson); (T.P.).

Var. *crista* (Linn.) Swinemoor with type, abundant (J.D.B. 3). Springhead, Hull (J.D.B. 1). Withernsea (F.W.F. circular 99). Holderness ponds and dykes (F.W.F. circular 140). Hedon; Patrington; Waxholme (T.P.).

Subfossil. Hornsea (Hall p. 45; C. Reid p. 82). Mappleton; Atwick; Skipsea (T.P. 1892).

Planorbis albus (Linn).

Appears to be rare in Derwentland; it is not recorded in lists for Wressle or Howden.

Derwentland.—York, somewhat rare (S.W.N.); sparingly distributed (R.M.C.). Pocklington canal (Y.N.U. 1893).

Wolds.—Bempton, very fine in ponds close to the precipice (430 ft.) (W.C.H.; W.C.H., "Flamborough" p. 137). Flamborough, ponds near the cliffs very fine (W.C.H. circular 62; F.W.F. circular 116). Kildwick Percy (Y.N.U. 1885; circular 106). Londesborough (J.D.B. circular 75). Brough (J.D.B. circular 69). Welton, pond at entrance to dale and stream through village (J.D.B. 1; J.D.B. circular 69; Y.N.U. 1887; Y.N.U. 1901). North Cave (T.P.). Risby (T.P.).

Holderness.—Driffield, debris from canal (J.D.B. circular 145). Leven canal (J.D.B. 1; J.D.B. 3). Swinemoor, and drift Beverley Beck, moderately plentiful (J.D.B. 3). Hornsea Mere (Y.N.U. 1881; C. Reid p. 83). Beverley and Barmston drain (J.D.B. in N. & T.). Dunswell; Burstwick drain; drain near Cowden; Keyingham drain; local, and apparently preferring streams (T.P.). Easington (Y.N.U. 1904). Common from Hornsea to Driffield (E.P.B.).

Subfossil. Skipsea (T.P.). Hornsea (T. Sheppard, Nat. 27, p. 366).

[*Planorbis parvus* (Say).]

Subfossil, in the mud cliffs of Hornsea, Wm. Nelson, J. of C. 5. p. 139].

Planorbis spirorbis (Müll.).

“In profusion in all ponds,” (W.C.H.), accurately describes the distribution of this species. It is far more common than *P. vortex*.

Derwentland.—York district, with *vortex* (S.W.N.); general and abundant (R.M.C.). Brighton (J.D.B. circular 75). Newsholme (J.B.). Wressle (G.R.). Cowbridge; Sandholme; pond near Sleight's House; Featherbed Lane (Wm. Nelson, J. of C. 5, pp. 262-267).

Wolds.—Filey, cliff (W.C.H. 2nd circular, 1883; Y.N.U. 1883; Y.N.U. 1903). Speeton (J.S.G.); undercliff, abundant (N. & T.). Flam-borough Head (W.C.H.; F.W.F. circular 116). Bridlington, debris, a quantity (C. T. Musson in N. & T.). Kelleythorpe (T.P.).

Holderness.—Driffield canal (L. B. Ross, circular 145). Wansford (L. B. Ross in N. & T.). Skipsea (N. & T.). Swinemoor; Leckonfield; drift of Beverley Beck; Long Lane; Kitchen Lane; abundant (J.D.B. 3). Figham; Meaux; New Holland near Meaux (W.D.R. in N. & T.). Hull district, common; Spring Dyke (J.D.B. 1). Hessle; Hessle Road, Hull; Anlaby Road, Hull (J.D.B. in N. & T.). Ditch near Hornsea (W.D.R. in N. & T.). Hornsea Mere (C. Reid, p. 83). Ditch near Wassand, plentiful (J.D.B. 2). Saltend Common, ponds (T.P. Trans. 1, 102); probably destroyed by inundation in 1900. Ditch inside the Guard Bank, Saltend (T.P. Trans. 3, p. 41). Haltemprice Lane; Sproatley; Mappleton; pools in plantations, Hornsea; Withernsea; Hedon, Westlands, &c.; generally distributed (T.P.). At Hornsea and in the Foston streams and canal (E.P.B.).

Subfossil. Bridlington (W.C.H. Nat. 12, p. 374). Hornsea (H. F. Hall, p. 45).

Planorbis vortex (Linn.).

“*Cochlea exigua subfusca, altera parte planior, sine limbo, quinq; spirarum. . . . Huic deest limbo: at parte altera sc. superiore planior est, et ubi limbus in proxime*

superiore, ibi velut acies. . . Circa Eboracum in aquis stagnantibus aliquoties eam inveni. In fossis ad fluvium Darwent juxta Bubwith Ferry magna copia habentur." —Lister, Hist. Anim. Ang., p. 146. Messrs. Nelson and Taylor consider that this refers to the last species; Dr. Jeffreys, following Montagu, Donovan, Pennant, &c., thought it indicated *vortex*. The comparison is with *carinatus* ("e medio orbe limbus notabilis exstat"). It is generally agreed that *vortex* is rarer in East Yorkshire than *spirorbis*.

Derwentland.—York district, common (S.W.N.); by no means common or widely distributed (R.M.C.). Kirkham Abbey (Y.N.U. 1889). Pocklington Canal (Y.N.U. 1893). Riccall (N. & T.). Wressle, Fleetdyke, and near the Castle (G.R.). Pond near Howden Station (N. & T.). Sandholme and Ousethorpe (W. Nelson, J. of C. 5, pp. 262-67). Bubwith (J.D.B. circular 75). Selby Cut; ditch alongside Selby Cut; Newsholme (N. & T.).

Wolds.—Brantingham (J.D.B. circular 69).

Holderness.—Driffield (W.C.H. Nat. 12, p. 374); plentiful in R. Hull (L. B. Ross in N. & T.); debris in canal (J.D.B. circular 145). Skipsea, pond near the coast (N. & T.). Hornsea Mere (J.D.B. 2). (Y.N.U. 1881; C. Reid, p. 83). Withernsea (F.W.F. circular 99). Figham, and drift of Beverley Beck, not common (J.D.B. 3). Figham (N. & T.; J.D.B., J of C. 3, p. 177). Hull district, not as common as *spirorbis*; Spring Dyke; Beverley and Barmston Drain (J.D.B. 1). Thorp Garth, Aldborough; Hedon; Burstwick (T.P.). Typical *vortex* is rare in Holderness. Lambwath stream, near Skirlaugh (T.P.). Haltemprice Lane (J.W.B.). Common (E.P.B.).

Subfossil. Hornsea (H. F. Hall, p. 45).

Planorbis carinatus (Müll.).

Derwentland.—York district, common and well distributed (R.M.C.). Pocklington Canal (Y.N.U. 1893). Riccall; Howden; Selby Cut (N. & T.).

Wolds.—Bridlington (G. Wingate in N. & T.).

Holderness.—Driffield Canal (L. B. Ross and J.D.B. circular 145). River Hull at Driffield (L. B. Ross in N. & T.). Leven Canal; Beverley (J.D.B. 1). Leven Canal; Figham; Leckonfield Moat, local and not plentiful (J.D.B. 3). New Holland, near Meaux (W.D.R. in N. & T.). Hornsea Mere (J.D.B. 2; Y.N.U. 1881; C. Reid, p. 83); exceedingly fine (F.W.F. Fretwell's Guide and circular 150). Withernsea (F.W.F. circular 99). Keyingham drain; Kelsey Hill; Ryhill drain, local (T.P.). Endyke Lane (J.W.B.). Common (E.P.B.).

Subfossil. Bridlington (W.C.H. Nat. 12, p. 374).

Planorbis umbilicatus (Müll.).

Derwentland.—York district, abundant (S.W.N.); very common (W.C.H.). Naburn Lock, plentiful 1887 (J. Grassham). Riccall; Bubwith; common in ponds near Barlby Bank, Selby (W.D.R.).

Howden; Newsholme Road near Howden; Newsholme; pond, Wressle; pond between Wressle and Brighton; pond near Brackenholme (N. & T.). Wressle, common in most drains (G.R.). Cowbridge; Ousethorpe; Featherbed Lane; Wressle (Wm. Nelson, J. of C. 5, pp. 262-67). Kirkham Abbey (Y.N.U. 1889).

Wolds—Kildwick Percy (Y.N.U. 1885; circular 106). Bridlington (J.S.G.; G. Wingate in N. & T.; Y.N.U. 1886).

Holderness—Driffeld Canal (L. B. Ross & J.D.B. circular 145); plentiful in R. Hull (L. B. Ross in N. & T.). Wansford (L. B. Ross in N. & T.). Beverley district, everywhere common; Swinemoor; Figham; Leckonfield; Long Lane (fine); Kitchen Lane; Weel Carrs; Common bank Nook (J.D.B. 3). Meaux, common (W.D.R. in N. & T.). Rejectamenta Beverley Beck (J.D.B. in N. & T.). Hull district, common (J.D.B. 1). Cottingham Road; Spring Dyke; Holderness Road (J.D.B. in N. & T.). Hornsea Mere, in ponds, fine (J.D.B. 2; Y.N.U. 1881; C. Reid, p. 83). Withernsea (F.W.F. circular 99). Kelsey Hill; Hedon; Lambwath stream and ditches, Marton to Aldborough; Burstwick; Sandlemere; Barmston; Dunswell; common (T.P.). Common (E.P.B.). Southcoates Lane (J.W.B.).

Subfossil. Hornsea (H. F. Hall, p. 45). Bridlington (W.C.H. Nat. 12, p. 374). Mappleton; Atwick; Skipsea (T.P.).

Planorbis corneus (Linn.).

Derwentland.—York (Hincks, Ann. Nat. Hist. Ser. I. 5, p. 367; S.W.N.); common (R.M.C.). Brighton (J.D.B. circular 75). Pond near the Vicarage, Riccall; Brighton (W.D.R.). Newsholme Road near Howden (N. & T.). Pond near the Castle and in the Fleetdyke, Wressle; Pond near the Crescent Inn, going to Bubwith (G.R.). Sandholme; Featherbed Lane (Wm. Nelson, J. of C. 5, pp. 262-67).

Wolds.—Burlington (J.S.G.). Bridlington (W.C.H. circular 62; G. Wingate in N. & T.). Boynton fishponds (W. C. Hey, Nat. 12, p. 374), very large (L. B. Ross in N. & T.). Brantingham (J.D.B. circular 69). Marsh near Kirkburn Gypsey Race (T.P.).

Holderness.—Driffeld Canal (J.D.B. and L. B. Ross, circular 145). Foston and Brigham (L. B. Ross in N. & T.). Wansford (J.D.B. in Taylor, Mon. I, p. 305). Swinemoor; Figham; Long Lane (J.D.B. 3). Beverley Parks; rejectamenta Beverley Beck (J.D.B. in N. & T.). Figham (J.D.B. J. of C. 3, p. 177); one specimen W.D.R. in N. & T.). Hornsea Mere (Y.N.U. 1881; C. Reid, p. 83; T.P. Trans. I. 103). Hull district, generally distributed, plentiful in Spring Dyke (J.D.B. 1); with note on colour (J.D.B. J. of C. 3, p. 137). Cottingham Road, 1878; Holderness Road, 1879 (J.D.B. in N. & T.). Skidby drain (W. Nelson, J. of C. 7, p. 367). Burstwick, head of Ryhill drain (T.P. Trans. I, p. 103). Barmston; Lambwath stream and ditches, Marton to Aldborough; Keyingham drain near Thorneycrofts; Dunswell; not common (T.P.). Endyke Lane (J.W.B.). Plentiful in streams at Foston and Rotsea Carr (E.P.B.).

Var. *minor*:—Newsholme (G. W. Chaster, J. of C. 7, p. 367).

Var. *major*:—Boynton fishponds, 33×13 mm., 35×14 mm. (L. B. Ross in N. & T.).

Planorbis contortus (Linn.).

Derwentland.—York district, common (S.W.N.); pretty common (R.M.C.). Newsholme, White Rails Dyke (J. Beanland).

Wolds.—Bridlington (J.S.G. ; G.R. and G. Wingate in N. & T.) Filey (Y.N.U. 1903). Lowthorpe, Brace Bridge (Y.N.U. 1890). Marsh near Kirkburn Gypsy Race (T.P.).

Holderness.—Wansford (L. B. Ross in N. & T.). Swinemoor; Figham; drift of Beverley Beck; Kitchen Lane; pond near England Springs; very abundant (J.D.B. 3). Meaux and New Holland near Meaux (W.D.R. in N. & T.). Hornsea Mere (Y.N.U. 1881; C. Reid, p. 83). Hull district, found with *P. corneus* (J.D.B. 1). Newland, Cottingham Road, and Spring Dyke (J.D.B. in N. & T.). Haltemprice Lane; Sutton; Hedon; Keyingham drain; not common (T.P.).

Subfossil. Hornsea (C. Reid, p. 82). Skipsea (T.P.).

Bullinus hypnorum (Linn.).

Locally abundant in Derwentland and Holderness.

Derwentland.—York district, common, but local (S.W.N.); very abundant in the York district; Tilmire (R.M.C.). Harlethorpe, near Bubwith; pond near Brighton (N. & T.). Wressle (G.R. ; J.B. in N. & T.). Cowbridge; Sandholme; Featherbed Lane (W. Nelson, J. of C. 5, pp. 262-67).

Wolds.—Burlington (W.C.H.).

Holderness.—Driffield, plentiful in R. Hull (L. B. Ross in N. & T.). Drift of Beverley Beck; Cherry Tree Lane; Kitchen Lane; Commonbank Nook; not common, disappears at times (J.D.B. 3). Anlaby Road and Beverley Road, Hull (J.D.B. 1). Hornsea (Leeds Conch. Soc., *Yorkshire Weekly Post*, July 11th, 1903). Hedon, not uncommon (T.P. Trans. I. p. 103). Ditch inside guard bank, Saltend (T.P. Trans. III. p. 41). Haltemprice Lane; Dunswell; Ridgmont; Flinton; local (T.P.). Endyke Lane (J.W.B.). Stream near Hornsea Mere (E. P. B.).

Physa fontinalis (Linn.).

Derwentland.—York district, common (S.W.N.); (W.C.H.); decidedly less common than *hypnorum* (R.M.C.). Allerthorpe (Y.N.U. 1893). Ditch along the Ouse between Selby and Barlby (Y.N.U. 1875). Riccall; Hemingborough; pond near Howden Station (N. & T.). Wressle, Fleetdyke (G.R.). Ousethorpe; Sandholme (W. Nelson, J. of C. 5, pp. 262-67).

Wolds.—Flamborough, "a prevailing species" (W.C.H. circular 62). Bridlington (Y.N.U. 1886; G. Wingate in N. & T.). Lowthorpe, Brace Bridge (Y.N.U. 1890). Londesborough (J.D.B. circular 75). Brantingham (J.D.B. circular 69). Ellerker, near Brough (N. & T.).

Holderness.—Driffield Canal (L. B. Ross and J.D.B. circular 145). Figham; Swinemoor; Long Lane; Leckonfield Moat (J.D.B. 3). New Holland, near Meaux (W.D.R. in N. & T.). Hull district, common (J.D.B. 1). Newland, near Hull (N. & T.). Hornsea Mere (Y.N.U. 1881; C. Reid, p. 83); "reaches usually large dimensions" (F.W.F. Fretwell's Guide and circular 150). Ditches near Wassand (J.D.B. 2). Hedon; Sutton; Dunswell; Ryhill drain; Aldborough; moderately common (T.P.). Withernsea (F.W.F. circular 99). Skidby Drain (J.W.B.). "Abounds" (E.P.B.).

Amphipeplea glutinosa (Müll.).

Holderness.—Skidby drain, near Hull, found by Mr. J. F. Robinson, Oct. 1889 (F.W.F., J. of C. 6, pp. 251-53; Taylor Mon. I. p. 202; &c.), not seen recently (J.W.B. and T.P.).

Limnæa peregra (Müll.).

Derwentland.—York: abundant (S.W.N.); a dwarf form abounds in deepish water in the Ouse (R.M.C.). Naburn Lock (J. Grassham); Barby, common on bank of Ouse (W.D.R.); Hemingborough; Harlethorpe, near Bubwith (N. & T.). Wressle, common (G.R.). Newport; Cowbridge; Sandholme; Ousethorpe; Featherbed Lane; Wressle Castle (Wm. Nelson, J. of C. 5, pp. 262-267). Allerthorpe (Y.N.U. 1893). Kirkham Abbey (Y.N.U. 1889).

Wolds.—Filey (Y.N.U. 1883; Y.N.U. 1903). Buckton pond, fine (W.C.H. circular 62, and "Flamborough" p. 137). Burlington (J.S.G.). Bempton (W.C.H.). Pond near Danes Dyke House (Y.N.U. 1886). Flamborough (F.W.F. circular 116). North Grimston, abundant and fine (Y.N.U. 1902). Sledmere (Y.N.U. 1891). Kildwick Percy (Y.N.U. 1885; circular 106). Londesborough (Y.N.U. 1880; J.D.B. circular 75). Riplingham (F.W.F., Kew's "Dispersal of Shells," p. 10, and circular 157). Brough (J.D.B. circular 69; Y.N.U. 1901). Welton, pond at entrance to Dale, fine (J.D.B. 1).

Holderness.—Driffield canal (J.D.B. and L. B. Ross, circular 145). Leven canal (J.D.B. 1). Beverley, common and abundant everywhere; fine in Leckonfield Moat, and ditch in Long Lane; spire short and mouth wide, Figham and Pighill Lane (J.D.B. 3). Hornsea, generally distributed, but not very abundant (J.D.B. 2; Y.N.U. 1881; C. Reid p. 83). Withernsea (F.W.F. circular 99). Saltend Common, Cattle pond (T.P. Trans. I. p. 104). Saltend, ditch inside the guard bank; Sunk Island (T.P. Trans. III., pp. 33 & 41). Everywhere (T.P.). Everywhere (E.P.B.). Easington (Y.N.U. 1904).

Var. ovata Drap. :—Newsholme (J.B.). York district, not uncommon (R.M.C.). Hornsea Mere (?) (Y.N.U. 1881). Skidby drain (W. Nelson, J. of C. 6, p. 243). Bempton, extraordinarily large (W.C.H.). Grimston; Skeffling; Sutton; Hedon; Lambwath stream (T.P.).

Var. maritima Jeff. :—Sunk Island (T.P.).

Var. inflata Kob. :—Hedon (T.P.).

Var. *stagnaliformis* Taylor. Buckton (W.C.H. in J.W.T., J. of C. 4, p. 82). Kirkburn Gypsey Race (E.P.B.).

Subfossil. Bridlington (Lamplugh in C. Reid p. 73; W.C.H., Nat. 12 p. 374). Hornsea (H. F. Hall, p. 45; Reid p. 82; T. Sheppard, Nat. 27, p. 366). South of Withernsea (W.D.R. J. of C. 7, p. 88). Easington; Holmpton; Nevilles Dyke; Mappleton; Atwick Gap; Atwick; Skipsea; Ulrome (T.P.). Linnæa, Bridlington (Phillips, 1875, p. 83). Several species, Dimlington (?), (H. F. Hall, p. 39).

Linnæa auricularia (Linn.).

Apparently a rare species in the East Riding where it seldom attains large dimensions.

Derwentland.—Fine and characteristic at York (Hincks, Forbes and Hanley 4, p. 172); occurs rarely in the Ouse (R.M.C.). Newsholme, rare (J. Beanland).

Wolds.—Kildwick Percy (Y.N.U. 1893).

Holderness.—Driffell canal (L. B. Ross and J.D.B. circular 145). Foston (L. B. Ross, J. of C. 4, p. 356). Leven canal (J.D.B. 3). Hornsea Mere (C. Reid, p. 83; "in the deeper parts," F.W.F. Fretwell's Guide and circular 150). Swine; Burstwick drain; Sutton drain; local (T.P.). Foston stream and canal; Hornsea Mere; Rotsea Carr; canal, Wansford Road (E.P.B.).

Subfossil. Hornsea (T. Sheppard, Nat. 27, p. 366).

Linnæa stagnalis (Linn.).

Not a common species. As it is rare in the lacustrine deposits it is probable that it has never been common.

Derwentland.—York district; common (S.W.N.); quite a rarity (R.M.C.). Riccall (Y.N.U. 1875). Newsholme (J.B.). Wressle (G.R.). Featherbed Lane (Wm. Nelson, J. of C. 5, pp. 262-67). Brighton (J.D.B. circular 75).

Wolds.—Boynton fishpond (W.C.H., Nat. 12, p. 374). Risby fishpond, very sparingly (J.D.B. 3).

Holderness.—Driffell (L. B. Ross circular 145). Beverley (J.D.B. 1); formerly at Figham, but dead shells only to be found now (J.D.B. 3). Cottingham Road; fine in Spring Dyke (J.D.B. 1). Hornsea Mere (Y.N.U. 1881; C. Reid, p. 83). Kelsey Hill; Burstwick drain; Lambwath stream and ditches, Marton to Aldborough; Keyingham drain; Grimston; broken shells round a "thrush stone," Kelsey Hill, April 21st, 1903; not common (T.P.). Endyke Lane (J.W.B.). Driffell canal; Foston streams; Hornsea Mere; North Frodingham, drain near canal (E.P.B.).

Var. *fragilis* (Linn.):—York, rare (S.W.N.). Wressle, a small form like *fragilis* in the Fleetdyke in 1884 (G.R.). Kelsey Hill (?) (T.P.).

Subfossil. Skipsea, a few (Phillips, 1829, p. 64; 1875, p. 80; C. Reid, p. 79). Hilston, plenty (Phillips, 1829, p. 64; 1875, p. 74). One example, south of Withernsea (by E. Hawkesworth, W.D.R., J. of C. 7, p. 88). Holmpton; Nevilles Dyke; Atwick; rare (T.P.).

Limnæa palustris (Müll.).

Derwentland.—York district, “admodum frequens in stagnis circa Eboracum” (Lister, Hist. Animal. Angliæ, p. 139); rather well distributed (R.M.C.). Westow (Y.N.U. 1889). Newsholme (J.B.). Cowbridge; Ousethorpe; Featherbed Lane (W. Nelson, J. of C. 5, pp. 262-67).

Wolds.—Filey (Y.N.U. 1903). Flamborough, common but small (W.C.H. circular 62; F.W.F. circular 116). Pond near Danes Dyke House (Y.N.U. 1886; W.C.H. “Flamborough” p. 137). Burlington (J.S.G.); fine, millpond (W.C.H.; W.C.H. circular 62). Kelleythorpe (T.P.).

Holderness.—Driffeld Canal (L. B. Ross and J.D.B. circular 145; L. B. Ross, J. of C. 4, p. 356). Beverley (J.D.B. 1); locally abundant, but by no means a common species here; Long Lane; Swinemoor; Pighill, where it appears to prefer mud to water, and resembles *truncatula* in its habits; Figham; pond in field beyond Kitchen Lane; Commonbank Nook (J.D.B. 3). Cottingham (J.D.B. 3). Spring Dyke, Hull (J.D.B. 1). Hornsea (J.D.B. 1); ditches and swampy places near the Mere (J.D.B. 2; Y.N.U. 1881; C. Reid, p. 83). Haltemprice Lane; ditch parallel to Cottingham Beck; Sutton; Lambwath stream and ditches, Marton; Dunswell; Kelsey Hill; Springhead; Hedon; not common in East Holderness (T.P.). Endyke Lane (J.W.B.). Canal and trout streams, Driffeld; Foston streams; Hornsea; generally distributed (E.P.B.).

Var. *tincta* Jeff. :—Newsholme (J.B.).

Var. *elongata* Moq. :—Newsholme (J.B.). Burlington (J.S.G.). Near Hull (W. L. W. Eyre, J. of C. 7, p. 87). Sutton; Railway Bridge, Hedon (T.P.).

Var. *stricta* :—Near Hull (W. L. W. Eyre, *loc cit.*).

Var. *lacunosa* Zgl. :—Sutton; Dunswell (T.P.).

Var. *minor* Taylor :—Railway Bridge, Hedon (T.P.); several almost as narrow as *L. glabra*, and one specimen turreted.

Var. *variegata* :—Hedon (as above), with many showing spiral banding, April 1904 (T.P.).

Var. *corva*. (Gmel.) :—Driffeld (E.P.B.).

Subfossil. Bridlington (W.C.H., Nat. 12, p. 374).

Limnæa truncatula (Müll.).

There are few records for Derwentland; it is very abundant in the other divisions.

Derwentland.—York district, common (S.W.N.); abundant (R.M.C.). Newsholme, White Rails drain (J. Beanland). Wressle, on caddis cases in the Fleetdyke (G.R.). Newport (Wm. Nelson, J. of C. 5, pp. 262-67).

Wolds.—Filey, cliffs (W.C.H. 2nd circular, 1883; Y.N.U. 1883; Y.N.U. 1903). Flamborough (F.W.F. circular 116). Pond near Danes Dyke House (Y.N.U. 1886). North Grimston, one specimen (Y.N.U. 1902). Kildwick Percy (Y.N.U. 1885, circular 106). Brantingham (J.D.B. 1; J.D.B. circular 69; Y.N.U. 1901). South Cave to Brough, a small form in chalk pits (F.W.F. circular 157). Hessle, in a lime quarry, fine (J.D.B. 1). Kelleythorpe (T.P.). Cottam (E.P.B.).

Holderness.—Driffeld Canal (J.D.B. and L. B. Ross circular 145). Swinemoor; Figham; Leckonfield Park; Kitchen Lane; on the muddy banks of the R. Hull in countless numbers, generally small (J.D.B. 3). Hornsea, ditch near Mere (J.D.B. 2; Y.N.U. 1881; C. Reid, p. 83). Barmston Drain, Hull (J.D.B. 1). Withernsea (Y.N.U. 1892). Pond, roadside between Sutton and Wawne (H. E. Johnson). Hedon; Sutton; Lambwath stream; Skeffling; Patrington; Kelsey Hill; &c.; common everywhere (T.P.). Everywhere (E.P.B.).

Subfossil. Hornsea (H. F. Hall. p. 45). Bridlington (W.C.H. Nat. 12, p. 374).

Limnæa glabra (Müll.).

It is worthy of notice that this species has been found in every district which has been thoroughly investigated. The Danes Dyke record appears to be an error; if so it does not occur in the central division.

Derwentland.—York district, in small ditches but rare (Hincks in Forbes and Hanley, 4, p. 180); rare (S.W.N.); ponds about York (W.C.H.). Tilmire and Langwith (R.M.C.). Cowbridge, one specimen; Sandholme; Featherbed Lane; Wressle (W. Nelson, J. of C. 5, pp. 262-67).

Wolds.—Flamborough Head, in profusion in a pond where the water is quite red; this has produced decoliation in many cases (W.C.H.); pond filled up (W.C.H., "Flamborough," p. 137). Abounds in grassy ponds near Danes Dyke (W.C.H. circular 62; not recorded Y.N.U. 1886; nor in "Flamborough," pp. 135-37).

Holderness.—Plentiful in a pond near Leconfield Moat with *Pl. spirorbis* and a few *L. peregra* (J.D.B., J. of C. 3, p. 177; J.D.B. 3; F.W.F. Trans. I. p. 156). Hornsea Mere, one dead shell (C. Reid, p. 83); this record has not been confirmed. Hedon, in a closed ditch behind the "Plough Field," with *Pl. spirorbis* and *Physa hypnorum*; shallow ditch, Livers; ditch, "Poor Closes," all three within a short distance (T.P. Trans. I. p. 103). Pond near the Preston road, Sproatley, with *Pl. spirorbis* (C. Hollingworth). Haltemprice Lane (F.W.F.). Inglemire Lane (J. W. Boulton; F.W.F. Trans. I. p. 156 and T.P. p. 103.)

Ancylus fluviatilis Müll.

This species is practically confined to the rapid streams on the slopes of the Wolds, in which the stones are not coated with mud as in the sluggish drains of Holderness.

Derwentland.—York district: "In vadis lapidosis fluvii Ouse" (Lister, Hist. Animal, Angliæ p. 151); in the Ouse (W.S.N.); rare, in stony places in the Ouse (R.M.C.).

Wolds.—Speeton (J.S.G.; W.C.H. "Flamborough," p. 137). Flamborough, ponds near the cliffs (W.C.H. circular 62; F.W.F. circular 116). Lowthorpe (Y.N.U. 1890). North Grimston (A. H. Taylor circular 165). Stream on approaching South Cave from Mount Airy (F.W.F. circular 157). Hotham Beck (H. F. Parsons, Nat. 4, 90). Brough (Goole Sc. Soc. Nat. 2, p. 170; H. F. Parsons, Nat. 4, 90); in the streamlets, (3rd circular 1878; J.D.B. circular 69; Y.N.U. 1903). Scarborough Beck (H. M. Foster).

Holderness.—Driffield canal (L. B. Ross and J.D.B. circular 145). Driffield (L. B. Ross J. of C. 4, p. 356). Not found in the east of Holderness (T.P.). Generally in the streams, especially on the Foston side of Driffield (E.P.B.).

Velletia lacustris (Linn.).

• Rare in the East Riding; the specimen recorded below is the only one I have taken.

Derwentland.—Ditch along the Ouse between Selby and Barby (Y.N.U. 1875). River Derwent at Kirkham Abbey (Y.N.U. 1889).

Wolds.—Flamborough (F.W.F. circular 116). Speeton (W.C.H., "Flamborough" p. 137).

Holderness.—Driffield, debris from canal (J.D.B. circular 145). Leven canal (J.D.B. 1). Leven canal and Leckonfield Moat, fine and moderately abundant (J.D.B. 3). Hornsea (Y.N.U. 1881; F.W.F. Fretwell's Guide; a dead shell on a caddis case, May 28, 1904, T.P.). Pond on roadside between Sutton and Wawne (H. E. Johnson). Ponds near Swine Church (F.W.F. and J. F. Robinson). Common on reeds of canal at Wansford; ponds at Skerne (E.P.B.).

[*Cyclostoma elegans* (Müll.).

Is reported for Forge Valley, but has not been recorded for the East Riding].

[*Acme lineata* (Drap.).

Occurs at Hackness (W.C.H.). Not on record for the East Riding].

Neritina fluviatilis (Linn.).

Much rarer than might be expected, considering the number of streams in the Riding.

Derwentland.—York: "In vadis lapidosis fluvii Ouse juxta Foorforth copiose" (Dr. Martin Lister, Hist. Animalium Angliæ, p. 136; Hincks, Ann. Nat. Hist. ser. I. 5, 1840, p. 367; abundant in the Ouse on stones two or three feet below the surface (S.W.N.); Ouse near Bishopthorpe, a very dark variety (W.C.H.); very abundant in the Ouse both above and below the city (R.M.C.). Derwent near Kirkham Abbey (W.C.H. in N. & T.).

Holderness.—Driffeld, debris from canal (J.D.B. circular 145). Barmston drain (J.D.B. 1 and 2). Abundant in the R. Hull at Grovehill, where the specimens are thickly encrusted with a calcareous deposit (J.D.B. 3). Sutton drain (T.P., Trans. I. p. 101). R. Hull at Gibraltar, dead (H. M. Foster). "In slow running rivers as the Humber" (T. Brown "Illustrations," 1844, p. 26), is evidently error. Common in the river at Rotsea; dead shells at Wansford lock (E.P.B.).

Viviparus contectus (Millet).

This species only occurs in the neighbourhood of Wressle, where Dr. Martin Lister discovered it more than two hundred years ago.

Derwentland.—Fulford, near York (W.C.H.); dead shells occurred at Fulford two years ago, but none since, I believe (W.C.H. in N. & T., 1883). "In fossis ad fluvium Darwent juxta Bubwith octavo ab Eboraco miliari magna copia reperiuntur" (Lister, Hist. Animalium Angliæ 1678-81, p. 134). Between Wressle and Brighton in a tributary of the Derwent (W. Nelson, Nat. 10, p. 20; J. of C. 4, p. 214). Wressle, a few mostly young in the Fleetdyke, 1884 (G.R.); Wressle, "this being at present the only really Yorkshire habitat known" (Wm. Nelson, J. of C. 5, pp. 262-67). An "exhibition of *P. contecta* from East Yorks. sent by Albert Harker," Conch. Soc. 5th June, 1889, is recorded (J. of C. 6, p. 101) without any reference to localities.

Viviparus viviparus (Linn.).

Derwentland.—In the Ouse at Selby, numerous fine examples on the mud where clear of weeds before reaching Barlby (Y.N.U. 1875). York (Hincks, Ann. Nat. Hist. 5, ser. I., p. 367, 1840); I have taken two or three specimens in the Ouse (S.W.N.); profusely abundant in the Ouse below York (W.C.H.); below the city it abounds (R.M.C.).

Holderness.—Foston, near Driffeld, exhibited at the Conch. Soc. for Mr. L. B. Ross (J. of C. 4, p. 356). Dead specimen from highwater mark at Bridlington (G. Wingate, J. of C. 4, p. 365). Three dead shells found on the bank of the Beverley and Barmston drain at Figham in the mud thrown out in cleaning the drain (H. M. Foster, Jan., 1885). As one branch of the Barmston drain enters the sea at a few miles south of Bridlington, it is probable that all these dead shells were derived from colonies in the Driffeld neighbourhood, though its occurrence there requires confirmation.

Bythia tentaculata (Linn.).

Derwentland.—York, abundant everywhere (S.W.N.). River Ouse, near Selby (Y.N.U. 1875). Derwent at Kirkham Abbey (Y.N.U. 1889). Howden (N. & T.). Newsholme and Wressle, very common (G.R.). Pocklington canal (Y.N.U. 1893). Brighton (J.D.B. circular 75).

Wolds.—Burlington (J.S.G.). Londesborough (J.D.B. circular 75).

Holderness.—Driffield, canal (J.D.B. and L. B. Ross, circular 145); plentiful in R. Hull (L. B. Ross in N. & T.). Foston, plentiful in R. Hull (L. B. Ross in N. & T.). Beverley, abundant and generally distributed; Leven canal; Long Lane (fine); Swinemoor; Figham; R. Hull; Leckonfield Moat (J.D.B. 3). Hornsea Mere (Y.N.U. 1881; C. Reid p. 83; F.W.F. Fretwell's Guide and circular 150). Ditch near Hornsea Bridge (J.D.B. 2). Withernsea (F.W.F. circular 99). Hull district, common (J.D.B. 1). Dunswell; Cottingham; Burstwick drain; Ryhill drain; common (T.P.). Abundant, Wansford and Foston (E.P.B.).

M. decollatum Jeff. Hornsea (Y.N.U. 1881).

Var. *cornea* Locard. Fleetdyke, Wressle (G.R.).

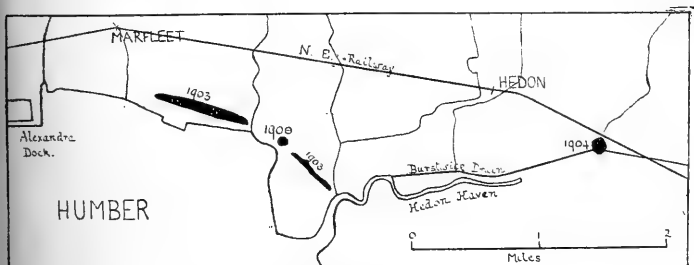
Subfossil. Skipsea (Phillips, 1829, p. 66; 1875, p. 80; Reid, p. 79). Hornsea (H. F. Hall, p. 45; Phillips, 1875, p. 77; Reid, p. 82; T. Sheppard, Nat. 27, p. 366). Holmpton (Phillips, 1829, p. 62; 1875, p. 71). Bridlington (W.C.H. Nat. 12, p. 374). Holmpton; Skipsea; opercula only, Ulrome (T.P. 1892).

Bythinia leachii (Shepp.).

Local in Derwentland and Holderness, but common in several stations in the latter district.

Derwentland.—Wressle, Fleetdyke on caddis case, rare (G.R.). Bubwith (J.D.B. circular 75). Near Brough (Y.N.U. 1878; J.D.B. circular 69). York (Hincks, Ann. Nat. Hist. Ser. I. 5, p. 367, 1840).

Holderness.—Driffield, debris from canal (J.D.B. circular 145). Hornsea Mere (Y.N.U. 1881; C. Reid, p. 83; F.W.F. Fretwell's Guide and circular 150). Ditch parallel to Leven canal; Figham; scarce (J.D.B. 3). Barmston drain, near Hull (J.D.B. 1). Dunswell Lane; Sutton drain; common in both localities (T.P.). Endyke Lane (J.W.B.). Abundant in canal and streams, Wansford and Foston (E.P.B.).



Distribution of *Paludestrina jenkinsi*.

Paludestrina jenkinsi (Smith).

Not in the Census. Only found in the neighbourhood of Hedon at present but it appears to be extending its range.

It occurs in fresh water except near Marfleet (see Trans. III. p. 41).

Holderness.—Pond near the guard bank, Saltend, Sept. 3rd, 1900 (F.W.F. T.P. Trans. I. p. 236). Ditch parallel to Humber bank from Lords Clough to Marfleet (T. Stainforth). Ditch inside the guard bank, Saltend (T.P. Trans. III. p. 41). Burstwick drain and drain east of Hospitals, Hedon, April, 1904 (T.P. Nat. 29, p. 141). Common in the Burstwick drain from the locality marked on the map to within a short distance of Burstwick, Aug., 1904 (T.P.).

Valvata piscinalis (Müll.).

Derwentland.—R. Ouse at Naburn (W.C.H. in N. & T.; R.M.C.). Derwent at Kirkham Abbey (Y.N.U. 1889). R. Ouse near Barlby (Y.N.U. 1875). Wressle, Fleetyke (G.R.).

Wolds.—Lowthorpe (Y.N.U. 1890).

Holderness.—Driffild (W.C.H. Nat. 12, p. 374); debris from canal (J.D.B. circular 145). Brigham, moderately plentiful in canals and ditches (L. B. Ross in N. & T.). Foston (L. B. Ross in N. & T.). Leven canal; Swinemoor; Figham; R. Hull; moderately abundant (J.D.B. 3). Leven canal; Skidby drain (J.D.B. 1). Skidby drain (W. Nelson J. of C. 6, p. 243). Hornsea Mere (Y.N.U. 1881; C. Reid, p. 83). Withernsea (Y.N.U. 1892). Dunswell; Fleet drain between Preston and Wyton; Barmston; Burstwick drain; fairly common in the larger drains (T.P.). Abundant in canal and streams, Wansford and Foston (E.P.B.). Endyke Lane (J.W.B.).

Var. *antiqua* Sowerby :—Fleetyke, Wressle (G.R.).

Var. *acuminata* (Jeff.) :—In drift of Beverley Beck, and the Barmston drain at Figham (J.D.B. 3).

Subfossil. Dimlington (H. F. Hall, p. 45); Hornsea (H. F. Hall, p. 45; Reid, p. 82; T. Sheppard, Nat. 27, p. 366). Bridlington; *Valvata* (Phillips, 1875, p. 83; W.C.H. Nat. 12, p. 374). Sandlemere (Reid, p. 84). South of Withernsea (W.D.R. J. of C. 7, p. 88). Holmpton; Mappleton; Atwick; Skipsea; Ulrome (T.P. 1892).

Valvata cristata Müll.

Derwentland.—York, a few in the Ouse (R.M.C.). Ouse between Selby and Barlby (Y.N.U. 1875). Pocklington canal (Y.N.U. 1893).

Wolds.—Lowthorpe (Y.N.U. 1890). Bridlington, common attached to caddis cases in a pond near the railway on the west side of the line to Scarborough (G. Wingate in N. & T.).

Holderness.—Leven canal, attached to caddis cases (J.D.B. 1 and 3). Leckonfield Moat; drift of Beverley Beck (J.D.B. 3). Hornsea Mere (Y.N.U. 1881; C. Reid, p. 83). Haltemprice Lane; Dunswell; Swine; Mappleton; Hedon; Thorngumbald; not uncommon in shallow pools and ditches (T.P.). Inglemire Lane (J.W.B.). Abundant, Wansford and Foston (E.P.B.).

Subfossil. Sandlemere (G. Reid, p. 84). Skipsea (T.P.). Hornsea (T.P.; T. Sheppard Nat. 27, p. 366).

Unio tumidus Phil.

The occurrence of this species in Holderness requires confirmation.

Derwentland.—York, “*Musculus angustior*” (List. Hist. Animal Angl. p. 149, tab. 2, f. 30; Appendix p. 12, tab. 1, f. 6), “In fluvio Ouse juxta Eboracum copiose”; “found with *pictorum* in Ouse in Yorks.” (Pennant Brit. Zool. 1812, vol. 4, p. 162); (Maton and Rackett, quoting Lister; Hincks, Ann. Nat. Hist. ser. 1, vol. 5, p. 367; S.W.N.); in the Ouse but very rare; var. *radiata* occurs amongst the rest (R.M.C.). Market Weighton canal between Newport and Cliff (J.D.B. circular 75; H. F. Parsons, Nat. 4, 90).

Holderness.—R. Hull (J.D.B., Nat. 8, p. 185). Sutton drain, between Wawne Road and the Great Culvert, in mud thrown out when cleaning (J.W.B.).

Unio pictorum (Linn.).

Not in the Census. As in the case of the last species, it is uncertain whether its range at York extends to the East Riding.

Derwentland.—York, “*Musculus angustissimus . . . cum superiore, at rarior est*” (Lister Hist. Anim. Angl. Appendix p. 13, tab. 1, fig. 4); “Ouse in Yorks” (Pennant Brit. Zool. 1812, vol. 4, p. 162); (Maton and Rackett, Linn. Trans. vol. 8, p. 38; T. Brown “Illustrations” 1844, p. 81); common in the Ouse below York (W.C.H.); very fine and very abundant in the Ouse but the number below the city far exceeds that above (R.M.C.). Market Weighton canal between Newport and Cliff (J.D.B. circular 75; H. F. Parsons Nat. 4, 90).

Holderness.—[Canals about Hull, Forbes and Hanley, vol. 2, p. 146.] Leven canal; R. Hull (J.D.B. Nat. 8, p. 185). [“I found this species (*U. rostrata*) in the canal near Hull,” T. Brown “Illustrations,” p. 82]. Sutton drain, with *U. tumidus* as above (J.W.B.).

Var. *curvirostris* Norm. :—Ouse below York (W.C.H. J. of C. 3, p. 178); in the Ouse but not common (R.M.C.).

Var. *radiata* Moq. :—Pretty common amongst the rest (R.M.C.).

As indicated above, Lister described two species of *Unio* from the Ouse, Nidd and Foss. Subsequent authors agree in considering these distinct with the exception of Montagu, who however does not refer to the figure or description in the Appendix but appears to have decided from the figures of the *Historiæ Conchyliorum*. There is much confusion in the references, e.g., Turton (ed. Gray) refers to tab. 2, f. 30, as *Unio pictorum*, and Appendix fig. 6 as *U. tumidus* though the second figure is a copy of the first. Similar mistakes occur in Maton & Rackett (loc. cit.), and Leach (ed. Gray), *Molluscorum Britannicæ Synopsis*. Lister's descriptions and figures are

Musculus angustior. Hist. Anim. Angl. p. 149, tab. 2, f. 30; Appendix p. 12, tab 1, f. 6; Hist. Conch. tab. 147, f. 2; (ed. Huddesforth 1770).

Musculus angustissimus. Appendix p. 13, tab. 1, fig. 4; Hist. Conch. tab. 147, fig. 3.

Anodonta cygnea (Linn.).

Derwentland.—York, R. Ouse (W.C.H.). Ouse at York (T. Brown, "Illustrations," p. 79). Newsholme (J. Beanland).

Wolds.—Kildwick Percy (Y.N.U. 1885; circular 106; Y.N.U. 1893). Boynton fish pond (W.C.H., Nat. 12, p. 374). Lowthorpe (L. B. Ross, circular 84). Risby (J.D.B. 1); (Beverley F.N. and Sc. Soc. Nat. 7, p. 170), one specimen; much less numerous than formerly (J.D.B. 3).

Holderness.—Driffield canal (L. B. Ross and J.D.B. circular 145). Leven canal (empty shells, J.D.B. 1; fragments J.D.B. 3). Hornsea Mere "thick, tumid and narrow" W.C.H.; J.D.B. 1; abundant J.D.B. 2; "probably *incrassata*," 3rd circular 1881; F.W.F. Fretwell's Guide and circular 150; T.P. Trans. 1, p. 104). Barmston drain, empty shells (J.D.B. 1). Cottingham, broken shells in fields probably carried by birds (J.D.B. 3). Foston (E.P.B.).

Subfossil. *anatina*:—Owthorne but not elsewhere (Phillips, 1829, p. 35; 1875, p. 724). Hornsea (Phillips, 1875, p. 72; Reid, p. 82). Sandlemere (Reid, p. 84). *Unio*, Hornsea (H. F. Hall, pp. 41 and 45). Dimlington (?) (H. F. Hall, p. 39). It is impossible to obtain entire specimens, but judging from their size all should be referred to *cygnea*; Mapleton; Skipsea (T.P.).

Anodonta anatina (Linn.).

Derwentland.—York, to be found in the Ouse in any quantity (R.M.C.). Wressle, Fleetyke, var. *ventricosa*, dead shells (G.R.).

Holderness.—Hornsea Mere (J.D.B. 1; J.D.B. 2; T.P., Trans. I., p. 104; C. Reid, p. 83); the last probably refers to *cygnea*, which is not recorded by Reid. Burstwick drain; Keyingham drain; brickpond, Hestholme, near Ridgmont (T.P. Trans. I., p. 104).

Var. *radiata* Jeff.:—Burstwick drain (T.P.).

Sphærium corneum (Linn.).

Derwentland.—York, "in aquis stagnantibus circa Eboracum copiose" (Lister, Hist. Anim. Angl., p. 150, and App., p. 14); common everywhere (S.W.N.); fine and abundant throughout the district generally (R.M.C.). Ditch parallel to Ouse between Selby and Barlby (Y.N.U. 1875). R. Derwent at Kirkham Abbey (Y.N.U. 1889). Pocklington canal (Y.N.U. 1893). Wressle, near the castle; Fleetyke, between Wressle and Bubwith (G.R.). Bubwith and Brighton (J.D.B. circular 75).

Wolds.—Filey (Y.N.U. 1903). Flamborough (F.W.F. circular 116). Brantingham (J.D.B. 1; J.D.B. circular 69). Brough (N. & T.). Risby (T.P.).

Holderness.—Driffield canal (L. B. Ross and J.D.B. circular 145). Beverley, very abundant in nearly every pond, ditch and stream in the district; Figham; Long Lane; Swinemoor; R. Hull; Beverley and Barmston drain (J.D.B. 3). Hornsea Mere (J.D.B. 2; Y.N.U. 1881; C. Reid, p. 83; F.W.F. Fretwell's Guide and circular 150). Hull district, Barmston and Skidby drains; plentiful (J.D.B. 1). Ditch near Hornsea Bridge (J.D.B. 2). Skidby drain (W. Nelson, J. of C. 6, p. 343). Withernsea (F.W.F. circular 99). Cottingham; Springhead Road; Dunswell; Hedon; Burstwick drain; Keyingham drain; Sutton; Grimston; Aldborough; abundant everywhere (T.P.). Easington (Y.N.U. 1904). Common and fairly distributed (E.P.B.).

Var. *nucleus* (Stud.);—Burlington (J.S.G.).

Var. *flavescens* (Macgill.);—Beverley and Barmston drain at Figham (J.D.B. 3).

Var. *regularis* Pascal;—Wressle, in the Fleetdyke (G.R., Nat. 11, p. 347).

Subfossil. Holmpton (Phillips 1829, p. 62; 1875, p. 71). Skipsea (Phillips, 1829, p. 66; 1875, p. 80; C. Reid, p. 82). Hornsea (H. F. Hall, p. 45; Phillips, 1875, p. 77; Reid, p. 82; T. Sheppard, Nat. 27, p. 366). Dimlington (?) (Hall, p. 39). Bridlington (Phillips, 1875, p. 83; W.C.H., Nat. 12, p. 374). Sandlemere (C. Reid, p. 84). South of Withernsea (W.D.R., J. of C. 7, p. 88). Easington, Holmpton, Neville's Dyke, Mappleton, Atwick Gap, Atwick, Skipsea, Ulrome (T.P., 1892).

Sphærium rivicola (Leach).

The Hornsea record has not been confirmed, and it is doubtful whether its distribution at York extends to the East Riding. It is not given as an East Riding species in the Census.

Derwentland.—York, abundant (Hincks, Ann. Nat. Hist. ser. 1, vol. 5, p. 367; Tate, British Mollusks, 1866, p. 34); rare in the Ouse (R.M.C.).

Holderness.—Hornsea Mere (C. Reid, p. 83).

[**Sphærium pallidum** Gray.

Occurs at York in the Foss (W.C.H.).]

Sphærium lacustre (Müll.).

A common species in South Holderness, but not recorded for Derwentland.

Derwentland.—[York, only one locality, a stagnant pond (S.W.N.); a comparative rarity throughout the York district (R.M.C.).]

Wolds.—Pond near Danes Dyke House (Y.N.U. 1886; W.C.H. "Flamborough" p. 137). Flamborough (F.W.F. circular 116). Tibthorpe (E.P.B.).

Holderness.—Beverley district, local and not plentiful; small at Figham in a ditch bordering on the Hull Road; also in a ditch running into the R. Hull at Commonbank Nook, near Arram (J.D.B. 3). Hornsea (H. Strickland, Forbes and Hanley, 2, p. 118). Hornsea Mere (Y.N.U. 1881; F.W.F. Fretwell's Guide and circular 150). Withernsea (F.W.F. circular 99). Spring Dyke, Hull (J.D.B. 1). Saltend Common, cattlepond (T.P., Trans. I., p. 104). Marfleet; Burstwick drain; Waxholme; Patrington; Sproatley; not uncommon (T.P.). Form approaching *ballidum*, Burstwick Drain (T.P.). Rotsea (E.P.B.).

Var. *rychholtii* (Norm.) :—Pond, near Danes Dyke House (Y.N.U. 1886; F.W.F. circular 116).

Subfossil. Skipsea (Phillips, 1875, p. 80, not in 1829; C. Reid, p. 79, from Phillips).

Pisidium amnicum (Müll.).

Derwentland.—York (S.W.N.); fairly common in the Ouse, (R.M.C.). Wressle, in the Fleetydyke (J. Beanland).

Holderness.—Driffield, debris from canal (J.D.B. circular 145); canal, F.W.F., J. of C. 7, p. 173). Barmston drain; Leven canal (J.D.B. 1). Locally abundant; Beverley and Barmston drain, near Arram; Leven canal; R. Hull at Grovehill (J.D.B. 1). It occurs in the Derwent at Ayton (North Riding) and should be found lower down; in Holderness it appears to be confined to the valley of the R. Hull (T.P.). Well distributed (E.P.B.).

Pisidium fontinale (Drap.).

Derwentland.—York, common (R.M.C.). Wressle, Fleetydyke, on caddis cases (G.R.).

Wolds.—Filey, cliffs (W.C.H. 2nd circular, 1883; Y.N.U. 1903). Speeton (T.P. circular 172). Pond near Danes Dyke House (Y.N.U. 1886; W.C.H. "Flamborough" p. 137). Flamborough (F.W.F. circular 116). Brough (Y.N.U. 1901).

Holderness.—Driffield, debris from canal (J.D.B. circular 145). Beverley district; Long Lane; Figham; Leven canal; moderately plentiful (J.D.B. 3). Withernsea (F.W.F. circular 99). Burstwick drain; Garton; Dunsell (T.P.). Lambwath Stream at Skirlaugh (T.P.).

Subfossil. Hornsea (T.P.; T. Sheppard, Nat. 27, p. 366).

Pisidium henslowanum (Shepp.),

Derwentland.—York (S.W.N.); common in sand dredged from the Ouse (James Backhouse in R.M.C.).

Holderness.—Leven canal (J.D.B. 1). Leven canal; Barmston drain near Arram; ditch parallel to Leven canal; Cottingham; R. Hull at Grove Hill where its scarcity or abundance appears to be determined by the action of the tides (J.D.B. 3). Hornsea Mere (C. Reid, p. 83; T.P. specimens identified by Mr. J. W. Taylor). Lambwath Stream at Skirlaugh (T.P.).

Psidium pulchellum Jenyns.

Derwentland.—Very abundant in shallow ditches near York (W.C.H.);
 "Common enough, I believe" (R.M.C.).

Wolds.—Risby (T.P.).

Holderness.—Saltend Common, cattlepond (T.P., Trans. I., p. 104).

Psidium cinereum Alder.

Derwentland.—Ponds on Tilmire (R.M.C.).

Wolds.—Lowthorpe (Y.N.U. 1890).

Holderness.—Beverley, ditch near station, extremely abundant (J.D.B. 3).
 Hornsea Mere (C. Reid, p. 83 as *casertanum*; T.P. specimens identified
 by Mr. J. W. Taylor).

Psidium pusillum (Gmelin.).

Derwentland.—York (S.W.N.); very abundant in shallow ditches near
 York (W.C.H.); generally distributed (W.C.H. in R.M.C.). Derwent
 at Kirkham Abbey (Y.N.U. 1889). Pocklington canal (Y.N.U. 1893).

Wolds.—Pond near Danes Dyke House (Y.N.U. 1886; W.C.H. "Flam-
 borough" p. 137). Lowthorpe (Y.N.U. 1890). Kildwick Percy
 (Y.N.U. 1885; circular 106). Welton; Brantinghamthorpe (Y.N.U.
 1901).

Holderness.—Driffeld canal (J.D.B. circular 145; L. B. Ross, J. of C. 4,
 p. 356). Leven canal; ditch parallel to Leven canal; shallow ditch,
 Swinemoor; extremely abundant (J.D.B. 3). Hornsea, ditch near
 Wassand end of Mere (J.D.B. 2; Mere, C. Reid, p. 83; T.P.) Leven
 canal and Keyingham drain (J.D.B. 1). Withernsea (F.W.F. circular
 99). Saltend, ditch inside guard bank (T.P. Trans. III. p. 41).
 Hedon; Thorngumbald; Grimston; Aldborough; Mappleton;
 Hornsea Burton; common everywhere (T.P.).

Var. *obtusalis* (Lam.). Hornsea Mere; Kelleythorpe (T.P.).

Subfossil. Bridlington (W.C.H. Nat. 12, p. 374). Hornsea (C. Reid,
 p. 82). Sandlemere (C. Reid, p. 84). South of Withernsea (W.D.R.
 J. of C. 7, p. 88). Kilnsea; Easington; Holmpton; Neville's Dyke;
 Mappleton; Atwick Gap; Atwick; Skipsea; Ulrome (T.P. 1892).

Psidium nitidum Jenyns.

Derwentland.—York (S.W.N.).

Wolds.—Pond near Danes Dyke House (Y.N.U. 1886; W.C.H. "Flam-
 borough" p. 137). Flamborough (F.W.F. circular 116).

Holderness.—Common, Spring Dyke; Skidby drain; (J.D.B. 1). Ditch
 bordering the Hull Road, Figham; ditch parallel to Leven canal
 (J.D.B. 3). Hornsea Mere, specimens identified by Mr J. W.
 Taylor (T.P.).

Pisidium milium Held.

Occurs in several localities, but is never common.

Holderness.—Beverley, ditch in Long Lane, near Beverley Minster, sparingly (J.D.B. 3). Hornsea Mere (J.D.B. 2; 3rd circular 1881; Y.N.U. 1881; F.W.F. Fretwell's Guide and circular 150). Burstwick, ditch on road to Burton Pidsea; Withernsea, pond on cliff; Burstwick drain; brickpond near Sproatley (T.P.).

[**Dreissensia polymorpha** (Pall.).

The record quoted in Kew's "Dispersal of Shells," p. 218—"in many places in the canal between Manchester and Hull" (T. Brown, "Illustrations," 1844, p. 76)—is, of course, an error as far as regards Hull, since the canal terminates at Goole.]

ADDENDA.

Records initialled E.P.B. were taken from the proof of Mr. Blackburn's paper; in the published list ("Naturalist," Dec., 1904) the following also occur:—

- Hyalinia radiatula* (Wolds) Kelleythorpe.
Helix rotundata (Wolds) King's Mill, Driffield.
Helix pygmaea (Wolds) Tibthorpe Wold.
Helix aculeata. Delete "Tibthorpe Chalk Pit."
Helix pulchella (Wolds) Scarborough Road, Driffield.
Helix pulchella var. *costata* (Wolds) Tibthorpe Wold Chalk Pit.
Helix cantiana (Wolds) Flamborough; Bridlington.
Vertigo pygmaea (Wolds) Tibthorpe.
Cæciloides acicula (Wolds) Tibthorpe Chalk Pit.
Planorbis nautilus (Holderness) Foston and Hornsea.
Planorbis corneus (Wolds) Kellythorpe.
Planorbis contortus (Holderness) fairly common.
Limnaea palustris (Wolds) Kelleythorpe.
Pisidium amnicum (Holderness) Driffield *vice* "Fairly distributed."
Pisidium fontinale (Wolds) Tibthorpe Wold. (Holderness) Driffield; Rotsea; Beeford; Skipsea.
Pisidium pulchellum (Holderness) Lowthorpe; Beeford; Skipsea; Hornsea.
Pisidium cinereum (Holderness) Rotsea and Foston.
Pisidium pusillum (Wolds) Tibthorpe Wold; (Holderness) Driffield; Foston; Rotsea; Hornsea.
Pisidium nitidum (Wolds) Tibthorpe Wold; Kelleythorpe. (Holderness) Skerne; Beeford; Skipsea.
Pisidium milium (Wolds) Tibthorpe Wold. (Holderness) Driffield; Skerne; Lowthorpe; Hornsea.

From the Skipsea lacustrine deposit Mr. Blackburn records *Bithynia tentaculata*, *B. leachii*, *Limnaea peregra*, *Valvata piscinalis*, *V. cristata*, *Sphærium corneum*, *Pisidium pusillum*, *P. nitidum*, *P. roseum*, and *P. fontinale*.

ROMAN VILLA AT HARPHAM, EAST YORKS.

BY THOMAS SHEPPARD, F.G.S.

A DISCOVERY of what may eventually prove to be a Roman villa of no mean importance was made during the latter part of 1904, in a locality where such extensive traces of Roman occupation were little suspected. Evidences of the villa were first noticed by the farmer, in "Cross Trod Field," near Harpham, about two miles from the old "High Street," leading from Bridlington to Sledmere. A previous tenant had removed large quantities of coarse sandstone from a slight and somewhat rectangular eminence in Cross Trod Field, which probably represented parts of the walls or foundation of the villa. These stones were used in the farm buildings, and so complete was their removal that not one piece was observed in the recent excavation.

The attention of the Rev. C. V. Collier, F.S.A., having been called to a few tesserae that had been turned up by the plough, that gentleman had a small trial hole made, which revealed a portion of a mosaic pavement of red and white tesserae. Subsequent excavations were abandoned until after the corn was gathered, when they were resumed. The writer was then invited to join Mr. Collier in the work, and by the kindness of the owner of the land, Mr. W. H. St. Quintin, J.P., some labourers were employed. The excavations revealed three different pavements, two close together, the third some little distance away. These were at depths varying from a few inches to two feet. When near the surface the tesserae had been disturbed by the plough, and in the case of the pavement, shewn in Plate XVI. fig. 1, many of the tesserae had entirely disappeared, leaving only the underlying concrete.

Upon the pavements were found quantities of wall-plaster, roofing tiles, oyster shells, nails, coins, pottery, &c., which the owner allowed to be exhibited in the Hull Museum.

At this juncture, the removal of Mr. Collier from the district necessitated a temporary suspension of operations, which, however, were resumed on the pavements, and specimens found being presented to the Hull Municipal

Museum by Mr. St. Quintin. Before anything was removed, however, careful plans of two of the pavements were made by Mr. Eastwood, on behalf of Mr. H. O. Piercy, Mr. St. Quintin's agent; the third was sketched by the writer.

Unfortunately, it was found that the concrete underlying the tesserae had disintegrated somewhat, being of a very sandy character, and had to some extent fallen in amongst the large angular lumps of chalk which formed the foundation. Some of these chalk fragments even protruded through the tesserae, rendering the removal of the tiles exceedingly difficult. The most important parts, however, were removed intact, the remainder being brought away in as large fragments as was possible. Taking all into consideration, the pavements were wonderfully perfect, the plough, and holes driven for stakes for sheep-nets being the cause of the principal irregularities. The great number of visitors present during the process of the excavations was responsible for only a very small section of the tesserae being removed. Below the concrete the original subsoil was met with, there being no trace of heating appliances below the floor.

The most important of the three pavements discovered is that shewn on the plan (Plate XIV.), which represents the tessellated floor of a square room, on the outsides of which quantities of mortar, large blocks of chalk, &c., evidently the foundations of the walls, were met with. The pavement had sunk in places, giving the surface an uneven appearance. The large central square, consisting of a somewhat labyrinthine design, was not in very good condition, the tesserae being exceedingly loose. The broad borders surrounding this square, however, were in much better state of preservation, and large slabs were brought away intact. The extreme limits of the room measured about 18 feet each way. The pavement itself was slightly damaged on the edges, but was roughly $16\frac{1}{2}$ feet by $17\frac{1}{2}$ feet. The centre piece is a small square, with $16\frac{1}{2}$ inch sides. This consists of smaller tesserae, and is naturally of much finer work. The tesserae of which it is composed average a little over $\frac{1}{4}$ -inch square, those of the remainder of the pavement being $\frac{1}{2}$ -inch to $\frac{3}{4}$ -inch square.

This centre piece consists of four lanceolate pieces forming a quatrefoil, joined in the centre in a ring. The outline of the quatrefoil, as well as the squares enclosing it, is composed of very dark blue tesserae made from nodules, such as occur in the Speeton Clay or the Lias at Whitby. Nodules of this character also occur in some quantity in the

drift deposits in the neighbourhood. The apex of each foil is filled with small cubes of red burnt clay, probably the waste from tiles. Then follows a ring of yellow limestone (Magnesian Limestone) two tesseræ in width. Three circles of small chalk tesseræ follow next, then the ring of dark blue tesseræ forming the bases of the quatrefoil, inside which are white and blue cubes. A plan of this centre piece is shewn in Plate XV.

The remainder of the pavement is entirely composed of cubes of chalk and sandstone. The chalk is of somewhat hard type, and has obviously been carefully selected from beach boulders such as occur on the shore at Bridlington. This is proved by the fact that some cubes exhibit the unquestionable borings and stains made by *Cliona*; and others are formed from the rounded edges of water-worn chalk pebbles. Such pebbles would be most suitable for the purpose, as they had already undergone a process of natural selection by the action of the waves. The sandstone is of the same material as that employed in the roofing tiles of the building, quantities of which were obtained amongst the debris of the villa. These tiles were on an average $\frac{1}{2}$ -inch to $\frac{3}{4}$ -inch in thickness, and they were unquestionably derived from the West Riding. Nothing of the kind occurs *in situ* anywhere near Harpham.

The design in the large central square is in four parts, each section being divided into an elaborate key pattern; all the four, however, are connected one with another in such a way that, beginning at the centre, and following one of the white chalk lines, the entire design is covered before the outlet is reached leading into the outer border of the square. As will be seen from the plan, the entire design (with the exception of the small quatrefoil in the centre) is made up of broad and narrow bands of chalk and sandstone respectively, at right angles to each other. The sandstone bands are two tesseræ broad, the chalk bands being three.

The pavement rested upon a foundation of concrete largely composed of sand mixed with fine chalk gravel. This was placed upon large angular pieces of chalk.

About fifteen yards to the north of this pavement is that shewn in Plate XVI. fig. 1, which is so near the surface that it has been much damaged by the plough. It is $27\frac{1}{2}$ feet long by 1 to 4 feet broad, and is in an easterly and westerly direction. The pavement is made up of red and white bricks, and is ornamented in a castellated design in red and white, each portion being $9\frac{1}{2}$ inches across. This corridor is particularly

interesting, as it affords evidence of fairly long occupation. Part of the original design, measuring 5 feet by 2 feet, had been worn away or otherwise destroyed, and subsequently repaired. The patch is of very coarse red brick tesseræ, without any regard to design, and is obviously the work of one not so familiar with the construction of these pavements as the original workmen. The soil above the pavement was largely composed of lumps of angular chalk, plaster, thin slabs of sandstone, roofing tiles, iron nails, and other odds and ends such as might be expected to occur on the site of a building that had fallen in from decay, or had been burnt or demolished. A restoration of part of this corridor is given on Plate XVI. fig. 2.

At the north-east corner of the large pavement was a rectangular pavement (Plate XVI. fig. 3), the south-west corner of which closely adjoined the larger pavement. This measured 21 feet by 7 feet, and was composed of tesseræ of chalk and brick, averaging 1 inch sides. The centre of this floor consisted of a square of white tesseræ, with $6\frac{1}{2}$ inch sides; this was surrounded by a square band of red tesseræ, $6\frac{1}{2}$ inches wide, and on each side of this were bands of chalk and brick, each being $6\frac{1}{2}$ inches in width. On each of the two long sides was a white band a foot broad, though this had been damaged. Both the ends of the floor had also suffered from the plough, though at the south end there was clear evidence of the lateral bands returning.

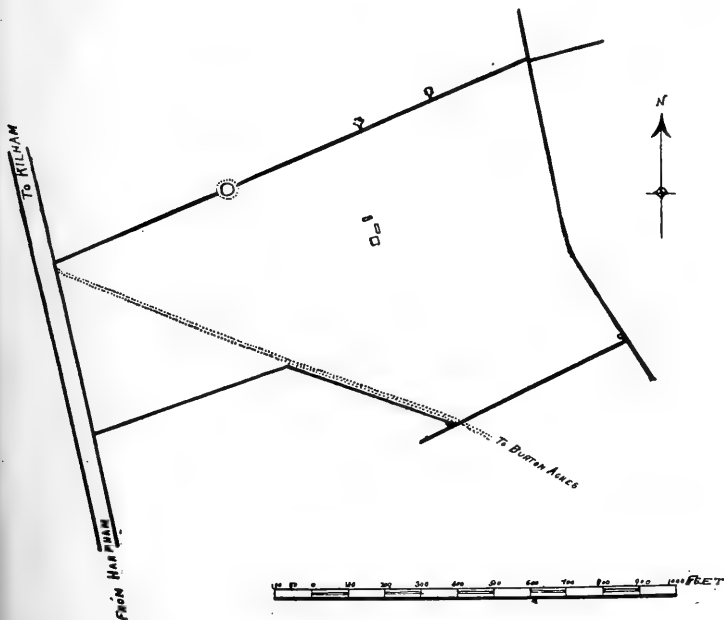
The relative position of the three pavements is shewn in the adjoining plan (p. 177).

Upon all these pavements a quantity of objects was found. Upon that shewn in Plate XIV., besides the wall-plaster, oyster shells, &c., was a quantity of broken roofing tiles, pottery, pieces of glass, bones and teeth, one coin (Gallienus), and charcoal. Upon the adjoining pavement (Plate XVI. fig. 3) we found three coins, pottery, oyster shells, and a large quantity of bones, nails, &c. Both these pavements shewed evidence of small fires having been made upon them, the tesseræ being reddened and splintered.

Amongst the many interesting objects obtained during the excavations are the following:—

Plaster.—There are numerous pieces of the original plaster from the walls, the colouring upon which is still in a wonderful state of preservation. The colours represented are white, brown, red, drab, black, yellow, and green. Several of the pieces show two or three colours. One fragment (Plate XVII. fig. 1) is of exceptional value, as it gives evidence

of a second coat of plaster and colouring having been placed upon pre-existing plaster work. The original plaster is about $2\frac{1}{2}$ inches in thickness in this specimen, and has been coloured green, yellow, and white. Upon this a second coat of plaster has been placed, about half-an-inch in thickness, the colouring being brown, drab, and white. Other examples were found which had been scored by a toothed instrument, for the reception of the second coat of plaster. The plaster is largely

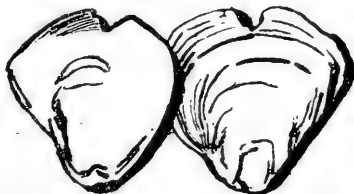


made of the fine, white, rounded chalky gravel, which might be obtained in the neighbourhood. Its disintegration in many places had left quite a large deposit of this gravel, which could easily be detected in the excavations from its light salmon colour.

Tesseræ.—The various tesseræ illustrate in a remarkable manner the durable nature of Roman workmanship. They are frequently broken right through the squares, instead of being divided at the joints. They vary in size from an

inch or an inch-and-a-quarter square down to about one-third of an inch; the larger ones consist of pieces of brick, probably made from broken tiles, &c. Those of chalk come next in size; then are squares of thin, shaly sandstone, precisely the same material of which the roofing stones were made. The smallest tiles are of hard blue nodules. One of the brick tesserae has been tooled. It was found loose and may be part of a special design.

Portions of earthenware roofing tiles were found, with the side ridges, and also fragments of flue-tiles, with the characteristic deep combings. One flat tile (Plate XVII. fig. 2) has the impression of a dog's foot, with possibly also the foot-prints of a rabbit or hare. Some of the larger earthenware tiles were found in a small excavation made some little distance to the south-east of the pavements, where probably are the remains of a hypocaust.

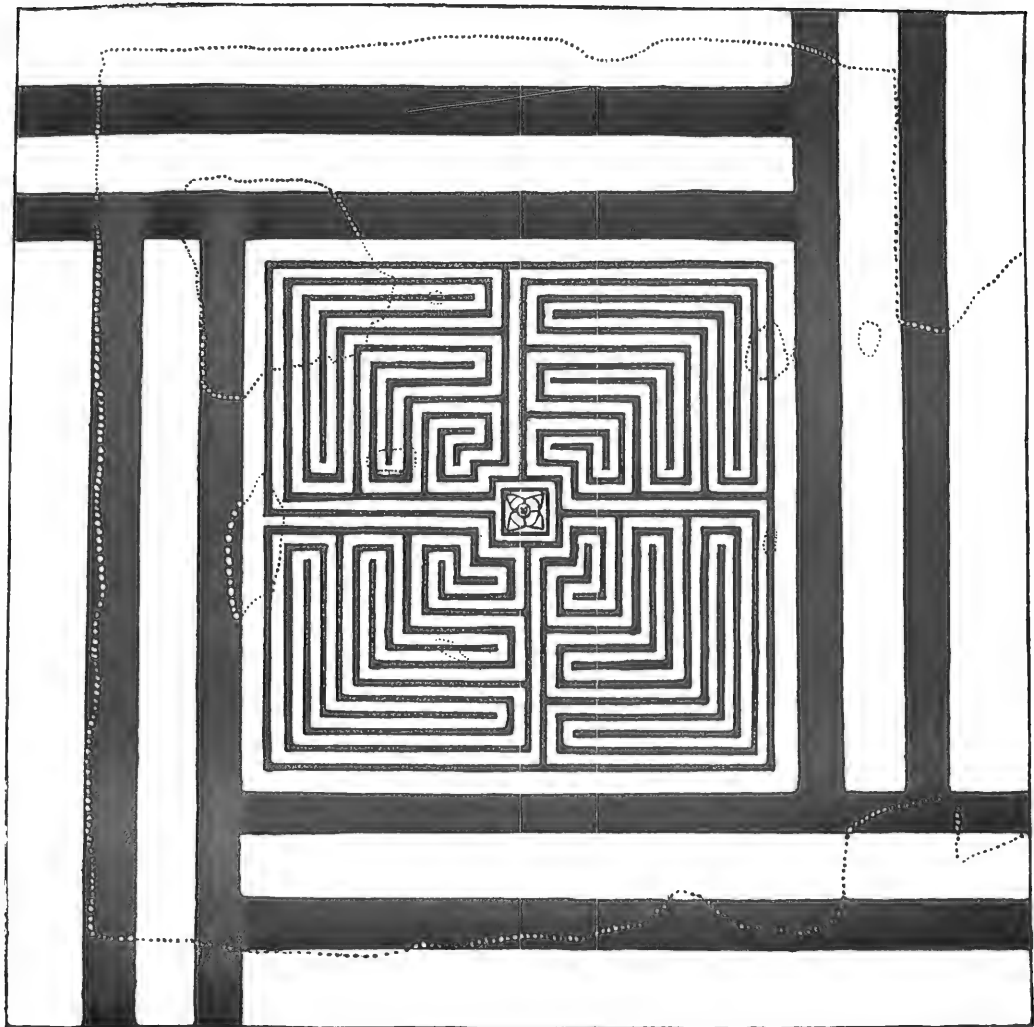


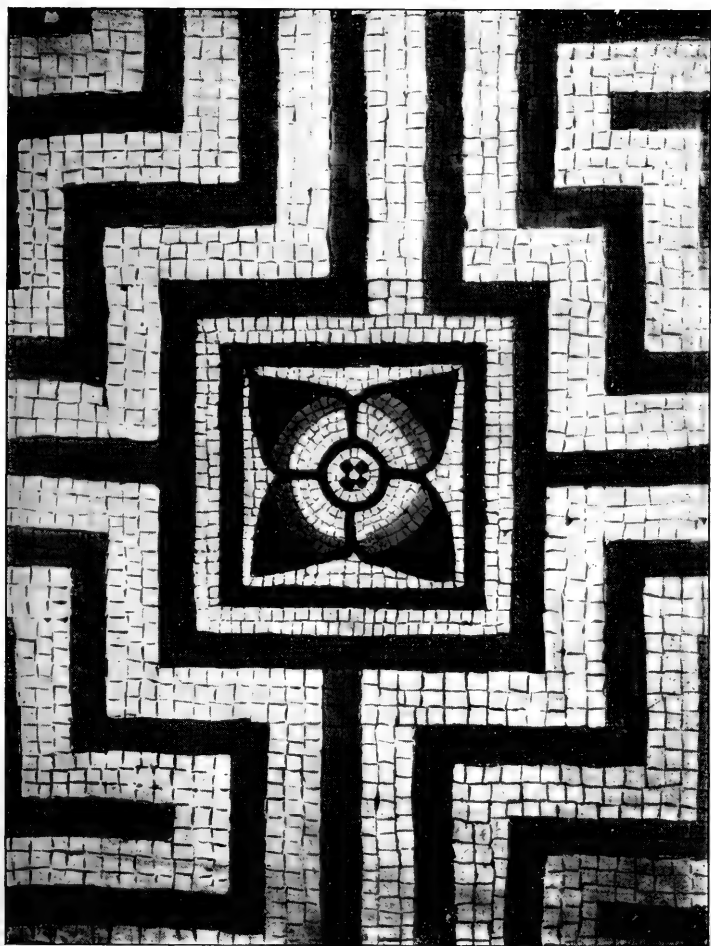
Portions of several earthenware vessels have been found. Some of the pieces were picked from the field at some distance from the pavements; others were taken from the two floors (Plates XIV. and XVI. fig. 3). Amongst them are portions of three or more large vessels of dark grey ware, of the Romano-British type; these are very thick, and were found in large pieces. The clay of which they were made had been mixed very largely with ground oyster-shells. Fragments of two shallow saucer-like vessels were obtained, one of plain grey ware, the other of yellow material, ornamented on the outside with a chevron pattern in brown. All these are obviously the remains of domestic utensils. One small fragment is evidently of Caistor ware, being ornamented in relief on the outside.

A great number of oyster-shells were found, and several of these had a V-shaped piece nipped out of them, shewing the way in which they had been opened by the Romans. Bones and teeth were fairly common, and apparently belong to the ox, sheep, pig, dog, and birds.

The other specimens include four coins, one Gallienus, one Tetricus, one Victorinus, and one undeterminable; three











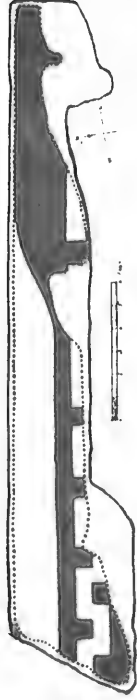


FIG. 1.

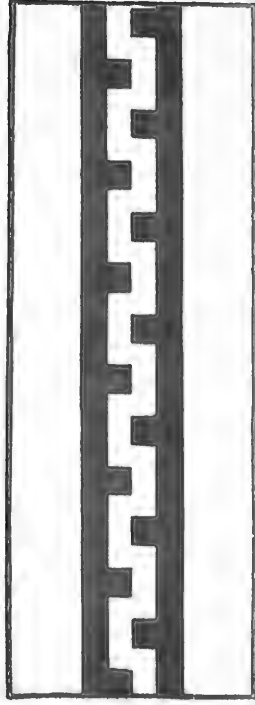


FIG. 2.

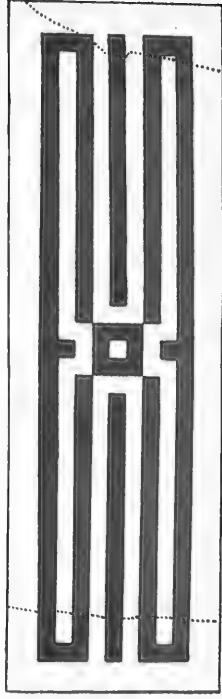


FIG. 3.

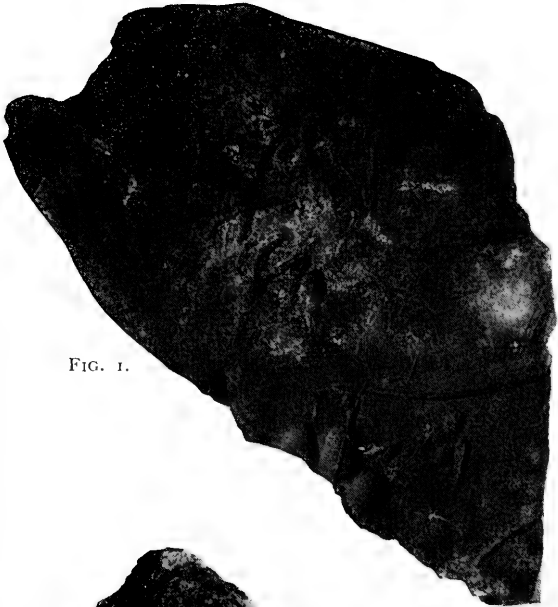


FIG. 1.

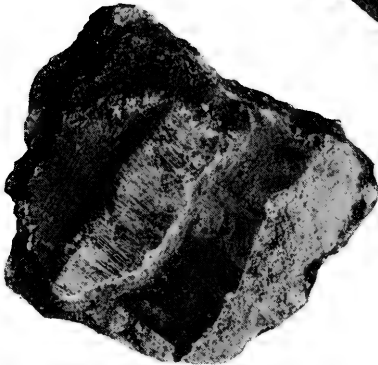


FIG. 2.





PLATE XVIII.



glass beads, one of transparent glass, the other two of turquoise-blue glass; a piece of twisted band, and a lump of melted lead; two iron staples; a large quantity of flat-headed iron nails used for fastening the roofing tiles; a three-sided arrow point $1\frac{1}{4}$ inches long; portion of a bronze buckle, and a small thin piece of bronze and small pieces of glass, some of which have evidently been acted upon by fire. Most of these are shown on Plate XVIII.

Unquestionably, the excavations so far made have only revealed a portion of an extensive Roman Villa, probably erected in the third or fourth century. Trial holes put down in different parts revealed traces of foundations, wall-plaster, &c., at several different points. From a number of objects found also on the surface, as well as the part of a hypocaust (?) discovered at the south-east of the pavements, it is obvious that the area would well repay further examination, and this Mr. St. Quintin has kindly agreed to. The Villa is not surrounded by earthworks or other military protection, and appears to have been more of the type of a summer residence, possibly for the use of officers from Eboracum (York).

The entire collection has been kindly presented to the Hull Municipal Museum by Mr. St. Quintin, where the smaller objects are already exhibited, and where the tesserae, &c., will be shewn so soon as they have been placed upon a new foundation of cement, &c. My best thanks are also due to Mr. H. O. Piercy and the Rev. C. V. Collier, who has taken a keen interest in our Museum, and has materially assisted me in the preparation of these notes.

I am also indebted to Mr. Eastwood for a plan of the large pavement, and to my assistant, Mr. T. Stainforth (who is putting the pavements together), for the drawings from which the plans illustrating these notes have been made.

EXPLANATION OF PLATES.

- PLATE XIV.—Plan of large pavement in sandstone, chalk, &c.
 „ XV.—Details of centre of large pavement.
 „ XVI.—Fig. 1, Plan of corridor, in brick and chalk.
 „ „ „ 2, Restoration of part of corridor.
 „ „ „ 3, Plan of pavement in brick and chalk.
 „ XVII. „ 1, Portion of brick tile with impression of dog's foot.
 „ „ „ 2, Piece of plaster shewing two thicknesses.
 „ XVIII.—Objects found during the excavations:—
 Four coins.
 Three glass beads.
 Iron arrow point, piece of lead, bronze buckle.
 Iron staples.
 Iron nails.

LIST OF THE AQUATIC LARVÆ OF FLIES
OCCURRING IN THE HULL DISTRICT.

BY H. M. FOSTER.

THE following is a preliminary list of the aquatic larvæ so far noted in the Hull neighbourhood. Only those species of which identification was certain have been included. I have examples of each preserved and mounted for the microscope.

DIPTERA.

Culex pipiens. Generally distributed in stagnant waters.

Corethra plumicornis. Pond at Leconfield. It frequents water about two feet deep, and lives near the bottom.

Chironomus plumosus. In ponds and ditches throughout the district.

Tanypus maculatus. Pond at Springhead. "Eleven acre" pond, Leconfield, and probably occurs plentifully in other local waters.

Ceratopogon bicolor. Eleven acre pond, Leconfield. Ditch at Springhead.

Dicranota bimaculata. Scorboro' Beck at Bealey's Lane, found in the mud. (Very scarce).

Ptychoptera paludosa. Pond on Springhead Road. Clear stream near Watton. (Found in the mud).

Simulium latipes. Watton Beck at Watton. Cave Beck. Gipsie at Boynton and Bridlington.

Simulium reptans. Scorboro' Beck at Bealey Lane. Hempholme Lock, below Weir, River Hull.

Stratiomys chameleon. Ryde Street Brickpond, Hull.
Eristalis tenax. Stagnant water, Leconfield.

TRICHOPTERA.

Limnophilus rhombicus. Ryde Street Brickpond, Hull.

Limnophilus flavicornis. Barmston Drain, River Hull, and other local waters.

L. lunatus. Generally and plentifully distributed.

L. vittatus. Pond at Springhead.

L. auricula. Scorboro' Beck; Gipsie, Bridlington.

Plectronemia. Brian Mill Beck, Scorboro', below the Mill.

SIALIDÆ.

Sialis lutarius. Barmston Drain at Hempholme. Pond Springhead. River Hull above Beverley.

PERLIDÆ.

Perla bicaudata. River Hull just below the Weir at Hempholme Lock. (Very scarce).

EPHEMERIDÆ.

Ephemera vulgata. West Beck near Corps Landing. Hutton Beck. Beck near Cranswick. Barmston Drain at Dunswell. (Found living in burrows in the mud).

Chloeon dipterum. Generally distributed, being not nearly so local as *E. vulgata*. (Found on aquatic plants and stones).

Baetis fluminum. Cave Beck under stones to which they cling tenaciously.

MARINE ZOOLOGY IN THE EAST RIDING, 1904.

The following have been taken on the Holderness coast during 1904. In the fishing cobbles at Hornsea, May 28th, crustacea:—*Hoplonyx cicada* (Fabr.), *Callisoma hopei* A. Costa, *Idotea marina* (Linn.), *Idotea linearis* (Penn.), *Jæra albifrons* Leach, *Hippolyte varians* (Leach). In crab pots, Hornsea, August 8th, *Polynoe imbricata* Linn., *Pedicellina cernua* (Pall.) on whelk shells, and *Phoxichilus spinosus* (Mont.); with the mollusca, *Lacuna crassior* (Mont.) common, *L. pallidula* (da Costa), *Cingula semistriata* (Mont.) abundant. *Modiolaria discors* (Linn.) was washed up alive at Kilnsea (sea side) on August 16th; several specimens of *Syndosmya alba* (Wood) were found alive on the tide mark at Aldborough during the same month, and dead specimens of *Syndosmya tenuis* (Mont.) were taken on the river side at Kilnsea.

Eurydice pulchra Leach from Well Creek is an addition to the Humber crustacea; and *Haustorius arenarius* (Slabber), the sand furrow maker, from Aldborough, adds another species to the East Riding list. The common estuarine schizopod, *Neomysis vulgaris* (Thompson), was abundant during August in the ditch which forms the western boundary of Westlands, Hedon.

T. PETCH.

T. PETCH, B.A., B.Sc. (LOND.).

MR. T. PETCH, the subject of the present sketch, is an out and out East Riding Yorkshireman, proud of the fact, for he first saw the light at Hornsea on the Holderness coast some thirty-four years ago. His boyhood schooldays were passed in the old choir school of Holy Trinity, Hull. Later he became a teacher in the King's Lynn Grammar School, where he first got in touch with Dr. Plowright of Micro-Fungi fame. In the meantime Mr. Petch had graduated in Arts at London University, and afterwards as Bachelor of Science of the same University. An all round man in classics, mathematics, and natural science, his strongest proclivities, nevertheless, are towards the last; or, at least, it may be said that it is the absorbing passion of his vacation and other leisure time. King's Lynn formerly, and Leyton Technical Institute of late, may have claimed, and doubtlessly received, Mr. Petch's best daily work, but no sooner had the schools "broken up" than the mathematical and science master hastened northward to the maternal roof at Hedon, the old brick built town with its fine dominating Church of St. Augustine, overlooking the restless tide of the Humber, of which indeed the town was once a port. The mud deposited by this same tide has removed that status from Hedon, but has made new land of the muddy foreshore, every yard of which from Hedon Haven *via* Cherrycob Sands, Stone Creek, Sunk Island to Spurn, is familiar ground to Mr. Petch. The foreshore, and also the neighbouring sea coast from Spurn northward to Filey, have for years found in him their most ardent and devoted searcher and observer. Thus it is scarcely to be wondered at that his contribution to natural history journals and proceedings has been so extensive. No one has written more fully and with greater interest on such topics as the "Land and Freshwater Mollusca of Holderness," "The Marine Fauna of the Humber District," "*Paludestrina jenkinsi*," &c. (see "The Naturalist" and the "Transactions of this Club" for the years 1900 to 1904). Amongst Zoologists Mr. Petch was the first to announce the discovery in East Yorkshire of *Vertigo minutissima*, a tiny mollusc inhabiting Kilnsea Warren; for Yorkshire *Limapontia depressa*, a black sea-slug, and *Farella repens*, a polyzoan from the Humber, together with undetermined varieties of



T. PETCH, B.A., B.Sc. (Lond.).



brackish water forms of *Membranipora*; whilst *Nyctiphanes norvegica*, a shrimp, was new for England.

His notes on E. Riding birds are very numerous and always from original observation. In Botany Mr. Petch is also skilled, and brings to the science, as to those dealing with animal life, the same lynx eye for discovery. Bearing out this it may be stated that he has the credit of being the first to discover in our vice-county the three following species of plants:—*Bupleurum tenuissimum*, (narrow-leaved Hare's-ear), *Statice Limonium* (Sea lavender), and *Ruppia rostellata*. Other records, and they are numerous, will be found initialled "T.P." in Robinson's "Flora E.R. Yorkshire," published 1902. Then, on that debatable ground (Plant or Animal?) the Myxomycetes or Mycetozoa, our friend has done equally distinguished work. Mr. Lister, the greatest living authority on this perplexing branch of organisms, credits Mr. Petch with discovering for the first time in Britain the forms known as *Badhamia decipiens*, *Trichia verrucosa* (new to England), *Badhamia populina* (new species).

His list of East Riding Mycetozoa—and he is the first systematic observer of them in the Riding—numbers something like sixty, and a complete set of actual specimens of those collected and named by himself is at the service of any working Myxologist.

Although much has been accomplished locally, Mr. Petch is not one of those who believe that finality can ever be pronounced regarding scientific research in any branch; so at the present time he has schemes in his mind for further work in his native County and Riding thereof. These, however, for the time will have to be taken up by another or other naturalists (why not of our Hull Scientific and Field Naturalists' Club); for the appointment of Mr. Petch as Mycologist (Student of Fungi) to H.M. Government in Ceylon will shortly remove him from our midst. Our meetings together in the field cannot take place any longer—at least for some years to come, and no one of the Yorkshire or Hull Naturalists will be more missed therefrom than our energetic, thorough-going, and genial member.

The best wishes of the Hull Scientific and Field Naturalists' Club go with Mr. Petch to his new sphere of observation and discovery. May he have health and everything else necessary to adequately develop himself and add to Nature knowledge in the world.

EAST YORKSHIRE BOTANICAL NOTES IN 1904.

THE usual vigilance in the search for plants and for fuller knowledge of their distribution and associations has not at all slackened during the past year, notwithstanding the fact that a special work has been published dealing with the Flora of the East Riding. Rather, we have many indications that certain of our anticipations of its publication have been and are being fulfilled. For example, there is quite an increase in the number of correspondents furnishing new records of plants, giving manuscript notes of information that previously had been locked away from the compiler's gaze. The additions to the said "Flora," owing to the above causes, and also as reward to our diligent search in the fields, number something like a score of species. Some of these were included in the addenda, of E.R. plants in the last number of our proceedings.

For much help rendered, our thanks are due to Rev. W. C. Hey, of West Ayton, who sends us interesting plants from the Filey district, to Rev. E. A. Woodruffe Peacock, for determination of certain alien grasses, to Messrs. Arthur Bennett, F.L.S., H. Stuart Thompson, F.L.S., P. Fox Lee, Miss Jackson, Thearne Hall, and the Rev. F. H. Woods, Rector of Bainton, for various important pieces of assistance in the Botanical Department.

The subject of Botany has been kept well to the front at the Hull Museum, which is largely due to the practical efforts of Miss Jackson and Mr. William Brumby who have gathered and contributed several hundred species of plants during the season. This is a very practical illustration of how propagandist work may be done in any branch of Natural Science.

Our Phanerogamic additions are chiefly of alien plants, some dozen or so of new species having been added from the Hull Docks.

The sedge *Carex paradoxa* has been found in a new situation, namely, on the north bank of Leven Canal, midway between Leven and the River Hull.

Two important cryptogamic additions have been made, namely *Moonwort* from fields at Hornsea Mere (where it has not been seen since 100 years ago, O.B.G.) and the Marsh

Buckler, *Lastræa Thelypteris*. This fast vanishing fern was known previously in East Yorkshire, in one station only, and that was near the River Hull. The new locality is near Driffield, and its discovery is due to the observation in the first instance (March, 1904) of Rev. F. H. Woods, Rector of Bainton.

Several interesting Algæ have been collected and drawings have been made of them, but as yet they are only partially identified.

CHARLES WATERFALL.
JAS. F. ROBINSON.

THE COMMITTEE'S REPORT ON THE WORK OF THE CLUB, DURING 1903-4

(Presented at the Annual Meeting, September 28th, 1904).

YOUR Committee is pleased to record that the work accomplished during the past twelve months has been quite up to the Society's traditions.

Transactions.—Since the last Annual Meeting, Part I., Vol. III., of the Society's Transactions has been issued to the members. This volume is of particular scientific value, and the Club has received praise in the scientific and public press for the excellence and local character of its publication. It contained Mr. Wade's "Birds of Bempton Cliffs," Mr. Blashill's "Evidences of East Hull" (both of which have been issued in separate volumes), Mr. Petch's "Marine Fauna of the Humber District," and other papers of local interest.

One paper read to the Club has been printed elsewhere, viz:—The Rev. E. P. Blackburn's "Shell Collecting for Beginners," which appeared in the *Leeds Mercury Supplement* for Saturday, June 5th, 1904.

In our last Annual Report we deplored the lack of a list of Land, Fresh-water, and Marine Shells of East Yorkshire, but we are glad to say that, by the publication of Mr. T. Petch's list, part of this cause of complaint will be removed. We still require, however, lists of local fungi, &c., and much remains yet to be done, more particularly in the Microscopic

Section, though we are pleased to note that many of our members are working surely and persistently in this direction.

The Society has received financial assistance from the sale of Mr. Wade's "Birds of Bempton Cliffs," and Mr. Philip's "List of Diatoms," in addition to that which is derived from the sale of Transactions.

Lectures.—Since the last Annual Meeting three syllabuses have been issued; one for the Winter Session, October, 1903 to March, 1904, and two Summer syllabuses of two months and four months each respectively. During the year the following lectures have been given:—

- 1903.
- Oct. 14—* "The Geographical Distribution of Plants."—Dr. W. G. Smith.
- Oct. 28—* "Garden Cities."—Mr. F. W. Bricknell, A.M.I.C.E.
- Nov. 4—Discussion on Evolution.—Opened by Mr. W. Chadwick.
- Nov. 11—* "The Chamounix and Zermatt Valleys."—Dr. J. Hollingworth.
- Nov. 18—"Records and Rarities for 1903."—Members.
- Nov. 25—"East Yorkshire Proverbs and Phrases."—Mr. J. Nicholson.
- Dec. 2—"Ruskin and Natural Science."—Mr. W. Wood.
- Dec. 9—"Half-an-hour with Cactaceous Plants."—Dr. J. W. Wilson, F.R.H.S.
- Dec. 16—"Friendly Bacteria."—Mr. A. R. Warnes, M.S.C.I.
- 1904.
- Jan. 6—"Roman Lincoln."—Councillor J. G. Hall.
- Jan. 13—"Fruits of the Rosaceae."—Mr. C. Waterfall.
- Jan. 20—"The Liverworts."—Mr. J. F. Robinson.
- Jan. 27—"Solution."—Mr. G. B. Walsh.
- Feb. 3—* "Some Ornithological Evolutions."—Mr. Kenneth McLean.
- Feb. 10—"Coloration of Eggs—protective and otherwise."—Mr. T. Audas, L.D.S.
- Feb. 24—"Entomology of Hornsea Mere."—Messrs. Boulton and Stainforth.
- Mar. 2—"The Geology of Flamboro' Head."—Mr. J. W. Stather, F.G.S.
- Mar. 9—"Botany of Hornsea Mere."—Messrs. Robinson and Philip.
- Mar. 16—"The Origin of Life."—Mr. R. H. Philip.
- Mar. 23—"Natural History of Hornsea Mere."—Members.
- Mar. 30—"Pollen Eaters."—Mr. E. Lamplough.
- Apr. 13—"Flame."—Mr. G. B. Walsh.
- Apr. 27—"Jottings from a Naturalist's Notebook."—Mr. H. E. Johnson.
- May 25—"Living Matter."—Dr. John Hollingworth.
- June 8—"Shell Collecting for Beginners."—Rev. E. P. Blackburn.
- June 22—"Pollen."—Mr. J. F. Robinson.
- July 6—"Fertilisation of Plants."—Mr. G. H. Hill.
- July 20—"Germination of Seeds."—Mr. H. Knight.
- Aug. 3—"Antiquity of Man."—Mr. T. Sheppard, F.G.S.
- Aug. 17—"Origin of Seed-bearing Plants."—Mr. H. Knight.
- Aug. 31—"Roman and Pre-historic Remains in the Neighbourhood of Easington."—Dr. J. W. Wilson, M.A., F.R.H.S.
- Sep. 14—"Some Aquatic Larvae."—Mr. H. M. Foster.

* Illustrated by Lantern Slides.

Most of the lectures were illustrated by lantern-slides, specimens, experiments, or diagrams.

During the Winter months, in accordance with our custom, meetings have been held on the alternate Wednesday evenings. These were of an informal character, devoted to the exhibition of specimens, microscopic work, and lecturettes of a practical nature.

On July 2nd the Yorkshire Naturalists' Union visited Spurn, and many of our members attended the excursion. On the Saturday evening a meeting was held in the Queen's Hotel, Withernsea, at which the following papers of local interest were read and discussed :—

“The Sea's Encroachment on the East Coast,” by Mr. R. G. Allanson Winn, M.I.C.E.I.

“A few notes on Spurn Point,” by Mr. A. E. Butterfield.

“The Real Ravenser,” by Mr. T. Blashill, F.R.I.B.A.

“Roman Remains at Kilnsea,” by Mr. T. Sheppard, F.G.S.

The first three papers have since appeared in the “Naturalist,” the last appeared in Hull Museum Publications, No. 21.

Excursions.—The following excursions have been held during the summer :—From April 1st to May 28th the Club visited North Cave, Bridlington, Haltemprice Lane, Saltend Common, Hornsea Mere, Barton and South Ferriby, and Swine; from June 4th to September 24th, West Dock Reservation, Leven, Pulfin Bog, Risby Park, Bentley Woods, Withernsea, Hall Ings, Rise Park, Snake Hall, Driffield, Haltemprice Lane, and Houghton Woods. In addition to these the Yorkshire Naturalists' Union has held excursions to Scarborough, Hebden Bridge, Spurn, Farnley, Buckden, Dent, and Rokeby. At each of these our Society was represented, and in the case of Spurn our members made a goodly muster.

Membership.—Whilst the names of some members have been erased from our lists, several new members have been elected, leaving the present total at 175, as against 177 last year. We have lost quite recently two well-known and esteemed members by the hand of death—Mr. J. W. Webster, Easington, and Mr. J. Burns.

Attendance.—The attendance at the indoor meetings has been up to the average; a falling off occurring during the holiday season.

The Hull Museum.—From the Club an expression of its indebtedness is due to the Museum Committee of the City for the increasing usefulness of a re-organised Municipal Museum, particularly in certain branches of Natural Science. The table of wild-flowers in their season, the insect and ornithological collections, as well as the palæontological series already available, have been much appreciated; whilst in matters of determination, the promptitude of the Curator to assist deserves our gratitude. The propagandist work done by Mr. Sheppard in his lectures to thousands of our young people is deserving of the admiration and thanks of the club. In all the branches of Natural Knowledge above-mentioned, we trust the Museum will continue to develop whilst there is maintained a keen reciprocity between our Society on the one hand and the Museum on the other.

Press.—Our thanks are again due to the local Press for the assistance it has rendered the Society in the matter of reports of our excursions and meetings, the fulness and general accuracy of which is much appreciated.

NOTES ON THE EAST YORKSHIRE FAUNA.*

1902. Jan. 1—*Waxwing* shot, in fine plumage, by Mr. Dossor at Cranswick.
 Jan. 23—*Cormorant* shot at Leven, $2\frac{1}{2}$ ft. beak to tail.
 Feb. 23—*Otter*, female, shot at South Cave.
 May 29— „ caught in Trout Stream, Driffield.
 Sept. 9—*Trout* caught in Hull River at Arram, 22 ins., 5 lbs. 3 ozs.
 Sept. 25—*Pike* caught at Frodingham Bridge, 44 ins., $19\frac{1}{2}$ ins. girth, 19 lbs.
 Dec.—*Seal* caught at Bridlington.
1903. Mar. 14—*Badger* caught at Cottam, Driffield, 24 lbs.
 „ 17—2 *Otters* killed at Sunderlandwick.
 April 28—2 *Otters* shot at Lowthorpe, male 25 lbs., female 15 lbs.
 „ 31—1 *Otter* shot at Welton coming out of a drain—almost blown to bits.
 Oct. 1—*Spotted Woodpecker* seen at North Cave.
 Nov. 1—*Gold Crested Wren* in my garden, Berkeley Street, Hull.

* These records have been extracted from the note book of Mr. John Nicholson, Hull, by Mr. G. H. PRESENTED

9 FEB. 1905

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A MONTHLY ILLUSTRATED JOURNAL OF

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Technical College, Huddersfield;

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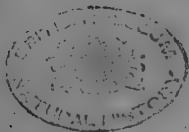
Hull Scientific and 

 Field Naturalists' Club

FOR THE YEAR 1905.

VOL. III. PART III.

EDITED BY THOMAS SHEPPARD, F.G.S.



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TRANSACTIONS

OF THE

Hull Scientific

AND

Field Naturalists' Club.

EDITED BY

T. SHEPPARD, F.G.S.

NATURAL ASPECTS OF HULL AND DISTRICT.

By J. FRASER ROBINSON.

HULL and the adjoining district of the East Riding (Riding=trithing=third part) has not infrequently been described as low-lying, flat, damp, depressing, and generally tame and uninteresting. To the right seeing eye, however, neither meanest object nor low-lying district is insignificant, but on the contrary, full of meaning and interest. But on the whole the epithet "low-lying" is correct, as much being imported by the word "Hull"—which is evidently of the same force as "Holl" in Holland—the nether or low land.

The River Hull, which has given the ordinary name to the City of Kingston-upon-Hull, flows southward from springs at the base of the Chalk Wolds near Driffild (Deira-field?), and joins the estuary of the Humber at right angles, making a sort of delta on which the nucleus that has

expanded into the modern city was first built perhaps a thousand years ago. At high water—for the River Hull is tidal—the adjacent land is considerably below the water level, and were it not for very many miles of embankment along the shores of both the Humber and its affluent, as well as by many more miles of big open drains and smaller ones known as dykes, the district would be still correctly described in Chaucer's words, "the merschlie londe called Holderness." Thanks to the drainage operations above mentioned, which have gone on for hundreds of years, Holderness is now one of the driest parts of the British Isles. This is borne out by the fact that it is just on a par with East Anglia in respect of rain-fall, the lowest recorded in the kingdom. Still there are many relics of "the dim and watery woodland" of former times. Many marshy places still exist untouched by the cultivator's hand. One lake at least, the largest in Yorkshire, remains in Hornsea Mere; whilst the word "Mar" (the pronunciation of Mere) persists in many place names like Marton and Marfleet. Actual sections of some old Meres now dry and cultivated, with their marly bottoms overlaid with peat, may still be seen in the clay cliffs at Skipsea, Atwick, and Holmpton. The last name in part very often met with, suggests a feature of the ancient landscape. The "holmes" were the mound-like gravel hills that would rise out of the marshes and be the first "terræ firmæ" on which the primitive inhabitants would build their farms and hamlets. Even occasional wild bird visitants having preference for aquatic haunts and breeding places, still tell of the former prevalence of more watery conditions. The bittern is a solitary instance.

Away to the west, engirdling geographical Holderness, is a range of low chalk hills, never more than 850 feet above sea-level, and not averaging 450 feet. These are the Yorkshire Wolds, wind-swept uplands, gently rounded and with no great abruptness, except here and there in the steep sided, V-shaped dales like those of Drewton and Welton, or better those near Thixendale, and the magnificent perpendicular cliffs of Flamborough's famed promontory.

Still to the west beyond the Wolds are "The Levels," a sandy alluvial tract intersected from north to south by the Derwent, tributary of the Ouse.

The three areas briefly sketched in the preceding paragraphs have, as geological ground-work, different constitutions. Holderness is a large area of glacial drift, consisting of "Boulder Clay" and gravels which are really morainic

mounds, causing the many pleasant undulations variously named "holmes," "rises," "barffs," and "broughs." Very interesting to the geologist are the contents of these gravels, consisting as they do of pebbles, ice-scratched, far-travelled stones, and bones and teeth of animals like the wild ox, reindeer, and the extinct mammoth. The Boulder Clay accumulations are the earliest of the Post Pliocene geological formation. The reassortment of the mud derived from the glacial drift has made the many patches of alluvium near the rivers and smaller streams, which are included in the later Quaternary System.

The Wolds for the most part belong to the Cretaceous System, the youngest of the Secondary (Mesozoic) Systems, and immediately underlie the Boulder Clay, there being no certainty that the Tertiary epoch is represented in our district as it is copiously in East Anglia. The Cretaceous System includes the Neocomian (locally Speeton Clay) and the lower, middle, and upper chalk formations, all of which are well exposed at no great distance from Hull. The Neocomian is of exceptional interest, being a better exposure near Speeton than any where else in the world. The curious may be referred to the interesting work entitled, "Argiles de Speeton," by Mr. G. W. Lamplugh, F.R.S., and M. Pavlow, of Moscow. Of the fossil animal contents of the chalk formations there are innumerable opportunities for collection and study in chalk pit, quarry, and cliff. Foraminifera like those of the Atlantic ooze, sponges, mollusc shells, sea-urchins and their allies, scales of fishes and sharks' teeth, all in greatest variety and fair abundance will reward the interested seeker after nature-knowledge, and tell unmistakably the history of the earth's vicissitudes. Of the economic value of the common white rock called "chalk," there is abundant evidence in the whiting mills and lime kilns that are found in many places on the Wolds. Emerging from below the chalk strata, and forming low hills and terraces round the western escarpment are rocks of the Jurassic System—Oolite and Liassic. These are readily distinguished from the chalk and sand rocks by their yellow and more fertile soil, as, for example, near Brough and North and South Cave. The Newbald and South Cave Oolite quarries furnish the only building stone, but that not of the best, that is obtainable in the East Riding.

Still westward and we are on the "Levels," an alluvial region with a great depth generally of sand and gravel, which bears more of the heathy character than anywhere else in the neighbourhood. The "Levels" are underlaid by Triassic

sandstones which, however, crop out only in one or two places, like the Church hill at Holme-on-Spalding-Moor.

In short, all our East Yorkshire rocks are Secondary and Quaternary only; and, although briefly described above, the knowledge is fundamental to adequate comprehension of the present day local geography, scenery, and plant life, which will be treated of in the sequel.

The rocky groundwork, taken together with the atmospheric, aqueous, and resultant plant conditions, entirely determines the character of the scenery of any district. Thus Holderness is not a dead level as may be supposed, but very pleasantly undulating, and this is owing to the glacial gravel accumulations spoken of above. The natural streams and numerous artificial drains, meander along reed and sedge fringed courses, which anglers know well to appreciate, and of which artists would do well to cultivate the acquaintance. For, notwithstanding the lowness of the land, there are scores of "bits" of utmost picturesqueness and quiet beauty wherever waters are making their way slowly to the Humber. Adjacent to the noble estuary, even if somewhat muddy, how scenic interest arises. In every mood of storm or shine, wild morning or red-golden sunset, the Humber is beautiful. Perhaps the upland Wolds will be preferred. Nowhere of great elevation, nevertheless, their undulating wind-swept "fields" are inspiring and almost grand. Dropping down to the "Levels" we have the soft beauty of purple heathery commons, wheat, flax and potato fields, woodland and orchard, all harmoniously blended in the ever circling seasons.

What is called artificial is, after all, only a phase of the natural, so reference here may be made to the perfectly picturesque brick and red-tiled farms and villages that meet the eye gazing upon our East Yorkshire landscape. Generally dominated by old churches, and embowered amidst tall trees of elm or ash, the villages have a positive charm unequalled elsewhere.

It has already been hinted that the plant is dependent upon such conditions as those above mentioned; and in consideration of the botanical aspect, we may begin with our centre—Hull. Take the trees of the city. All our main "roads" are really avenues of trees, and will strike the visitor as uncommonly fine as such. Before building operations were so extensive, we had still more trees, especially of the big rough-barked elm; and many of these still remain piously included, even in the pavement. Of wild plants it

will scarcely be expected to see much in a large and busy place like Hull; and yet it is quite possible to find between two and three hundred different species during the year. True, they are "aliens and strangers," incidentally brought to the port by ships from all lands, and are welcomed by no one but the botanist, who often finds them beautiful, and always interesting. They occur in profusion on the waste land of the dock reservations, particularly on the west side of the city, their seed having been dumped down there with rubbish and sweepings from mills and dock sheds.

Leaving the city to search the various areas above referred to, we find that each has its own group of plants, dominant or rarer examples of which may now be mentioned. Beginning with the Holderness Coast, with its clay cliffs, one finds plants that apparently prefer clayey soil: such are the ivy-leaved ranunculus (*R. hederaceus*), the smallest flowered geranium (*G. pusillum*), chicory, and the bucks-horn and seaside plantains. On the small and only sand dune tract between Withernsea and Spurn Head, another group, sand and salt loving, have sway and are very distinct in appearance from plants of the clay. The most conspicuous perhaps, after the three blue-green, seaside grasses including *Elymus arenarius*, the large rose-pink flowered species of creeping convolvulus known as Soldanella, the sea holly (*Eryngium*), sea buckthorn Hippophæe, the dune-thorn of the Dutch Coast, and the seaside sedge (*Carex arenaria*). All this group have the characteristics of seaside sand plants—fleshy glaucous, (blue-green) leaves and great ramifications of underground root and stem systems which effectively bind the loose sands together.

From Spurn, along the North bank of the Humber, for many miles, indeed, up to Hull and beyond, the plants are estuarine in character, being fleshy, salt-loving, and aquatic. Wild celery (*Apium graveolens*) now so much cultivated and blanched in the sandy tract near Selby, is perhaps the most noticeable plant; but with it grow sea-southernwood (*Artemisia*), samphire (*Salicornia*) often pickled locally, and very sparingly the beautiful sea lavender (*Statice Limonium*) and many rushes and sedges, some of considerable rarity, like *Carex divisa*.

Inland, the water-courses, streams, drains, dykes, ponds, and other watery places may be inspected, and quite other sets of plants would appear, a very large list of which might be given. White flowered water crowfoot in about a dozen forms (sub-species) is the most conspicuous plant on the

surface of ponds and dykes in spring and early summer. On the edges of the drains grow the great meadow rue (*Thalictrum flavum*), mingling with the greatest dock (*Rumex hydrolapathum*) the yellow iris and the largest of the sedge family. On the water float the yellow, and occasionally also the white water lily, whilst arrowhead, the rose-tinted flowering-rush, handsomest plant in Holderness, rise above the water level. The colour scheme of the marshy and watery places is exceedingly fine; add to the above-mentioned masses of purple loosestrife (*Lythrum*), water violet, bogbean, water forget-me-not, the orchids—*latifolia*, *incarnata* and *Epipactis palustris*, and an idea of the gaiety of the solitary place may be obtained. In one marshy spot near the River Hull, the rambling lover of wild plants in early July would have his vision cheered by the sight of plant quintette of rare occurrence elsewhere. These are the marsh pea (*Lathyrus palustris*) which is not now known in any other Yorkshire situation, the great yellow loose-strife (*Lysimachia vulgaris*), the rare sedge (*Carex paradoxa*), the fast vanishing marsh buckler-fern (*Lastrea Thelypteris*), and waving over all, the purple and silvery plumes of the small-reed (*Calamagrostis lanceolata*).

How completely dependent plants are on the special geological and geographical conditions is clearly shown by the quite different association of plants of the aquatic sort that are found in damp places on the sandy tract called the "Levels" (Derwentland). Here, and here only, the marsh St. John's wort (*Hypericum elodes*), and the beautiful blue gentian or "Calathian Violet" (*Gentiana Pneumonanthe*), mudwort (*Limosella*), and pillwort, *Pilularia*, all grow in profusion. This also is our best district for the plants who make part of their food of insects for the capture of which they are specially adapted. Such are the two sundews, the butterwort and bladderwort; whilst the chastely beautiful "Grass Parnassus" with its large white flowers, so conspicuous in many a marshy place in early autumn, is a not remote relative.

Before leaving the sandy tract it may be observed that it is the only part of the East Riding where heather and the cross-leaved heath grow in abundance, and the rose bay willow herb and many varieties of bramble and fern still luxuriate. One plant of the orchidaceous type, *Goodyera repens*, is found growing in a Scotch-fir wood on Houghton Moor, the only place in England south of Northumberland.

Of the fields and woods of the lower positions of the

district, much might be said. The spring and early summer carpet of buttercups, daisies, and cowslips, mingled with the meadow loving orchids—*O. Morio*, in many shades, and *O. ustulata*—afford visions of beauty that cannot be surpassed anywhere else.

Finally, a few remarks may be added on the remaining area, the Chalk Wolds, which, in their turn, have another and quite characteristic group. The beech, to the North of Yorkshire, always a cultivated tree, is most probably here quite native, and exceedingly fine are the woods of the same, which are scattered over and frequently top the wolds. Underneath the beech in several places grows the only ericaceous plant on the wolds, the yellow bird's nest, a pale bleached looking parasite (*Hypopitys*) of extreme interest to the biologist and microscopist. The deadly night shade (*Atropa belladonna*), the beautiful and uncommon bee orchis (*Ophrys apifera*), *Orchis pyramidalis*, *Campanula glomerata*, dropwort spiræa (*Spiræa Filipendula*), and many others of equal interest are also characteristic of the chalk.

Such is a sample of the vegetal productions of our little known corner of England. A very small selection truly, of the one thousand and thirty odd flowering plants and ferns that are to found recorded in the writer's "Flora of the East Riding of Yorkshire," but sufficient, we submit, to show that the opening statement of this chapter is unfair and ill-conceived. On the contrary

"Our life, exempt from public haunt,
Finds tongues in trees, books in the running brooks,
Sermons in stones, and good in everything."

THE MYCETOZOA OF THE EAST RIDING.

By T. PETCH, B.Sc., B.A.

IT is generally supposed that Mycetozoa are extremely rare objects. Even Professors of Botany, when questioned by students who wished to extend their knowledge of the group beyond the well-known caricature of *Arcyria punicea* which illustrates the subject in so many text-books, have been known to warn them that specimens are rarely met with, and to point out the futility of any attempt. Yet there is no group more generally distributed. In town parks, in woods, along country hedges, on dock quays, and in timber yards, wherever any dead vegetable matter can be found, there will also be myxos.

The majority are certainly minute. This objection was once raised by a botanist during a visit to Epping Forest, but, unfortunately for his argument, we immediately encountered an oak log on which grew several specimens of *Reticularia lycoperdon* measuring from two to seven inches in diameter. But, neglecting these larger forms, the others are not hard to find, since they usually grow in large numbers. There is no difficulty in perceiving a square yard of *Cribraria argillacea* on the floor of a pine wood, or a six-foot length of *Badhamia populina* on a fallen log, or a rubbish heap whitewashed with *Diachea elegans*. The key of the secret is, that to find myxos one must look for myxos: he will never succeed in finding many while he is looking principally for something else.

The species enumerated in the following list—I regret that through unexpected circumstances it is merely a list—were obtained during the vacations of two years. Thus it has not been possible to make any investigations at what is the best time of year, viz., September to December, and consequently many common leaf-inhabiting forms have not been observed. The localities explored lie for the most part in South and Middle Holderness, where the trees in the hedgerows and small plantations are chiefly ash, elm, oak, and poplar. Most of them are well known to the members of the Hull Scientific and Field Naturalists' Club, and will no doubt continue to yield an abundant harvest, but it may

save disappointment on the part of future workers to point out that a few of the less known have lost the particular feature which made them so productive. Thus, Thorp Garth, Aldborough, is credited with twenty-four species, nearly all of which were gathered in an old stickheap, some five yards by five, which has since been destroyed; while the stickheap at Hedon referred to so often in the records was a collection of elm logs which were sawn up last year. The Newton Garth locality still exists: it is a group of willows, surrounding a hollow partly filled with rotten logs, at the edge of the second field on the field path from Hedon to Paul.

Better hunting grounds will be found to the west of Hull among the beech woods on the chalk, and the fir plantations of Derwentland. The Hull Parks should produce many other species, more particularly in the autumn on fallen leaves, especially if these are gathered into heaps for "leaf mould." The neighbourhood of Cottingham will probably be productive; many new species have been discovered during recent years on the waste heaps of market gardens in the Midlands.

It may not be out of place to pass on some instructions as to the preservation of Mycetozoa. Immediately they are brought home they must be laid on a tray until they are dry. If left in a vasculum or tube they invariably become mouldy. When dried they may be glued in cardboard boxes, preferably on paper trays which can be lifted out when it is desired to examine or remove specimens. Match boxes answer admirably for small gatherings, though it will facilitate storage and save much future trouble if boxes of a uniform size are used. If kept in a dry place with a little naphthalene, the sporangia retain their shape and colour indefinitely.

Since the determination of a species depends on the spores and capillitium it is necessary to prepare slides. A sporangium is placed on the glass slip, a drop of alcohol added, and then a few drops of water. With the aid of a needle miniature waves are created in the mixture, and these, dashing against the sporangium, wash out the spores which would otherwise hide the capillitium. There is no danger of losing *all* the spores. The water is then drained off, a drop of ten per cent. carbolic acid is added and drained off almost immediately, and the specimen then mounted in glycerine jelly. The mount is afterwards closed with Hollis glue (one coat) and gold size (two coats).

Glycerine jelly is not an ideal medium, but it is to be

preferred to Canada Balsam. The latter is used for Cribriarias, as it preserves the plasmodic granules which distinguish certain species. Cribriarias may be washed in xylol, but it is generally possible in their case, and also with such forms as *Arcyria* and *Stemonitis*, to blow away the spores before commencing. The microscopist must remember that in most cases sliding the cover glass about, as is so often done with botanical sections to secure an absolutely central position, will roll up the capillitium and quite spoil the specimen. When he is interested in myxos he will not mind being eccentric.

The Guide to the Mycetozoa in the British Museum, which costs threepence, will enable the student to identify his finds without much difficulty. The "Monograph of the Mycetozoa" can be consulted in the Free Library, and full accounts of all later species will be found in the "Journal of Botany."

The identifications of almost all the species listed here have been confirmed or corrected by Mr. Lister, but for whose infectious enthusiasm and generous assistance this collection would never have been undertaken.

EXOSPOREÆ.

CERATIOMYXACEÆ.

Ceratiomyxa mucida Schroet.

On elder branches in a hedge, and on rotten logs in a stick heap, Thorp Garth, Aldborough, Aug. 8, 1903. Snake Hall, near North Cave, on pine stumps, Aug. 29, 1903; Aug. 27, 1904. Hornsea, plantations north of the Mere, May 28, 1904; Aug. 8, 1904. Burton Constable, Aug. 31, 1904. Not a common species in Holderness, since logs are seldom allowed to lie until they are rotten.

ENDOSPOREÆ.

PHYSARACEÆ.

Badhamia foliicola List.

In abundance on dead hawthorn twigs in a dry ditch at Tansterne fox cover, Aug. 8, 1903 (Journal of Botany, vol. 42, p. 129).

Badhamia utricularis Berk.

On an oak post, Thorp Garth, Aldborough, Aug. 8, 1903. North Cave, Aug. 29, 1903.

[Badhamia nitens Berk.]

W. W. Strickland (Naturalist, vol. 14 (1889), pp. 192, 193) records this species as *B. pallida*, Berk., from "The Grove," Boynton, July, 1880. It is not included by Mr. Lister amongst the specimens from Boynton examined by him at the British Museum.]

Badhamia decipiens Berk.

Tansterne fox cover, on a piece of bark in the same ditch as *B. foliicola*, Aug. 8, 1903. In the Journal of Botany, vol. 42, p. 130, Mr. Lister writes:—"In Aug., 1903, Mr. Petch collected four reniform plasmodiocarps of this species at Tansterne, Yorks. They are olive-yellow, either uniform in colour or varied by yellow ridges or broken bands formed by dense deposits of lime in the sporangium wall; the capillitium is of the true *Badhamia* character, consisting of a coarse network of broad strands charged throughout with orange-yellow lime; the spores are purple-brown, spinulose, and slightly paler on one side, 11-12 μ diam. The specimen agrees closely with that from Montpellier, and is the first British example we have known."

Badhamia macrocarpa Rost.

On elm logs in a stick heap, Hedon, Dec. 26, 1902.

Badhamia panicea Rost.

Thorp Garth, Aldborough, Aug. 8, 1903, on a poplar log. On hawthorn branches, Hedon, Jan., 1904.

Physarum viride Pers.

Abundant, Birkhill Wood, near Cottingham, Aug. 1, 1903; July 23, 1904. Roos Bog, Aug. 10, 1903. Bale Wood, Aldborough, Aug. 21, 1903; Aug. 24, 1904. Boreas Hill, Sept. 1, 1903. Var. *incanum*, Thorp Garth, Aldborough, Aug. 7, 1903. Pond Wood, Boynton, July 24, 1880 (W. W. Strickland, loc. cit., *P. nutans* var. *aureum*).

Physarum nutans Pers.

North Wood, Boynton, July 22, 1880 (W. W. Strickland, loc. cit.). Osgodby; Cliff Common; Escrick, Y.N.U. Fungus Foray (Nat., vol. 10 (1885), p. 141). Escrick, Y.N.U. Fungus Foray (Nat., vol. 21 (1896), p. 365). Very common in hedges and stick heaps round Hedon, Dec. 26, 1902—Jan. 5, 1903. Birkhill Wood, near Cottingham, Aug. 1, 1903. Aldborough, Thorp Garth, Aug. 7, 1903. Bale Wood, Aldborough, Aug. 21, 1903; Aug. 24, 1903. Enholmes, near Patrington, Aug. 31, 1903. Boreas Hill, Sept. 1, 1903. Swan Island, Hornsea, Aug. 22, 1903. Hornsea, plantations north of the Mere, Aug. 8, 1904. Humbleton and Tansterne, Jan. 5, 1904. Var. *leucophæum*, Hedon, Dec. 27, 1902. Var. *robustum*, Aldborough, Sept. 4, 1903. A form with stout, erect stalks and purple globose sporangia, without any deposit of lime in the sporangium wall or capillitium was gathered at Newton Garth, near Hedon, Dec. 26, 1903.

Physarum calidris List.

A small group of six sporangia in a stick heap at Thorp Garth, Aldborough, Aug. 8, 1903.

Physarum compressum Alb. & Schw.

Stick heap, Hedon, on elm, Dec. 26, 1902. On a poplar log, Thorp Garth, Aldborough, Sept. 4, 1903. On the roots of a tree at Lelley, Jan., 1904. A large gathering of which the majority of the sporangia possessed white stalks, Hornsea, Aug. 8, 1904. A form with lobed, iridescent heads, without lime deposits in the sporangium wall, Fewson's stick heap, Hedon, Jan. 1, 1904, and May 25, 1904.

Physarum cinereum Pers.

A few scattered sporangia on dead leaves, plantations north of the Mere, Hornsea, Aug. 8, 1904.

Physarum vernum Somm.

Abundant on dead hawthorn branches, Hedon, Dec. 30, 1903.

Fuligo septica Gmelin.

On pine needles, Snake Hall, near North Cave, Aug. 27, 1904. Dryham plantation, North Cave, Aug. 29, 1903.

Craterium pedunculatum Trentepohl.

Filey, first ravine south, on dead rushes, Y.N.U., 1903 (Nat. vol. 28, p. 250). Abundant on twigs, Tansterne fox cover, Aug. 8, 1903; Jan. 5, 1904. On old rushes, drain bank, Hedon, Dec. 28, 1903. Thearne, Jan. 2, 1904. Newton Garth, Jan. 4, 1904. Kelsey Hill, April 4, 1904. Neville's Dyke, April 8, 1904.

Craterium leucocephalum Ditm.

On dead leaves, Bale Wood, Aldborough, Aug. 21, 1903.

Leocarpus vernicosus Link.

Esrick, Y.N.U. Fungus Foray (Nat. vol. 21 (1896), p. 365). Bale Wood, Aldborough, a form with rigid-stalked, upright sporangia, Jan. 6, 1904. Yellow plasmodium amongst dead leaves which ripened three days after gathering, Burton Constable, Aug. 31, 1904.

Chondrioderma spumarioides Rost.

On dead thistles in a hedge, Thorp Garth, Aldborough, Aug. 7, 1903.

Chondrioderma michelii Rost.

Boynton, Yorks. (Lister, Mon. p. 79; Brit. Mus. Coll. 1112). A few sporangia on moss, Hornsea, plantation north of the Mere, Aug. 8, 1904.

W. W. Strickland (loc. cit.) does not record this species from Boynton, but gives *Diderma cyanesces* Fr., which is a synonym of *Chondrioderma niveum* Rost. No Boynton specimens of the latter are included in the British Museum Collection.

Chondrioderma radiatum Rost.

North Wood, Boynton, Jan., 1880 (W. W. Strickland (loc. cit.), recorded as *Diderma umbilicatum* P.; specimens from Boynton in the British Museum Collection (Lister, Mon. p. 85). In a dead fence, Hedon, Jan. 1, 1903.

DIDYMIACEÆ.**Didymium difforme** Duby.

On dead thistles, Hospitals, Hedon, April 10, 1903. On poplar and hawthorn leaves, Hedon, Jan. 1, 1903. Stick heaps, Hedon, Dec. 26, 1903; April 1, 1904, &c. Thorp Garth, Aldborough, Aug. 7, 1903, &c. Withernsea, on branches, on sand near the beach, Aug. 26, 1903. Boreas Hill, Sept. 1, 1903. Hedon, drain bank, in heaps of dead grass, Dec. 28, 1903. Thearne, Jan. 2, 1904. Newton Garth, on old straw, May 27, 1904. Bale Wood, Aldborough, Aug. 24, 1904. Pond Wood, Boynton, Feb. 29, 1880, W. W. Strickland (loc. cit. recorded as *Physarum album*, Fr.).

Didymium clavus Rost.

Thearne, on dead grass and leaves, Jan. 2, 1904. Bale Wood, Aldborough, Aug. 24, 1904. Kelsey Hill, Sept. 1, 1904.

Didymium nigripes Fries.

Pond Wood, Boynton, Feb. 8, 1880 (W. W. Strickland, loc. cit.). Form with lobed sporangia, on oak leaves, Bale Wood, Aldborough, Aug. 21, 1903. Hedon, drain bank, in heaps of dead grass, Dec. 28, 1903. "California," Hedon, Dec. 31, 1903. Stick heaps, Hedon, Dec. 24, 1903. Newton Garth, May 27, 1904. Hornsea, Aug. 8, 1904. Kelsey Hill, Sept. 1, 1904.

Didymium effusum Link.

Filey, first ravine south, Y.N.U., June 1, 1903 (Nat. vol. 28, p. 250). Thin plasmodiocarps, Hedon, Aug. 5, 1903. Thorp Garth, Aldborough, on dead thistles, Aug. 7, 1903. Kelsey Hill, April 4, 1904. Hornsea, plantation north of the Mere, May 28, 1904; Aug. 8, 1904.

Spumaria alba DC.

White plasmodium creeping over grass on the roadside, Dryham, North Cave, Aug. 29, 1903; only a small portion ripened when placed under a bell jar.

STEMONITACEÆ.**Stemonitis fusca** Roth.

Rose Hill, Hedon, Dec. 29, 1902. Thorp Garth, Aldborough, Aug. 8, 1903. Newton Garth, Dec. 26, 1903. Hornsea, Aug. 8, 1904. Bale Wood, Aldborough, Aug. 24, 1904. Burton Constable, Aug. 31, 1904.

Stemonitis flavogenita Jahn.

This species was till recently incorrectly designated *S. ferruginea* Ehr., and East Riding specimens have been distributed under this name. The discovery of Ehrenberg's type specimen proves that his *S. ferruginea* is the modern *S. Smithii*, and necessitates a change of nomenclature (Journal of Botany, vol. 42, p. 194).

Hedon, on sticks in a hedge, Aug. 3, 1903. Thearne, Oct., 1903, J. F. Robinson! Hornsea, Aug. 8, 1904. Snake Hall, near North Cave, Aug. 27, 1904. Pond Wood, Boynton, July 1, 1881 (W. W. Strickland, loc. cit.).

Stemonitis ferruginea Ehr.

Formerly known as *S. Smithii* Macbride.

Two small gatherings in Bale Wood, Aldborough, Aug. 21, 1903.

Comatricha obtusata Preuss.

Nursery Gardens, Boynton, Nov. 15, 1885, W. W. Strickland (loc. cit.); Lister, Mon. p. 118. Filey, Y.N.U., June 11, 1883, *vide* H. T. Soppitt (Nat. vol. 8, p. 191); Y.N.U., June 1, 1903 (Nat. vol. 28, p. 250). Escrick, Y.N.U., Sept., 1896 (Nat. vol. 21, p. 365). Brough, Y.N.U., May 27, 1901 (Nat. vol. 26, p. 227). Hornsea, April 18, 1903; Aug. 8, 1903, &c. Hedon, Dec. 26, 1903, &c. Birkhill Wood, Aug. 1, 1903. Thorp Garth, Aldborough, Aug. 7, 1903, &c. Bale Wood, Aldborough, Aug. 21, 1903. North Cave, Aug. 29, 1903. Boreas Hill, Sept. 1, 1903. West Dock Reservation, Hull, Sept. 5, 1903. Thearne, Jan. 2, 1904. Tansterne, Jan. 6, 1904, &c. The form known as *C. æqualis* Peck was gathered at Thorp Garth, Aldborough, Aug. 8, 1903.

Comatricha laxa Rost.

Very small sporangia on a pine log, West Dock Reservation, Hull, Sept. 5, 1903.

Comatricha typhoides Rost.

Thorp Garth, Aldborough, on rotten wood in a stick heap, Aug. 8, 1903; Aug. 20, 1904. Swan Island, Hornsea, Aug. 22, 1903. Hedon, May 25, 1904. Hornsea, plantation north of the Mere, Aug. 8, 1904.

Enerthenema elegans Bowman.

On the under side of a sound pine log, West Dock Reservation, Hull, Sept. 5, 1903; three *Agriolimax agrestis* were busily engaged in devouring the white plasmodium as it emerged from the wood. Rose Hill, near Hedon, on fallen ash branches, Aug. 4, 1904. Burton Constable, Aug. 31, 1904. Pond Wood, Boynton, Nov., 1884, W. W. Strickland (loc. cit.).

Lamproderma irideum Mass.

Thorp Garth, Aldborough, on twigs in a stick heap, Aug. 11, 1903. Hornsea, plantations north of the Mere, May 28, 1904.

AMAUROCHÆTACEÆ.**Amaurochæte atra** Rost.

On pit props just landed, ex steamer from Norway, Fish Dock Extension, Hull, Sept. 1903.

Brefeldia maxima Rost.

Boynton, W. W. Strickland (loc. cit.); specimens in the British Museum Collection (Lister, Mon. p. 136).

HETERODERMACEÆ.**Cribraria argillacea** Pers.

Boynton, Yorks., British Museum Collection, 1044 (Lister, Mon. p. 140). This species is not recorded by Strickland; it is probably represented by one of the records which were not confirmed by Mr. Lister in his examination of the British Museum Collection.

Cribraria aurantiaca Schrad.

A fallen willow lying across a ditch on the south side of Rose Hill, near Hedon, produced this species in abundance, Dec. 29, 1902; Aug. 27, 1903; Aug. 4, 1904.

Dictydium umbilicatum Schrad.

On very rotten wood, Thorp Garth, Aldborough, Aug. 8, 1903. Abundant on a log in Birkhill Wood, July 23, 1904. Hornsea, abundant, Aug. 8, 1904. Wassand, small pale form on an ash stump, Aug. 8, 1904.

LICEACEÆ.**Licea flexuosa** Pers.

Usually found on old fencing and other worked wood in stickheaps and dead fences. Hedon, bank of old Humbleton Beck, Jan. 1, 1903. Stickheap, Hedon, Jan. 1, 1904; April 2, 1904.

TUBULINACEÆ.**Tubulina fragiformis** Pers.

Snake Hall near North Cave, Aug. 27, 1904; a pinkish red convoluted mass which turned black, and finally brown in ripening.

RETICULARIACEÆ.**Dictydiæthaliu plumbeu** Rost.

On hawthorn branches in a dead fence, Pollard farm near Hedon, Dec. 24, 1902. Stickheaps, Hedon, Dec. 26, 1902; Dec. 24, 1903; æthalia in the latter case two inches long. Bank of Humbleton Beck, Hedon, Jan. 1, 1903. Swan Island, Hornsea, Aug. 22, 1903. Hospitals, Hedon, Dec. 29, 1903. Thearne, Jan. 2, 1904.

Enteridium olivaceu Ehr.

Hedon, Dec. 29, 1902. On pit props, ex steamer from Norway, one of the æthalia three inches in length, Sept. 5, 1903. Tansterne, Jan. 6, 1904. Thearne, Jan. 2, 1904; a form approaching var. *liceoides*, with small hemispherical æthalia and free spores. Boynton, Feb. 1882 (*Reticularia applanata* Fr.), W. W. Strickland (loc. cit.); specimens from Boynton in the British Museum collection (Lister, Mon. p. 159).

Reticularia lycoperdon Bull.

Boynton, May 14, 1880 (*R. umbrina* Fr.), W. W. Strickland (loc. cit.). Pocklington, Y.N.U., Sept. 7, 1893 (Nat. vol. 19, p. 76). On willow, Rose Hill, April 11, 1903; Aug. 4, 1904. Newton Garth, July 22, 1903, Thorp Garth, Aldborough, Aug. 7, 1903. Tansterne fox cover, Aug. 8, 1903. Hornsea, on ash trees south of the Mere, Aug. 13, 1903. North Cave, Aug. 29, 1903. Burstwick Road, Hedon, May 25, 1904. Hedon, July 28, 1904. Snake Hall near North Cave, Aug. 27, 1904.

TRICHIACEÆ.***Trichia affinis* de Bary.**

Bale Wood, Aldborough, Jan. 6, 1904. One gathering of this date has a capillitium consisting partly of thick elaters as in *T. favoginea*, and partly of rough threads without spirals as in *Perichæna*, with large expansions. The capillitium forms a network as in *Hemitrichia*, and the two forms pass into one another. The sporangium wall is papillose. The spores are those of *T. affinis*, the modifications of the other parts being due to the severe frost which prevailed whilst the sporangia were ripening.

***Trichia persimilis* Karst.**

Bale Wood, Aldborough, Aug. 21, 1903; very abundant, Jan. 6, 1904; Aug. 24, 1904. Tansterne, Jan. 5, 1904; Aug. 25, 1904. Hornsea, plantation north of the Mere, May 28, 1904; Aug. 8, 1904. Boynton, Yorks., British Museum collection, Lister, Mon. p. 167. Strickland (loc. cit.) does not record *T. persimilis*, but gives *T. chrysosperma* DC. (= *T. favoginea* Pers.), North Wood, Feb. 8, 1880; this is no doubt the gathering referred to by Mr. Lister.

***Trichia scabra* Rost.**

Hornsea, abundant on fallen tree in the plantation north of the Mere, May 28, 1904.

***Trichia varia* Pers.**

In stickheaps and hedges, Hedon, Dec. 26, 1902; Jan. 1-3, 1903; &c. Rose Hill, on a decaying *Pleurotus*, Dec. 29, 1903. Newton Garth, Dec. 29, 1903. Filey, June 1, 1903. Thorp Garth, Aldborough, Aug. 7, 1903. Bale Wood, Aldborough, Aug. 21, 1903, &c. Thearne, Jan. 2, 1904. Humbleton, Jan. 5, 1904; May 26, 1904. Tansterne, Jan. 5, 1904.

***Trichia contorta* Rost.**

Hospitals, Hedon, Dec. 29, 1903. Thearne, Jan. 2, 1904. Aldborough, Jan. 6, 1904. Tansterne, Jan. 5, 1904.

***Trichia lutescens* List.**

Dryham near North Cave, Aug. 29, 1903, on sticks, probably hawthorn, forming a fence whose base rested on swampy ground by the roadside; the sporangia were only slightly attached, and many fell off when cutting up the sticks. The sixty-six sporangia mentioned by Mr. Lister were only part of the original growth. "The gathering consists of sixty-six subglobose chrome yellow sporangia from 0.4 to 0.7 mm. diam.; the membranous sporangium-wall is quite free from granular deposits, and the abundant pale yellow elaters are mostly long and often forked, though a few can be found not exceeding 90 μ ; they are from 3 to 4 μ in thickness, and are faintly marked with about four spiral lines; the spores are yellow, minutely spinulose, 10 μ diam." (Lister, Journal of Botany, vol. 42, p. 136).

Trichia fallax Pers.

Boynton Pond Wood, Feb. 8, 1880, W. W. Strickland (loc. cit.); specimens from Boynton in the British Museum collection, Lister, Mon. p. 171. Hedon, Dec. 29, 1902. Thorp Garth, Aldborough, Aug. 8, 1903. Bale Wood, Aldborough, Aug. 21, 1903; Jan. 6, 1904. Swan Island, Hornsea, Aug. 22, 1903. Newton Garth, Dec. 26, 1903. Thearne, Jan. 2, 1904. Tansterne, Jan. 5, 1904. Twyers near Hedon, Dec. 31, 1903. Hornsea, plantations north of the Mere, Aug. 8, 1904.

Trichia botrytis Pers.

Birkhill Wood near Cottingham, Aug. 1, 1903; July 23, 1904. Abundant in Bale Wood, Aldborough, Jan. 6, 1904.

Hemitrichia rubiformis List.

Boynton Botanical Gardens, Feb. 4, 1880, W. W. Strickland (loc. cit.); specimen in the British Museum collection, Lister, Mon. p. 176.

[Hemitrichia clavata Rost.]

Strickland (loc. cit.) records *Arcyria umbrina* Schum., Pond Wood, Boynton, Feb. 8, 1880. According to Mussat (Saccardo, Sylloge, vol. 15,) this = *Arcyria albida* var. *pomiformis*. The name is not given by Mr. Lister, but specimens in the Peradeniya herbarium named thus by Berkeley are *H. clavata*. It is not recorded among the Boynton specimens examined by Mr. Lister.]

ARCYRIACEÆ**Arcyria ferruginea Sauter.**

On a willow, Newton Garth near Hedon, Dec. 29, 1902; Dec. 24, 1903; April 6, 1904; May 27, 1904. Thearne, Jan. 2, 1904. Thorp Garth, Aldborough, Jan. 7, 1904.

Arcyria albida Pers.

Often recorded as *A. cinerea*, Pers. . Escrick, Y.N.U. Fungus Foray, Sep. 1896 (Nat. vol. 21, p. 365). "*Arcyria* on *Lastrea dilatata*; not described in Cooke; comes very near *A. cinerea*; Pond Wood, Boynton, July 24, 1880," W. W. Strickland (loc. cit.). Hedon, Jan. 1903, &c. Newton Garth, Dec. 29, 1902. Birkhill Wood, Aug. 1, 1903. Thorp Garth, Aldborough, Aug. 7, 1903. Swan Island, Hornsea, Aug. 22, 1903. Enholmes, near Patrington, Aug. 31, 1903. Thearne, Jan. 2, 1904. Tansterne, Jan. 5, 1904. Bale Wood, Aldborough, Jan. 6, 1904. Hornsea, plantations north of the Mere, Aug. 8, 1904. Var. *pomiformis* at Tansterne, Aug. 8, 1903; Hedon, July 28, 1904; on dead gorse, Kelsey Hill, Sep. 1, 1904.

***Arcyria punicea* Pers.**

"*Arcyria* (probably) *punicea*," on rotten birch, Boynton, July 24, 1880, W. W. Strickland (loc. cit.). Beverley, Y.N.U. May 29, 1882 (Nat. vol. 7, p. 205). Escrick, Y.N.U. Sep. 1896 (Nat. vol. 21, p. 365). Everingham, Y.N.U. Sept. 7, 1893 (Nat. vol. 19, p. 76). Hornsea, Aug. 1902; Aug. 8, 1904. Newton Garth, Hedon, Dec. 29, 1903; Aug. 10, 1904. Tansterne fox cover, Aug. 8, 1903. Bale Wood, Aldborough, Aug. 21, 1903; Aug. 24, 1904. Enholmes, Aug. 31, 1903. Burton Constable, Aug. 31, 1904.

***Arcyria incarnata* Pers.**

Hedon, Jan. 1, 1903, &c. Birkhill Wood, Aug. 1, 1903. Thorp Garth, Aldborough, Aug. 7, 1903, &c. Tansterne, Aug. 8, 1903. Roos Bog, Aug. 10, 1903. Hornsea, on ash trees south of the Mere, Aug. 13, 1903. Bale Wood, Aldborough, Aug. 21, 1903; Aug. 24, 1904. Boreas Hill, Sept. 1, 1903. Hornsea, plantations north of the Mere, Aug. 8, 1904.

***Arcyria flava* Pers.**

Pond Wood, Boynton, W. W. Strickland (loc. cit.; recorded as *A. nutans* Fr.); specimens from Boynton in the British Museum collection, Lister, Mon. p. 190. Newton Garth near Hedon, Dec. 29, 1902. Abundant, Bale Wood, Aug. 21, 1903. Birkhill Wood, Aug. 1, 1903; July 23, 1904. Abundant on a fir log, Dryham Plantation, North Cave, Aug. 29, 1903. Hedon, July 28, 1904. Hornsea, Aug. 8, 1904. Snake Hall near North Cave, Aug. 27, 1904.

***Perichæna depressa* Libert.**

Hedon, Dec. 26, 1903; May 25, 1904. Lelley, Jan. 5, 1904. Hornsea, plantations North of the Mere, Aug. 8, 1904.

***Perichæna populina* Fries.**

Pond wood, Boynton Jan. 1880, W. W. Strickland (loc. cit., recorded as *P. abietina*); specimens from Boynton in the British Museum Collection, Lister, Mon. p. 199. Abundant, Hedon, Dec. 26, 1902, Aug. 5, 1903, &c. Tansterne, Aug. 8, 1903. North Cave, Aug. 29, 1903. Swan Island, Hornsea, Aug. 22, 1903. Boreas Hill, Sept. 1, 1903. Twyers near Hedon, Dec. 31, 1903. Thorp Garth, Aldborough, Jan. 7, 1904.

***Perichæna variabilis* Rost.**

Abundant, Hedon, Jan. 3, 1903. Aldborough, Aug. 19, 1903, sporangium wall opaque with granular matter. Thorp Garth, Aldborough, Jan. 7, 1904. Thearne, Jan. 2, 1904. Newton Garth, Dec. 24, 1903.

MARGARITACEÆ.**Margarita metallica** List.

Abundant on hawthorn branches in the winter in the neighbourhood of Hedon, Dec. 26, 1902; Dec. 1903. Rose Hill, Dec. 29, 1902. Newton Garth, Dec. 29, 1902, &c. Aldborough, Aug. 19, 1903. Thearne, Jan. 2, 1904. Tansterne, Jan. 5, 1904. Humbleton, Jan. 5, 1904.

Dianema depressum List.

Humbleton and Tansterne, Jan. 5, 1904. Bale Wood, Aldborough, Jan. 6, 1904.

Prototrichia flagellifera Rost.

Rose Hill, Dec. 29, 1902. Abundant, Newton Garth, Dec. 29, 1902; Dec. 24, 1903. Abundant, Hedon, Jan. 1, 1903. The form without spiral markings on the threads is of frequent occurrence.

LYCOGALACEÆ.**Lycogala miniatum** Pers.

Barlby, W. N. Cheesman, Y.N.U. Bot. Report, 1881. Brough, Y.N.U. Bot. Report, 1878. Pocklington, Y.N.U., Sept. 7, 1893 (Nat. vol. 19, p. 76). Filey, Y.N.U., June 1, 1903 (Nat., vol. 28, p. 365). Birkhill Wood, Aug. 1, 1903. Thorp Garth, Aldborough, Aug. 8, 1903. Hornsea, Aug. 13, 1903; May 28, 1904. Enholmes near Patrington, Aug. 31, 1903. Hedon, July 28, 1904. Bale Wood, Aldborough, Aug. 24, 1904.

Erratum.

Ptychogaster albus Corda, under fir, Boynton Grove, Oct., 1888, Strickland (loc. cit.). This species is not a mycetozone.

THE HULL MUSEUM AND EDUCATION.

By T. SHEPPARD, F.G.S., *Curator.*

THE history of the Museum at Hull is practically the same as that of numerous other museums throughout the country. In a great number of instances the collections started in a small way early in the nineteenth century, and increased in interest at the time when the Literary and Philosophical Societies were in their prime. At that time most of the leading gentlemen took a prominent interest in natural science. Times changed however, attractions of other descriptions took the place of the old Literary and Philosophical debates; funds were not forthcoming as they had been; the museums became neglected as a consequence, and eventually were sold or were taken over by some public body. Such has been the case with the collections at Hull.

In October, 1822, just over eighty years ago, a few gentlemen met at the Dog and Duck Tavern, primarily to discuss the advisability of purchasing a collection of curiosities from Mr. W. W. Hyde, in order to form a museum for the town. At the same time the necessity for some scientific institution was felt, and it was unanimously decided "That an Institution be formed at Hull for the general promotion of Literature and Science." On the same date as the above-mentioned meeting, the collection of curios was examined and purchased for £80. By the following July, the President (Dr. J. Alderson) had delivered an address, which was printed, and a further collection of fossils, shells, birds, &c., had been secured for £100. The rooms in the Exchange were soon inadequate for the collections and meetings, and in 1831, the Society removed to the building now known as the Assembly Rooms in Jarratt Street, part of which had been specially constructed for its convenience. In June, 1855, the collections were removed to their present home in the Royal Institution, Albion Street. This building was opened by the late Prince Consort in 1854, and cost about £7000; Charles Frost, F.S.A., a thoroughly scientific man, then being the president.

From that time the desire, or necessity, for a large income, slowly but surely affected the nature of the Society's meetings and the quality of its work. The popular lecture made its appearance. Huxley, Thackeray, and many other scientific and literary leaders were induced to visit the town. The desire for first-rate lectures increased, the available funds at the disposal of the Society were more and more encroached upon for lecturers' fees, to the neglect of other matters. Competition with somewhat similar institutions which were formed in the town aided in the general destruction of the "philosophical" element, and assisted in the growth of the more entertaining lantern lectures. Classes in chemistry and other subjects were held later in the Society's rooms, and under its auspices, but these were gradually discarded, their place being taken by the School Board and other classes; and even its Museum, valuable as some of its contents were, became a source of anxiety to the members, and was eventually handed over to the town on certain conditions in January, 1901.

As an example of the nature of the collections in the old days is an account of the Hull Museum written by Llewellyn Jewitt, which appears in the *Art Journal*, for 1872. In this description, Mr. Jewitt states:—"The usual class of foreign 'curiosities' which characterise most museums are here, perhaps, more than usually abundant and interesting, and there are also a considerable number of local and other relics of mediæval and more recent times, including a fine and highly important collection of Yorkshire seals. The miscellaneous character of the 'curiosities' of the collection may easily be estimated from the enumeration of half-a-dozen of what are considered by some to be the attractions of the place:—"a part of a walking-stick belonging to Queen Elizabeth;" "a pair of cavalier's boots worn by Sir E. Varney, who bore the Royal Standard of Charles I. at the battle of Edgehill;" "some of the long corn among which the English Guards stood upon the field of Waterloo;" "a piece of the rock against which General Wolfe leaned when mortally wounded at the taking of Quebec;" "some bar shot fired by Paul Jones;" "a lock of Napoleon's hair;" "an autograph of Queen Victoria;" and "a piece of the tanned skin of Thompson the murderer." The nature of the collections as depicted by Jewitt was not by any means a unique feature in our provincial museums; the prevailing idea in

those days being that the collections should be of the character referred to. To-day, however, an effort is being made to change the old order of things, and in the present municipal museum "Education" is the watchword, and the specimens are exhibited labelled, arranged, and classified with a view to conveying as much instructive information as possible.

As to the value of museums as educational institutions there can be no question, particularly if they are arranged on modern lines and are not of the chamber of horrors' type, formerly so prevalent throughout the country. Unfortunately, to the average individual, a museum means a collection of deformities, monstrosities, and curios from every and any quarter of the globe; and, to some, there is no doubt that an eight-legged lamb or a murderer's knife excites more interest than any other sort of exhibit. Objects of the morbid type can only have a depraving effect and are certainly out of place in an educational museum.

A modern museum is of a totally different character. All the specimens are classified and arranged and labelled in their proper scientific and historical order, and any addition to the collection has its one proper position in the general series, and unless it is in its place it does not fulfil its proper mission. Visitors to museums would derive far more benefit from a knowledge of this, than by endeavouring to gather together scattered fragments of information by walking aimlessly from one part of the building to another.

To illustrate this, reference might be made, for example, to the case in the Hull Museum containing pre-historic remains. This is placed at the south end of the room devoted to antiquities, and contains implements and objects of stone, bone, bronze and iron, arranged in such a way, as to form a key to the early history of the Britons. For instance, at one end of the case are relics of the Palæolithic or Old-Stone-Age Man, the earliest human occupants of these islands. These implements are of a very primitive and rude character. A little further in the case are many fine axes, spears, arrow-heads, &c., of the Neolithic or New-Stone-Age Man. A comparison of these two reveals in a moment the great advance in the art of manufacturing implements by the New-Stone-Age Man. A little further and we have the axes, swords, spears, and other relics of the Bronze Age. The introduction of this metal into Britain had a wonderful influence upon the arts and upon the civilisation of the Britons. After bronze was the introduction of iron,

and we have the Iron Age. The case contains some of the earliest examples of iron implements and utensils hitherto found in this district.

Thus in this one case is an epitome of the history of the early inhabitants of the British Islands, and in examining it from end to end it is possible to get a far better and clearer idea of the evolution of the early implements and ornaments than can be obtained by any amount of time spent in reading up the subject in books.

But the case has other points of interest. Nearly every specimen contained within it has been found *in the district*, and "local" is the main feature of the Hull Museum collections. The days of attempting to form miniature British Museums, with a little of everything and nothing in particular, are over, and the object of our provincial museums should be to illustrate the history, geology, natural history, antiquities, &c., of the districts in which they are situated. But many other lessons can be learned by a perusal of the specimens in this case. Here is the skull of a Bronze-Age Briton. Note the perfect condition of the teeth, their regularity and absolute freedom from any trace of decay; the Ancient Britons *used* their teeth, and did not live on sops and sweetmeats. Close by is a photograph of an elaborately carved bone pin, and a bronze dagger, the handle of which has decayed, although the rivets for its attachment are preserved. These were found with a skeleton at Brough, and show that the Britons had some idea of a future life, as when they were buried the various objects likely to be of use to them in their new hunting grounds were buried with them.

A little further in the same case are examples of the early cinerary urns containing cremated human remains. The Corporation has recently erected a crematorium in Hull, of which Hull people are justly proud, but the novelty is gone when it is remembered that cremation was in vogue in East Yorkshire at least 2000 years ago.

Many other lessons might be learned from a perusal of the specimens in this one case, but full information is set out in type-written labels, so that those who care may be instructed. Similarly, the Roman, mediæval, and other cases in the collection are arranged and classified, and are teeming with information of an instructive and educational character. Any one of these contains sufficient material for an afternoon's study, rendering a perusal of the contents of the Museum at a single visit absolutely impossible.

HULL ANTIQUITIES.

The case of Hull antiquities is naturally a favourite one with visitors, and receives a good share of attention. Within it are specimens found in the city, which in themselves would amply serve to illustrate a history of Kingston-upon-Hull. The various coins, seals, pipes, earthenware vessels, glass and iron objects call to mind the former condition of things in Hull, and draw attention to the past Hull industries, whilst the cannon balls of stone and iron remind us of that memorable siege of Hull, when Sir John Hotham played so important a part in the history, not only of Hull, but of the whole country.*

So one might go on from case to case, and find ample material for writing many volumes.

NATURAL HISTORY.

Half the Museum is devoted to Natural History, and there again the specimens are all placed in their proper natural order, and should be examined in that order. The mammals, birds, reptiles, fishes, insects, and shells are there arranged, and, as in other parts of the Museum, the local element is predominant. Hull is particularly fortunate in being situated as it is, and has the advantage over inland towns in being able to include the local marine fauna and flora in its collections. Thanks to the efforts of early Hull naturalists, many most valuable specimens, formerly secured by the Literary and Philosophical Society's Museum, are now the town's property. Foremost amongst these is the skeleton of the type specimen of Sibbald's Rorqual, which is $47\frac{1}{2}$ feet long. This formerly occupied all the floor-space of the west wing of the building, but has now been suspended from the ceiling, where it can be better viewed from the gallery, and has also admitted of much more use being made of the floor-space.

A perusal of the Natural History specimens is as instructive educationally as is an examination of the antiquities. Space does not admit of details being given, but the knowledge obtained from an examination, say of the relative parts of the skeletons of the Mammalia, or in the various phases in

* These will shortly be removed to Wilberforce House, the birthplace of Wilberforce, in High Street. This magnificent Elizabethan building has been purchased by the Corporation, and is being transferred into a museum illustrative of the History of Hull and particularly of Wilberforce and his times.

the life of a butterfly, and of the protective colouration and adaptation to surroundings of the birds, insects, and shells, is a lesson not soon to be forgotten.

There is, perhaps, a difficulty in conveying to the public mind the proper function of a museum, but to some extent this has been surmounted by the delivering of lectures to the members of various societies who have visited the Museum. In future, however, there can be no question that the public of Hull will be able to appreciate to the full the purpose for which a museum exists. Visits to museums by school children during school hours are now allowed, providing children are accompanied by their teacher, and receive proper instruction in the museum. This is, without doubt, a step in the right direction.

Unquestionably the knowledge the young gain for themselves and the cultivation of their own reasoning abilities are far more potent in the formation of character and culture than the useless cramming of the brain more by memory than by reason. Sir John Gorst, in his address to the Section of Educational Science at the British Association Meeting in 1901 (see British Association Report pp. 858-863), clearly explains the position as under: "The power of research—the art of acquiring information for oneself—on which the most advanced science depends may, by a proper system, be cultivated in the youngest scholar of the most elementary school. Curiosity and desire to find out the reason of things is a natural, and to the ignorant an inconvenient, propensity of almost every child; and there lies before the instructor the whole realm of Nature-knowledge in which this propensity can be cultivated."

What more suitable opportunity could possibly be found for carrying out this ideal than by a properly conducted visit to a museum? The children are there told how to examine the collections, how they are arranged, and how best to derive instruction from the specimens.

With a view to encouraging these visits, the writer prepared a syllabus of lectures, which was circulated amongst the schools in the town and district. The necessary permission was obtained from the Educational Authority, and the result has been far more satisfactory than was anticipated. For some time past five mornings each week have been occupied in delivering lectures to scholars. The following is a list of the lectures:—

Lecture 1.—"How to see a Museum."—Classification of Objects—Labels—Comparisons, &c.

- Lecture 2.**—"Rocks."—Earth's Crust—Geological Divisions—Igneous and Aqueous Rocks—Sandstones—Limestones—Slates—Organic Remains.
- " **3.**—"Coal."—Position in Earth's Strata—Composition—Evidence of Former Climatic Conditions—Plant Remains—Mining—Anthracite—Jet—Lignite—Peat.
- " **4.**—"Limestone."—Composition—Organic Remains—Coral Limestone—Oolitic Limestone—Chalk—A Yorkshire Coral Reef.
- " **5.**—"Sandstone and other Building Stones."—How Formed—Age—Cementing Materials—Old Red Sandstone—Millstone Grit—Ganister—Casts of Fossils.
- " **6.**—"Fossils."—Organic Remains—Plants and Animals—Modes of Preservation—Casts—Petrifactions—Evolution—Value to Geologists.
- " **7.**—"The Ice Age."—Modern Glaciers—Moraines—Striated Surfaces—Erratics—Yorkshire Glacial Deposits—Boulder Clay—Fauna.
- " **8.**—"Extinct Monsters."—Age of Reptiles—Age of Mammals—Saurians—Mastodon—Mammoth—Red Deer—Methods of Preservation of Remains—Local Examples.
- " **9.**—"The Yorkshire Coast."—Cliffs—Different Aspects due to Different Geological Formations—Inlets—Faults—Filey Brig—Flambro' Cliffs—Caves—Hornsea Cliffs—Old Lake Beds—Effect of Ice Age on Old River Channels.
- " **10.**—"Pre-Historic Man."—Cave Man Contemporary with Mammals now Extinct—Palæolithic Man—Neolithic Man—Bronze Age—Iron Age—Lake Dwellings—Burial Mounds and Contents—Types of Weapons—Yorkshire in Pre-Historic Times.
- " **11.**—"Roman Britain."—Landing of Julius Cæsar—Roman Roads—Walls—Camps and Villas—Arts—Pottery—Coins—Roman Stations in Yorkshire.
- " **12.**—"Anglo-Saxons."—Eastern England—Customs—Objects of Iron—Local Relics—Cinerary Urns—Swords—Daggers—Coins, &c.
- " **13.**—"History of Hull."—Former State of the Land—"Ald Hull"—Favourable Position—Pre-Norman Embankments—Wyke—Convent of Meaux—Edward I. and Hull—Walled Town—Civil War—Docks—Whaling Days—Industries—Government.
- " **14.**—"The Human Skeleton."—Head—Trunk—Limbs—Names of Bones—Functions, &c.
- " **15.**—"Races of Mankind."—Distribution—Characteristics—Savages—Customs—Weapons, &c.
- " **16.**—"Mammals."—Distribution—Variation—Classification—Marsupials—Cetaceans—Hoofed Animals—Rodents—Carnivores—Insectivores—Primates.

- Lecture 17.**—"Birds, Reptiles, and Fishes."—Classification—Variation—Distribution—Habits—British Examples.
- " **18.**—"Insects."—Life History—Butterflies—Moths—Beetles, &c.—Economical Value—Pests—Common British Species.
- " **19.**—"Coins and Medals."—Origin of Coinage—Greek and Roman Coins—British Coinage—Early English Coins—Modern Coins—Medals.
- " **20.**—"The Art of the Potter."—British—Roman—and Saxon Earthenware—Cinerary Urns and Utensils—English Vessels—China—Hull Potteries—Foreign Vases, &c.

In addition to the above, children from private schools and from the schools of the neighbouring villages have visited the collections.

A pleasing feature in connection with these lectures is the frequency with which the children visit the Museum after school-hours, on Saturdays, and other holidays, when they can often be seen, note-book in hand, taking particulars of the exhibits. The children are also encouraged to sketch the objects, and thus a better idea of drawing is obtained than by merely copying other drawings.

Such is the brief review of some of the work being accomplished in the Hull Museum. It has, as yet, only been open to the public a short time, but it has been visited by a great many people, and the interest taken in the collections has been most encouraging to the Museum Committee. In addition to being open free from 10 a.m. to 5 p.m. each working day, it is thrown open on holidays, &c., and during the winter it is open on Tuesday and Thursday evenings from 7-30 to 9-30 p.m. These evening openings are evidently highly appreciated, particularly by the working classes, many of whom regularly visit the collection, accompanied by their children. The interest that the working classes take in the Museum is particularly encouraging to the writer, as, to a large extent, the collections are arranged for their benefit. It is also most pleasing to record that the work at the Museum is largely simplified by the help of these people. In fact, the gallery of collections is gradually being increased by a small band of voluntary workers, and it would be a great help to the Museum authorities if still more were to interest themselves in this way.

NOTES ON LOCAL DIATOMS FOR 1904-1905.

BY R. H. PHILIP.

THE year 1904 was not a very prolific one. The general dry weather tended to restrict the growth, except in perennial springs.

The most interesting gatherings I took were at Spurn, on the occasion of the visit of the Yorkshire Naturalists' Union. Some washings of Algæ, gathered from the foreshore on the Humber side of the peninsula, yielded *Actinocyclus Roperii* (Breb) Kitt. in abundance. This species was recorded by Norman under its old name *Coscinodiscus ovalis*, as rare in Ascidian molluscs. It was, however, plentiful enough at Spurn. I also found is same washings *Plagiotropis gibberula* Grun., and *Pleurosigma obscurum* W.Sm., and in another gathering from Patrington Haven *Achmanthes Danica*, Flogel, and *Navicula apis*. Donk., new records for this district. In fresh water forms, the only new record for the year was *Navicula vulpina* Kutz. from Hornsea Mere. I have, however, some doubt whether this should be considered a distinct species, or whether it is merely an unusually large variety of *Navicula radiosa*.

Owing to a variety of circumstances, the number of local gatherings made in 1905 has been but few. In the Beverley water supply, two new records have been found in *Navicula seminulum* Grun. and *N. exilissima* Grun., both very minute forms. The Pocklington excursion with the Yorkshire Naturalists' Union yielded some interesting gatherings, but nothing new. *Melosira arenaria* (a very fine and striking form) was plentiful in the Great Givendale springs, along with large quantities of *Diatoma hiemale*. No other species were found in this gathering besides these two.

Cleethorpes has again proved a good collecting ground. *Stephanopyxis turris*, a rare species found by Norman in Ascidian molluscs, has turned up here, also *Campylodiscus Thurettii*, first found by Mr. F. W. Mills in a slide from the river Humber. *Nitzschia socialis* Greg., *Nitzschia punctata*, var. *coarctata*, and *Synedra barbatula* Kutz. from the same gathering are now on record for this district for the first time. A recent gathering from shore pools near Marfleet yielded *Amphora acutinscula* Kutz., *A. turgida* Greg. and *Hantzschia amphioxys* var. *vivax*. This form in the old

records was probably confounded with *Nitzschia vivax*, which it greatly resembles.

EXPLANATION OF PLATE XX.

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|--|---|
| I.— <i>Synedra barbatula</i> Kutz. | IX.— <i>Nitzschia socialis</i> Greg. |
| II.— <i>Navicula apis</i> Donk. | X.— „ <i>punctata</i> var. |
| III.— „ <i>exilissima</i> Grun. | <i>coarctata</i> Grun. |
| IV.— „ <i>seminulum</i> Grun. | XI.— <i>Pleurosigma obscurum</i> W.Sm. |
| V.— „ <i>vulpina</i> Kutz. | XII.— <i>Achnanthes Danica</i> Fogel. |
| VI.— <i>Plagiotropis gibberula</i> Grun. | XIII.— <i>Hantzschia amphioxys</i> var. |
| VII.— <i>Amphoru turgida</i> Greg. | <i>vivax</i> (Htz.) Per. |
| VIII.— „ <i>acutiuscula</i> Kutz. | |

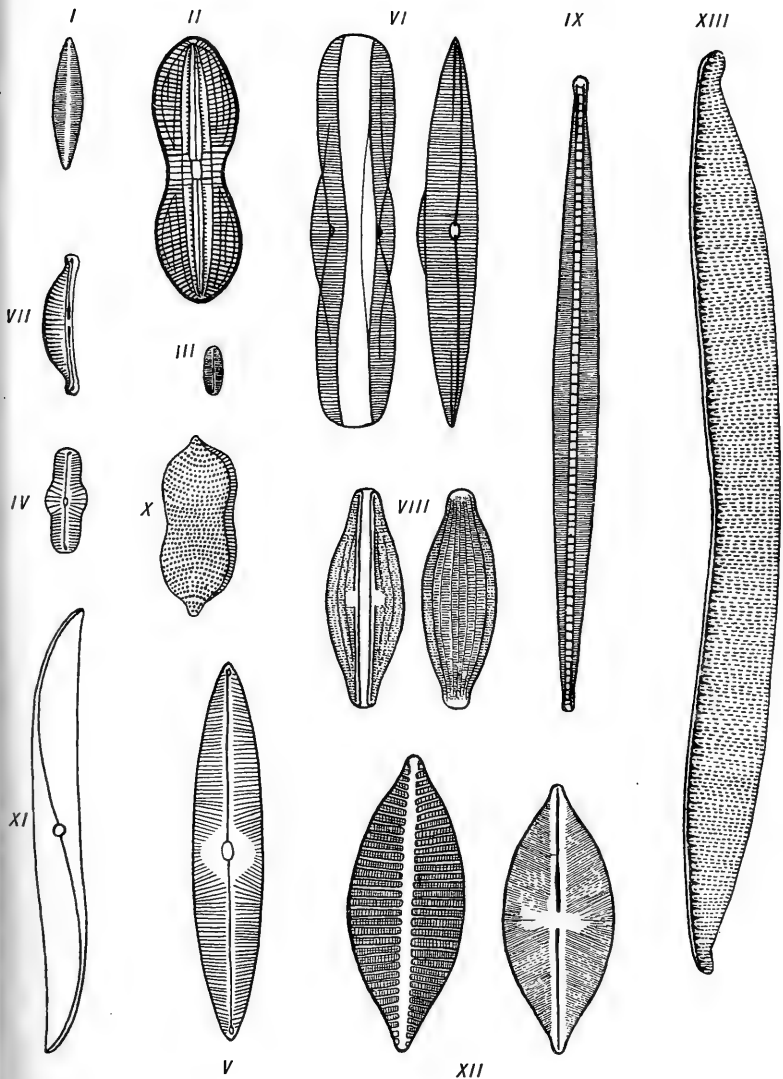
EAST RIDING BOTANICAL NOTES, 1905.

DURING 1905, a quiet but steady season's work has been accomplished. Little tracts of slightly fresh ground have been visited near Houghton Woods, Figham Common, Beverley Long Lane, Beverley Parks, &c. Several new stations for East Riding plants have been made out, e.g., the Greater Burnet, *Poterium officinale*, in an old sandy lane near Hotham; *Viola tricolor* in the same place; *Nepeta Cataria* in Beverley Long Lane (pointed out by its first finder there, Miss Jackson, of Thearne Hall); *Astragalus danicus* on Garton Wold, near the Sykes Monument; *Allium vineale* near Saltend Common; *Asplenium Ruta-muraria* on an old bridge near Figham Common. New localities have also been found for *Polystichum aculeatum* near Birkhill; the Petty Whin (*Genista anglica*) among the heather between Snake Hall and Duck Nest and *Buda rubra* in sandy fields at Snake Hall. The Marsh Pea (*Lathyrus palustris*) vegetated luxuriantly in its only Yorkshire habitat this spring, flowered plentifully in early July, and was in fruit in August. The Bee Orchis, at Kelsey Hill, was seen in June last.

One plant, quite a new record for the East Riding, viz., *Leonurus cardiaca*, was discovered at Barlby, near Skipwith Common, in August last by Mr. Wm. Bromby.

The West Dock Extension is no longer available as a productive alien botanical garden. The North Eastern Railway Company have killed that, but the scientific pure and simple must give way to the economic, and we must not grumble, for there still remains an immense amount of work to be done in many departments of botany.

J. F. ROBINSON, }
C. WATERFALL, } *Recorders.*









J. H. Washburn.

In Memory of

THOMAS BLASHILL, F.Z.S., F.R.I.B.A.

1830-1905.

(PLATE XXI).

IT is with every possible regret that we have to place upon record the death on January 19th, 1905, of Mr. Thomas Blashill—for many years a valued and esteemed member of this Club, and a personal friend of many of us. Though his duties and the fact that he resided in London prevented the Club from enjoying his company regularly at its meetings, we still had the privilege of seeing him when on his visits to his native county, and occasionally we had the pleasure and profit of his presence at our gatherings, when he appeared before us to read papers.

Much as he was occupied by his various duties in London, he never forgot the district which was so dear to him in his early days. Perhaps the most important product of his pen was the history of his native place, Sutton in Holderness, a book which was described as “one of those charmingly written local histories which form such an important feature in the literature of this country.” In this, his many-sided character and the thoroughness with which he did what he undertook, were well shown. Following this work was his “Evidence relating to the Eastern part of the City of Kingston upon Hull”—based upon a paper read to our Club, subsequently printed in our Transactions, and later issued in book form. The last paper he wrote was read at the Withernsea meeting of the Yorkshire Naturalists' Union in 1904,—“Changes in Spurn Point and their Bearing on the site of Ravenser.” This was printed in the “Naturalist” for September, 1904. Another publication of his was an illustrated guide to Tintern Abbey, a building in which he took a keen interest.

Of the Woolhope Club, similar in many respects to our own, Mr. Blashill was twice president, in 1882 and 1901. In his address on the latter occasion, he referred to the fact that he was the last surviving of the members who half-a-century previously had founded the Club.

But we must look upon the researches Mr. Blashill carried out in our district as a form of recreation; his life work, and the work which made him known far beyond the borders of his country, was in connection with his calling as an architect. In 1887 he was appointed Superintendent Architect to the Metropolitan Board of Works, and on the extinction of that body was appointed to a similar position on the London County Council. The ability with which he carried out his duties was shown by the fact that he was requested to continue for three consecutive years after the age when he should have retired, and on finally retiring he received the good wishes of the Council, and a substantial pension. Mr. Blashill took a keen interest in Archæology, and was an active member and vice-president of the British Archæological Association. He was fond of travel, and visited most of the countries in Europe.

Mr. Blashill leaves a widow, who has the sympathy of every member of the Hull Scientific and Field Naturalists' Club.

T. S.

NOTES ON THE RECLAIMED LAND OF THE HUMBER DISTRICT.

BY T. PETCH, B.A., B.Sc.

“ Look you, our foreshore stretches far, through seagate, dyke,
and groin—
Made land all, that our fathers made, where the flats and the
fairway join.”

IN the Humber district, the reclamation of salt-marshes and their transformation into valuable farms is such a familiar operation that one fails to realise the opportunities which it offers for investigation. Under the intense cultivation which prevails in these fertile areas, it is difficult to follow the advance of the flora of the surrounding country over the new land; observation is practically limited to the ditches, where *Sium latifolium* and meadowsweet gradually give place to *Cenanthe lachenalii* and *Phragmites*, and the latter yield in turn to *Potamogeton pectinatus*, *Chaetomorpha*, and *Ulva*. Elsewhere, few but the ordinary weeds of cultivation are encountered, though occasionally unexpected species occur, as, for example, *Listera ovata* on an uncultivated bank at the outer edge of the 1850 enclosure on Sunk Island, probably the only member of the Orchidaceæ on these areas.

But it is more interesting to note the other side of the question; to find survivors of the original salt-marsh flora on land one hundred, fifty, or twenty years old, and to discover what changes have enabled them to adapt themselves to their altered surroundings, and for how long such adaptations are effective. It is not to be expected that such obvious problems offer unworked ground. Much information may be found in P. Lesage, “Influence du Bord de la Mer sur la Structure des Feuilles,” Rennes (1890), and “Contributions à la Biologie des Plantes du Littoral” (1891), and in C. Brick, “Beiträge zur Biologie und vergleichenden Anatomie der baltischen Strandpflanzen” (1888), though these only touch on particular points, and by no means exhaust the subject.

It is, however, a necessary preliminary to such work that the extent of these areas and their dates of enclosure should be accurately determined. With this object, an investigation was commenced some years ago, but was ultimately laid aside, partly through pressure of other work, and partly because of the difficulty of obtaining accurate information on matters of recent history. I now have no opportunity of pursuing the matter further, and therefore wish to point out what seems to be wrong in our present information, and where additional information is required. It is to be regretted that the loose statements of earlier writers should be continually repeated without criticism.

The old Humber bank (ante 1750) extended from Paull Holme to Thorneycrofts, and thence along the present Keyingham drain by Saltagh, No Man's Friend, Ottringham Clough, and Winestead Clough to Patrington Haven. From Paull Holme to Thorneycrofts it can still be traced, and it is marked for the greater part of its length on the Ordnance Map of 1824. South of this, three main areas have been reclaimed: Cherry Cob Sands, Saltagh Sand, and Sunk Island. Cherry Cob Sands extend from the old bank between Paull Holme and Thorneycrofts to the western end of Sunk Island, and probably caused the warping up of the latter; its clough, which bears the date 1770, is somewhat primitive, and consequently the ditches on this area afford more salt-marsh and marine forms than those of the later reclamations on Sunk Island. Saltagh Sand forms a small triangle lying between the other two, with its apex at Stone Creek.

Much has been written about Sunk Island, but in no case does the account seem correct. The different reclamations may generally be identified by the present banks, roads, and drains, though there is much confusion of these three on the maps. The land enclosed previous to 1800 lies to the south of the present church, and is readily identified. Mr. A. E. Butterfield ("Naturalist," Nov., 1904) states that this was 1561 acres in 1744; Allen ("History of Yorkshire") quotes a letter of 1711, in which the area is estimated at near 2000 acres; Poulsen quotes a survey of 1764 as 1500 acres, and another of 1774 of 1561 acres, and on the facts stated there the last date seems correct. It should be possible, however, to verify this from the surveys quoted by Poulson, and it may be pointed out that no evidence as to the extent of the enclosed land can be obtained from charts.

More difficulty is felt in accepting the date 1800 for the

next enclosure, though it is given by Baines ("History and Directory of Yorks.," 1823). By that time, Cherry Cob Sands and Saltagh Sand had been embanked and united; the Keyingham drain flowed on the north of both, and as its outfall was removed from the present Sands Bridge to No Man's Friend in 1772, there could have been no channel between them even at high water, otherwise the tide would have entered the drain above the clough. Jeffrey's map of 1772 shows a complete channel round Sunk Island, and the Keyingham drainage water flowing over the mud on the west of the Island, but by 1797, as shown on the drainage plan which Poulson copied from an unacknowledged source, the channel on the west had warped up to such an extent that the water from Keyingham was turned round the north of Sunk Island, and entered the Humber on the east of it. This must be taken into account in fixing the date of the next enclosure. Judging from the maps of 1824 (Ordnance Survey) and 1829 (Bryant), in making it, a bank was carried from the apex of Saltagh Sand (the present Stone Creek) to a point on the Island due south of the present church, and a second bank was built from the eastern end of the Island, northwards towards the then Winestead Clough, and thence westwards. (Thus, in Mr. Butterfield's map, in the Naturalist, the bank of 1800 should coincide for some distance on the south with that which existed in 1774). But there is no evidence that it was continued beyond Ottringham Clough on the north. Here it seems to have been met by a cross bank from the old Ottringham Clough, thus obviating the necessity of constructing a bank on the north-west. This would seem the most economical method of enclosure, and there is no trace of a north-west bank on any map, or on the Island at present. If this was so, the date 1800 is incorrect, since the Keyingham drain (one of the largest in Holderness) then flowed round the north of Sunk Island, and the Act authorising the reduction of its drainage area and diversion between Cherry Cob Sands and Saltagh into Stone Creek was not obtained until 1802.

The present church was erected in 1877, on the site of a former building, which Poulson says was built in 1802. As this is on the "1800" enclosure, an exact date here would assist.

Mr. Butterfield's statement that this area is 1200 acres seems incorrect, and also that after 1728 the channel round closed up completely; there is no doubt that at high water Sunk Island was surrounded by water until the completion of

the bank of "1800." Oldham, in one map, figures a channel round in 1850, and Mr. Butterfield's map suggests the same; this arises from the two small drains figured on the Ordnance Map on the north of the Island, but these do not run parallel for any considerable distance, and are only ordinary ditches, except where the present Winestead drain bounds the Island on the north-east.

After the junction of the Island to the mainland in "1800," banks were built across the creek which was left on the north-east, at the end of Evendyke Plantation (in 1799 or 1807, Poulson*), and at the old Winestead Clough (1819-20, Poulson), enclosing two small areas which are marked on the Ordnance Map of 1824. With regard to the former, Poulson says, "Mr. Watt shut out the tide;" this would have been impossible unless there had been a previous cross bank further west.

The triangular mud flat which then remained to the east of the Island rapidly warped up, and further enclosures were made in 1826 and 700 acres in 1850. The bank of 1850 was completed in eight months, and was built of the clay from the foreshore; the construction of the last (1897) occupied several years, a chalk foundation being first laid down, and as the material then obtained from the foreshore contained a large proportion of sand, some difficulty is experienced in maintaining it. Oldham in 1854 wrote: "A few years will prepare a large increase . . . which . . . will add about 3000 acres." The area enclosed in 1897 was 336 acres:† the chalk foundation was planned to enclose 522 acres, but in spite of the time occupied on the work the rate of increase failed to realise expectations, and the area had to be reduced. Though work has been continued on the part left between the present bank and the chalk bank as originally planned, little progress has been made.

Patrington East Growths seem to have been enclosed in three sections, and the limits of these can still be traced. The old beach is marked by the present footpath to Patrington Clough. These enclosures appear to have followed the Sunk Island enclosures of 1826, 1850, and 1897 respectively.

The actual salt-marsh on the Yorkshire side of the Humber between Hull and Spurn is not very extensive. A strip about ten yards wide runs for about a mile along the Sunk

* Poulson gives two dates on pp. 463 and 465, vol. 2.

† Three fields, 100 acres, 117½ acres, 118½ acres.

Island foreshore, and there is a further patch of about two acres at Welwick. At Cherry Cob Sands and Stone Creek are two extensive "strays" outside the bank, but these are covered chiefly with grass, and are only flooded by the highest spring tides. Clement Reid ("Geology of Holderness," 1885) wrote: "The foreshores of the Humber when the tide is out are generally wide flats of bare mud or sand, cut up by multitudes of channels and creeks, and passing upwards into salt-marshes;" and Beazeley ("Reclamation of Land," 1900) states: "In some parts of the Estuary of the Humber between Sunk Island and Spurn Point extensive tracts of 'outstrays' or (locally so-called) 'growths' exist beyond the banks." Both these were incorrect: there are no "growths" between Sunk Island and Spurn, and the average Humber foreshore consists of a mud flat without creeks, which is either continued to the foot of the bank or else rises abruptly by a cliff four feet or so in height to a narrow grassy strip on which the bank is built. Only in the two places mentioned above is there any gradual transition.

The rapid growth of Sunk Island in its later stages has created a somewhat erroneous idea of the rate of accretion of land in the Estuary. Ten thousand acres in two hundred years is often quoted, but who thinks of the centuries, even before the first embankment of the Humber, during which the foundations were being laid down? Probably the lost towns of the Humber were deposited on its site.

Sunk Island owes its present size to a happy combination of currents which placed its nucleus to the west. Had it been central, Sunk would have been an island still, for there would never have been called into existence the enormous backwater in which the floating mud of the Humber was deposited.

There is a common East Yorkshire saying, that a man can get plenty of land, but can't find a place to put it. Materials for another Sunk Island drift about the Estuary at the present day, but there is no spot where the river can permanently deposit its load. Deposited at one tide, churned up by the next, carried up the river at springs and down again at neaps, its individual particles may travel about the Estuary for years before they are borne out to sea, or find a resting-place in some corner where the currents are checked. The earliest portion of Sunk Island lies suggestively opposite the outfall of the old Keyingham drain.

No matter how favourable the conditions, the process of reclamation can be accelerated only to a slight extent by artificial means. Of Oldham's 3000 acres, we have secured

300; and who knows Victoria County, whose name was writ large on the maps of the last century?

Yet prophets never were deterred by the fate of their predecessors; therefore, let us prophesy, even on the unstable foundation of Humber mud. From Paull Holme, there stretches south-east, over half the breadth of the river, Foulholme Sand, exactly as Cherry Cob Sands did centuries ago. The creek which exists at half-tide between its southern half and the mainland forms a backwater which is gradually silting up, so that there will some day be a wide, mud flat from Paull to Stone Creek. Further east, separated, as were their predecessors, by the Keyingham drain, lie the sands of Sunk Island; and thus we have the foundations of a replica of the reclamations of the last three centuries. Probably, when "Cherry Cob Sands" and "Sunk Island" convey as little meaning to our descendants as the "Isle of Holderness" does to us, there may be reclaimed a "Foulholme Sand," extending from Paull to Hawkin's Point, and a new Sunk Island in the Welwick bend.

The Spurn flats lend themselves neither to reclamation nor prophesy. Since the beginning of the nineteenth century, the channel between the Den and the mainland has filled up, together with the creeks, in which, according to the old shore-shooters, a man could hide; but during the last twenty years they have not appreciably altered. Shelford states, "the Spurn clays rose as a whole $11\frac{1}{2}$ inches between 1854 and 1867." One wonders whether the figures are correct; certainly the rate of increase has not been maintained, and there does not appear to be a sufficient quantity of silt in the water which covers them at high tide to justify the supposition that they will ultimately be reclaimed. A low, chalk bank from Welwick to Spurn, with openings at intervals, *might* assist, but, on the other hand, it would certainly cause erosion in the neighbourhood of the openings, and a transference of the eroded material into the channel. The rejection of the Holderness Embankment and Reclamation Bill of 1866 must be approved by all who are acquainted with the vagaries of the Humber.

The following notes, which have been made during the last few years when gathering information on other subjects, may be of use to future workers. As the phrases employed have often given rise to misunderstanding, it may be explained that "outside the bank" means on the riverward side of it, while "inside the bank" refers to enclosed land which is not subject to the action of sea water, except by accident.

I.—RECLAIMED AREAS.

In searching for the æcidium on *Glaux maritima*, the host plant was found inside the bank on Saltend Common, and at the western end of Paull, where, in both cases, the salt water only reaches when strong winds blow the spray over the bank at spring tides. Near the searchlight station, east of the battery, it grows inside the bank, on marshy ground which is flooded at high tide through the Thorngumbald Clough, and on Sunk Island it still grows on the shores of Fisherman's Channel, a brackish lake on the enclosure of 1800, which is probably the nineteen acres of water referred to in Kelly's "Directory" (1901). There are several similar but smaller broads on Cherry Cob Sands, but I have not seen *Glaux* there. The other host plant of the fungus, *Scirpus maritimus*, is common in all the brackish ditches of Holderness; but except for a few plants at the head of Hedon Haven, it does not occur outside the bank east of Hessle. In place of it, we find *Juncus gerardi* on the salt marsh at Welwick.

On Cherry Cob Sands the tidal water frequently enters the main drain so that, except in winter, the water contains almost as much salt as that of the Humber. *Ulva latissima* flourishes near the clough, and *Chaetomorpha litorea* and a rigid *Cladophora* are abundant for the next two miles. [See Trans. Hull S. and F.N. Soc. vol. 3]. *Aster Tripolium* and *Apium graveolens* are common along the ditches. The pastures on these areas have a characteristic appearance, but their constituent grasses have not been noted: *Carex divisa* generally occurs on those which have not been "meadowed."

Sunk Island is a place to be avoided by the botanical collector. Even on the oldest enclosures he will find an almost total absence of the commonest species, while prominent notices forbid the removal of plants from the outer bank and salt-marsh. The roadsides are bordered by a level, lawn-like strip of grass on which only *Bartsia odontites* has been noted, and the smaller ditches, owing to the thoroughness with which the drainage work has been performed, grow grass only on sides and bottom alike. I have seen it stated that the tidal water is occasionally allowed to enter and fill the ditches, but have been unable to obtain any confirmation of this rather improbable report.

Glaux maritima, *Spergularia marina*, and *Plantago Coronopus* grow on the shores of Fisherman's Channel, and *Aster*

Tripolium grows near at the bottom of grass-covered ditches; all these are on the 1800 enclosure.* *Plantago maritima* and *Triglochin* grow near the outfall of the drain on the 1826 enclosure; in 1850 this drain was diverted through the new enclosure, and in the newer part, *Suaeda maritima* and *Salicornia herbacea* still flourish.

Three years after the enclosure of 1850 a spontaneous growth of white clover covered the reclaimed land, which seems to have been at a higher level and more fit for enclosure than that obtained in 1897. From Oldham's figures the lowest part of the former was 7 ft. O.D., and would, therefore, be salt-marsh, whereas the lowest part of the latter was quite destitute of vegetation, and the part abandoned is still mud-flat only. The area which it was intended to enclose forms a long, narrow, isosceles triangle with its base along Patrington Haven and its apex near Hawkin's Point, but one-third of this was ultimately cut off by a bank parallel to that of 1850. In 1903 white clover was abundant at the apex of the triangle, but in other parts it was practically confined to a narrow strip about twenty yards wide along the old bank. It seems, therefore, to have appeared first on that part which was grass-covered before enclosure, and such ground would be more extensive in 1850 than in 1897. The seeds are probably conveyed to the new ground by horses and cattle, and fail to germinate on those parts which still contain a large percentage of salt.

During the construction of the bank, and up to 1902, *Atriplex hastata* was abundant on it, but only a few plants remained in 1903. This may have been introduced with the grass sown there to prevent denudation. *Obione portulacoides* covered the greater part of the enclosure until 1902, but in 1903 it was present, with *Plantago maritima*, only in the shallow drainage channels. *Artemisia maritima* also grew along these channels and at the foot of the old bank; it was still in the latter station in 1904.

There is no extermination of the salt-marsh species by an advancing host of Mesophytes. The bushy growths of *Obione* gradually dwindle and die off as the ground becomes unsuitable, leaving bare patches which are only after some time covered with moss and grass. In 1903 the chief grass

* *P. Coronopus* is common at the edge of the Holderness cliffs, if these are so low that the spray falls on the top, as for example, at Neville's Dyke; a narrow strip along the cliff at Kilnsea, which was allowed to go out of cultivation in 1902, was covered with this plant in 1903.

was *Festuca duriuscula*, which is also I believe the principal grass of the salt-marsh; it had, however, become so modified that, according to the foreman in charge of the works, sods taken from the enclosure to repair the bank died because of the salt water.

In 1904 there were no mollusca or waterplants in the newly dug cattle ponds on the last enclosure. *Palæmonetes varians* is common in the ditches within the 1850 bank. In the letter of 1711, quoted by Allen from Leland's "Itinerary," woad is said to be cultivated on Sunk Island. It would be interesting to discover whether there are any evidences of its cultivation; a "Wood Farm" is marked on maps printed about 1850. The same letter mentions the introduction of black rabbits; these still occur, while the common form is so abundant that a gamekeeper is employed to reduce their numbers.

2.—SALT MARSH, &c.

The tides of the Humber, according to the published tables, reach at Hull 6·5 ft. O.D. at the lowest neaps, and 13·5 ft. O.D. at the highest springs. The actual height attained depends on other factors; Shelford (Proc. Inst. Civ. Eng., vol. 28) states that the highest recorded tide up to 1868 occurred on the 8th February in that year, when a north-west wind piled up the waters to 15·7 ft. O.D. The level of the reclaimed land is about 10 ft. O.D., and the banks are maintained at 16 to 17 ft. O.D.

We have, therefore, a vertical average range of 7 feet (6·5-13·5 O.D.), in which it is possible to have salt-marsh. The mud which is submerged at every high tide grows only *Zostera*. From observations on the Wash it should also grow *Salicornia herbacea*, but the latter plant is comparatively rare on the Humber shore, so rare that it is almost unknown in the neighbouring villages. I have only met one "samphire" gatherer, and he, poor man, was not quite sane. There is practically none on the flats from Spurn to Welwick; small specimens are plentiful in the salt-marsh, and dwarf examples, usually very red, may occur at 12 ft. O.D. I have not been able to confirm Mr. J. F. Robinson's observation on *Vaucheria dichotoma* as a pioneer silt-retainer. The plant is common enough amongst the grasses, &c., of the salt-marsh.

Nowhere on the Yorkshire side of the Humber does the shore rise gradually through the full seven feet. Instead, we have in the only extensive areas outside the bank a series

of plateaux of almost uniform height. The one at Saltend is about 12 ft. O.D.; that along Cherry Cob Sands averages 12.5 ft. O.D.; and the one immediately east of Stone Creek is about 13 ft. O.D. These can hardly be classed as salt-marsh, since they are quite dry, except at the higher spring tides. At lower levels, there are only the banks of three creeks and the salt-marsh of Sunk Island and Welwick.

The distribution of plants on these plateaux is no doubt influenced by the grazing of horses and cattle, and the absence of a particular species on any one of them may be due to other reasons than the varying periods for which they are submerged. This remains to be determined; at present I can only give a few facts on the range of particular species. The range of the tides must, of course, be taken into account in comparing the situations given with other localities.

Aster Tripolium grows from 6.5 ft. O.D., the outer edge of the salt-marsh, to about 11.5 ft. O.D. Its upper limit is uncertain, as it is eaten off by cattle. Dwarf specimens occur on the higher levels with flowering shoots about six inches high; some have evidently been cropped short, but others appear to have withered at the top without any previous mutilation. Further facts about this plant and *Stutice* will be given later.

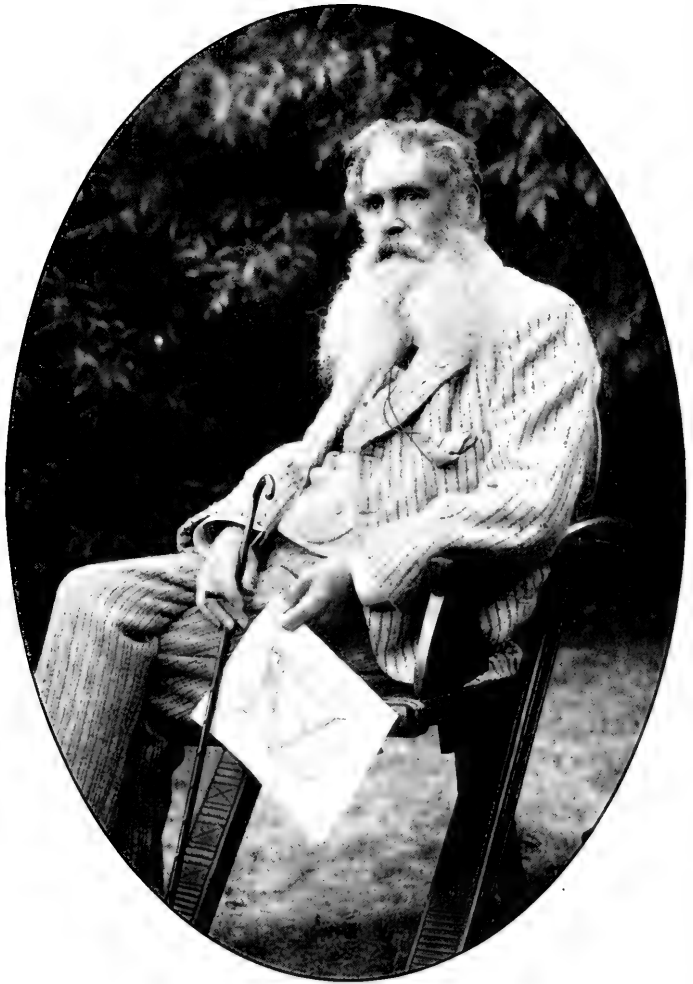
Obione portulacoides flourishes over the whole area, except perhaps in the highest and lowest foot. It is common on the Welwick and Sunk Island salt-marsh, and is fairly abundant on the Cherry Cob Sands plateau. It seems to survive enclosure for about six years. Thrift is more abundant on the Saltend plateau (12 ft. O.D.) than on the other two. *Artemisia maritima* does not grow below 13 ft. O.D., almost at the upper limit of spring tides. This usually confines it to the slope of the bank, though it also occurs on the higher parts of the plateau at Cherry Cob Sands. The lower leaves appear to be killed by the salt water.

Bupleurum tenuissimum grows with *Artemisia* at 13 ft. O.D., but never away from the bank. It may be found all along from Saltend to Welwick, 2 ft. high when growing amongst long grass on the Hedon Haven bank, or barely 6 inches in more exposed positions.

Trifolium fragiferum commences at 13 ft. O.D., where it is submerged at the highest spring tides, and continues to the top of the bank.

Plantago maritima and *Triglochin maritimum* appear to flourish best at 10-12 ft. O.D.





MR. G. H. HILL.

Though the artificial conditions to some extent preclude the application of the methods of Botanical Survey, some work can be done in comparing the vegetation of the various plateaux or the structure of a given species growing in different situations; and it is in the hope that these will be undertaken that the present incomplete notes have been recorded.

Anyone taking up this subject should consult a series of articles by Ganong on "The Vegetation of the Bay of Fundy Salt and Diked Marshes," which appeared in the "Botanical Gazette," vol. 36 (1903), Nos. 3, 4, 5, 6, &c.

HULL NATURALISTS.

By the kindness of the President, Mr. Edward Lampough, our Members are presented this year with plates (XXII. and XXIII.), from photographs, of Messrs. G. H. Hill and J. W. Boulton, two enthusiasts who still have the keen interest in the work of the Hull Club that they had a quarter of a century ago.

THE COMMITTEE'S REPORT ON THE WORK OF THE CLUB DURING 1904-5.

IT is once more this Committee's pleasant duty to report that the past year has been from almost every point of view a successful one. Our Society is becoming more and more recognised as being what a natural history society should be, and to this the frequent letters received by our Secretary testify. Especially in the matter of the printing of transactions, advice is asked by cognate societies, and this inquisitiveness can only result in a greater impetus being given to the printing of local transactions, and also in the production of work of good quality and real scientific value.

Transactions.—Since our last Annual Meeting, Part II. Vol. III. of the Society's Transactions has been issued to the members. The volume is quite equal to its predecessors, and has received nothing but the most favourable reviews from both the scientific and general Press. It contained "The Published Records of the Land and Fresh-water Mollusca of the East Riding, with Additions," by Mr. T. Petch, B.A., B.Sc.; "The Roman Villa at Harpham," by Mr. Thomas Sheppard, F.G.S.; "List of the Aquatic Larvæ of Flies occurring in the Hull District," by Mr. H. M. Foster; an account of "Mr. T. Petch, B.A., B.Sc.," by J. F. R.; "East Yorkshire Botanical Notes," by Messrs. C. Waterfall and J. F. Robinson; "The Committee's Report of the Work of the Club during 1903-4;" and shorter notes. The volume was illustrated by eight plates and other illustrations. Mr. Petch's paper is probably one of the best local lists of Mollusca ever published. We still require published records relating to many of the other branches of natural history followed by our members, and it is very desirable that systematic work in these directions be carried on.

From the sale of the reprints of Mr. Wade's "Birds of Bempton Cliffs," Messrs. Mills & Philip's "Diatoms of the Hull District," and Blashill's "History of East Hull," as well as from the sale of Transactions, the Society derives a regular income.

Lectures.—Since the last Annual Meeting three Syllabuses have been issued—one for the Winter Session, October 12th, 1904, to March 1st, 1905; and two Summer Syllabuses, from March 4th to June 24th, 1905, and July 1st to September 30th, 1905, respectively. During the past year the following lectures have been given:—

1904.

- Oct. 12—"The Field Naturalist."—Mr. E. Lamplough.
 Oct. 26—"Exhibition of Swiss Photographs." (Lantern.)
 Nov. 9—"The Dynamics of Yachting."—Mr. H. Wallis, L.D.S.
 Nov. 23—"Flies with Aquatic Larvæ."—Mr. H. M. Foster.
 Dec. 7—"Ornithological Superstitions."—Mr. Kenneth MacLean.

1905.

- Jan. 4—"The Ground-work of Chemical Science."—Mr. G. B. Walsh, B.Sc.
 Jan. 18—"A Study of Dialect Fighting Words."—Mr. J. Nicholson.
 Feb. 1—"Microscopy in the 18th Century."—Mr. R. H. Philip.
 Feb. 15—"Darwin."—Mr. J. F. Robinson.
 Mar. 1—"Insects as Food and Medicine."—Mr. E. G. Bayford.
 Mar. 15—"A Comparative View of Some Vertebrata."—Mr. S. Redfearn, B.Sc.
 Mar. 29—"Life in Other Worlds."—Mr. R. H. Philip.
 April 12—"A Trip in East Friesland."—Mr. J. R. Boyle, F.S.A.
 April 26—"Field Names."—Mr. W. Wood.
 May 10—"The Tissues of Plants."—Mr. C. Waterfall.
 May 24—"Plant Sensibility."—Mr. J. F. Robinson.
 June 7—"How East Yorkshire was Made."—Mr. T. Sheppard, F.G.S.
 June 21—"Disease and Immunity."—Mr. A. R. Warnes, M.S.C.I.
 July 5—"Colour."—Mr. G. B. Walsh, B.Sc.
 July 19—"Plant Lore and Legend."—Mr. H. E. Johnson.
 Aug. 2—"Pollination in Various Plants."—Mr. H. Knight.
 Aug. 16—"Disease and Immunity," Part 2.—Mr. A. R. Warnes.
 Aug. 30—Reports of Excursions and Exhibition of Specimens.
 Sep. 13—Conversational Evening.

Most of the lectures were illustrated by the lantern, specimens, or experiments.

On the alternate Wednesday nights during the Winter months a series of lecturettes on various branches of natural history was arranged, the subjects dealt with being as follow:—"The Daisy," "Fossils," "Insect Preservation," "Local Mollusca," "The Mushroom," "Evidences of Evolution," "Fresh-water Algæ," and "Bats." To each of these microscopes and specimens were brought.

The in-door meetings have been held without exception in the Society's rooms at the Young People's Institute, Charlotte Street. The average attendance at these has been twenty-six.

Mr. Sheppard's paper on "How East Yorkshire was Made" appeared in the "Naturalist" for April and May,

1905, under the title of "The Making of East Yorkshire," and has since been published separately by Messrs. A. Brown & Sons, and a permanent record of Mr. Foster's paper on "Flies with Aquatic Larvæ" appeared in the Society's Transactions for 1904, in a "List of the Aquatic Larvæ of Flies occurring in the Hull District."

Excursions.—The following excursions have been held during the spring and summer:—March 4th to June 24th, the Club visited Cottingham Road, Haltemprice Lane, Springhead and Willerby, Inglemire and Endyke Lanes, Figham Common, Hornsea Mere, Saltend Common and Hedon, Newport, Louth (with the Hull Geological Society), Wawne, Risby and Bentley Woods, Beverley Long Lane, Beverley Park, East Bank of the River Hull, Pulfin Bog, Hessele, Withernsea, Goole Moor, Barton and South Ferriby; from July 1st to September 30th, Hall Ings, Kelsey Hill, Swine, Haltemprice Lane, Hornsea Mere, Saltend Common, Skipwith Common, Driffield, Snake Hall, Sproatley, Burton Bushes, Newbald, and Houghton Woods.

The attendance at the excursions has not been what might have been expected, although there have been exceptions in this respect.

The thanks of the Society are due to Miss Bainton, of Beverley Park; Miss Jackson, of Thearne; and the Rev. F. H. Woods, B.D., of Bainton, for so kindly entertaining the members when excursions were held by the Society in their respective districts.

The Yorkshire Naturalists' Union has held excursions at Ripon, Askrigg, Loftus, Pocklington, Cudworth, and Maltby, at each of which our Society has been represented.

Membership.—The membership now stands at 162. The following eleven members have been elected during the year:—Messrs. L. Burnett, W. H. Crisp, T. E. Dobbs, H. C. Drake, A. M. Erskine, M.D. (Goole), F. Hollingworth, G. L. Hunt, E. S. Kemp, M. Ling, H. Waumsley, and W. H. Woodward.

By the hand of death we have lost two of our most esteemed members, the late Thomas Blashill, F.R.I.B.A., author of the "History of Sutton" and "Evidences of East Hull" (the latter appearing in the Society's Transactions for 1903), and the late M. Campbell, a genuine friend to the Club, and one who frequently attended our meetings.

Committee Meetings.—Since the last Annual Meeting four meetings of the Committee have been held, on Feb. 8th, June 7th, Sept. 6th, and Sept. 20th.

Finance.—The financial condition of the Society is satisfactory.

Museum.—We are glad to place on record the fact that the Municipal Museum becomes increasingly useful to the members of the Club, who frequently consult its Natural History collections. The various specimens of wild flowers and fruits of the district supplied chiefly by members of the Club (Mr. Bromby sent 250 and Miss Jackson another large number) have always been kindly received and displayed to the best advantage by the courteous Curator and his assistant. Specially interesting they have found the entomological collections as far as they can be displayed. At the same time, we would like to suggest that much larger rooms be placed at the disposal of the Curator, and thus enable him to make a yet better exhibition of his treasures, which is far from adequately done at present.

NOTES ON EAST YORKSHIRE COLEOPTERA IN 1905.

DURING the past year common species have been, as usual, fairly abundant, particularly certain species of the genera *Amara*, *Harpalus*, and *Pterostichus*.

During evenings in June and July a small party made excursions in search of aquatic life, which, however, were more enjoyable than successful. Springhead was the district usually chosen, one in which in former years many good species have been turned up. For a time the aquatic species obtained were exhibited alive in the Museum in Albion Street. These were *Haliphus fluviatilis*, *H. obliquus*, *Laccophilus obscurus*, *Hydroporus palustris*, *H. erythrocephalus*, *Agabus bipustulatus*, *A. nebulosus*, *Ilybius fuliginosus*, *Colymbetes fuscus*, *Dytiscus marginalis*, *Acilius sulcatus*, and *Helophorus brevipalpis*.

At a recent meeting of the Club Mr. H. M. Foster exhibited an example of the Wasp Beetle, *Clytus arietis*, one of our English Longhorns, from Scarborough, near Beverley. This is a new record for the Riding.

Four species of Longhorns, evidently imported with timber, have been shown or given to me during the past year. One of these is our regular annual visitor, *Acanthocinus aedilis*, but the other three have not been identified, as they do not appear on the British list. It would be interesting to have a list of our insect and spider visitors.—T. STAINFORTH.

MR. JAMES WM. BOULT,*

STONEMASON AND ENTOMOLOGIST.

PLATE XXIII.

BY J. FRASER ROBINSON.

ON the 25th day of May, 1905, a meeting of the Hull Scientific and Field Naturalists' Club was held, which proved of unusual interest; for exactly twenty-five years before, to the very date, the original society, The Hull Field Naturalists' Society, held its first meeting. (This subsequently amalgamated with the Hull Scientific Club, and our present title indicates the fact.) Furthermore, the founder of the first-named organisation was present in the person of Mr. James W. Boulton. So the proceedings took a somewhat reminiscent form, the original minute books being produced, and extracts read therefrom; whilst Mr. Boulton was much felicitated upon his silver wedding to the fair maid *Scientia Naturæ*. In reply to the many expressions of congratulation, our friend, who holds the record for regular attendance during the quarter of a century of the Club's existence, became briefly autobiographical, and from the notes then made, together with interviews accorded during a friendship extending over the greater part of the past twenty years, the following sketch has been prepared and will not fail, we believe, to be of some interest to our members.

Mr. J. W. Boulton is a native of the East Riding of Yorkshire, having first breathed its pure air on 13th March, 1847, at the little old-world village of North Frodingham, where his father, who is still living, was sometime tailor. We are not informed that any portents or omens attached to his birth, but it seems a happy circumstance that one who should in later years give all his leisure, and even much of his resting time to the study of the insects and other lowly animals, as well as the wild plants of the county, should himself be native thereof, and so "to the manner born." It is not always thus—

* The above notes were prepared and printed in pamphlet form and distributed amongst Mr. Boulton's friends and fellow workers, in recognition of his many years' devoted service to the club. It was thought advisable, however, to have a permanent record for the benefit of future members of the club, consequently they have been bound up in these Transactions.—[ED.]



MR. J. W. BOULT.



the stranger new to a district, and of briefer sojourn in it, being often the first to appreciate and describe its natural resources. The reason for this is quite explicable. The denizen from a distance naturally is not hampered by local prejudice and tradition, or the long familiarity that breeds contempt. But worthy of higher commendation is the man, who, though resident in his native fields, cannot be charged with either of these failings, and that is the case with the subject of this sketch. Notwithstanding long residence and work in the busy town, he never misses an opportunity of rambling, often more than once a week, into the adjacent country, and no one has made the eastern portion of the Riding more thoroughly his own in many different branches of natural history, as the sequel is intended to show.

North Frodingham would scarcely ever know, perhaps does not yet know, what an interesting little visitor came amongst them that wild March month some fifty-eight years ago, for when only a very few weeks old, the child was carried in his mother's arms to Newcastle, where Boulton the elder was to be employed for some months. Thence they returned to Yorkshire, and alternately Driffield and Hull, for the periods of James William's childhood and boyhood, became the places of abode.

At Driffield the child got the first rudiments of an education which, much to his present regret, never advanced very far. He remembers first attending a school kept by a Mr. Morris in Eastgate, and then the National school, Cross-hill. In these he learnt to read and write fairly well, but has painful recollections to this day of struggling with the elements of arithmetic. Possibly schools were then, as to some extent they still too often are, rather dreary and unlovable places, and the study of nature or human nature did not receive much attention. Consequently the fields and lanes, the wolds, and the rushing trout streams that join to make the river Hull, constituted a more attractive academy wherein some of the boy's earliest and best lessons were learnt. His first glimpses of local wild life were obtained rambling with a schoolmate who gathered snails with which to feed captive blackbirds and thrushes.

In his ninth or tenth year the family came to Hull, where he also made the acquaintance of the then existing schools of the ante-school-board times. But the experience was little better than that of Driffield. One gleam of brighter nature shone in a seminary in so remarkable a place as Robinson Row. Here the master was a bird-fancier and his school-

room was an aviary in which numerous canaries were reared and tended, and attention to these rather than to his books are Boulton's only memories. Of another school he tells us there was less good result to be expected, as the master was too frequently inebriated.

Of this period, however, he has one item of recollection to which he never fails to refer gratefully. At a little temperance meeting place in Mytongate he was induced, simply by the example of others, to sign the pledge of abstinence from alcoholic drinks, a circumstance to which he attributes his general good health, and much of the enjoyment of life. Although the motive for taking this step was so slight, yet, like the honourable man we know him to be, he has kept the pledge unbroken throughout the whole of his subsequent life.

When twelve years of age young Boulton was again in Driffild. His education now being reckoned "finished," he commenced as errand boy in the busy market town. At this occupation he was not eminently successful, for on one occasion being sent on a short errand, the wiles of Dame Nature inviting to wander with her, proved too strong, and four hours, instead of half-an-hour, were occupied doing the errand. Dismissal from his first post was the result. But could one wonder at the escapade? Given the first warm sunny days of the latter spring, the green marshy ground near the trout streams, the starry flowers of the season—the satiny stitchwort, "the pale primrose," the purple violet—and is it a wonder that the observant and impressionable lad forgot himself and his master's errand?

Returning to Hull in 1860, the family again settled down, and Hull has been their residence ever since. And now began apprenticeship to the vocation of stonemason, then, as now, considered to require seven years of a youth's life. In Boulton's case, he had spent little over half the time as apprentice when he was taken on as improver at the new Town Hall of Hull. When this was finished building he was sent to Garton-on-the-Wolds to help in the erection of the well-known and conspicuous monument to the late Sir Tatton Sykes. To two firms of Hull builders, namely, Messrs. Simpson & Malone and Messrs. Quibell & Pears, he gave such long terms of service—fifteen years to the last named—as to indicate that he proved himself an able and trustworthy workman. Indeed, for skill, energy, and reliability, he holds a place among the foremost servants of the municipality of Hull, which he has served for the past thirteen years. As indirect evidence of the above, it may be

incidentally mentioned that, notwithstanding the unfortunate general lack of employment one hears so much about in these times, Boulton has not lost many weeks during the whole of his career.

But it will be necessary to retrace our steps somewhat. At the age of twenty-four, Mr. Boulton, although never off work, suffered from ill-health. His doctor informed him that his malady was consumption, and that he would not live more than two months unless he left the stonemason's shed and got occupation in the open air. Happily this was possible, for a kindly employer sent the young mason to the Springhead Waterworks, then in building. This change, together with evening rambles, bird-nesting, and egg-collecting, which were now commenced, brought the desired effect. The incipient consumptive was cured, and is proud and thankful to be able to say that he has had no serious illness from then till now. Bearing on this, he informs us that, although a member of one of the leading friendly societies for upwards of forty years, only on one occasion, of ten days' duration, has he claimed and accepted the sick benefit to which his membership entitled him, and that was owing to an injured limb. Our friend is loud in his praise of the wise advice of his medical man, who seems to have been in advance of his time, as, the carrying of it into practice, coupled with the adopted strictly abstemious habit of life, were undoubtedly the means of securing a healthy body and the naturalist's almost unfailing accompaniment, a healthy and cheerful mental attitude.

Early in his field expeditions Boulton came to look upon harrying birds' nests as very distasteful, and even cruel—a side light this, and eminently characteristic of his kindly nature. So another pursuit which seemed to cause less compunction for the tyro was adopted. A sight of the excellent collection of butterflies and moths made by the late George Sweeney over thirty-five years ago, and a practical initiation into the art of collecting and mounting insects at the hands of the same naturalist, made Mr. Boulton an entomologist, and as such he has remained constant during all these years. At first the work was not easy. His friend Sweeney left the town shortly after their acquaintanceship began. No books or entomological manuals were at hand. No friendly spirit or local society seemed then to exist, and thus he was thrown largely on his own resources. The discouraging remarks of mild cynics who suggested that "he had turned boy again, catching butterflies," may have irritated him a little, but had little ultimate effect upon the

young enthusiast. Besides the perfect insects, eggs and larvæ of the lepidoptera were obtained, and "breeding" commenced. Newman's book ("Moths and Butterflies," 25/-), after some exercise of self-denial and thrift, was purchased, and then began the fascinating pursuit which with increasing strength has exercised our friend up to the present time. The observation of the transformation of instcts into their various phases became most attractive. Here are his own words:—"The more I went into it, the more I wanted to know. It became so interesting always to be learning something new, and to be getting health as well."

One incident of this period the now expert entomologist never fails to relate with enthusiasm. It was the taking of his first batch of the caterpillars of one of the tortoise shell butterflies (*Vanessa urticæ*). Information had been obtained that these were feeding in an old lane between Stoneferry and Sutton, the lane where tradition has it the peacock butterfly (*Vanessa Io*) was formerly to be found. Getting his desiderata, however, meant losing half-a-day's work, and this was out of the question. So, leaving his bed before three in the morning, he hurried to the spot, found the larvæ, and, depositing them upon their proper food plant, of which he had a supply at home, was at work as usual by six o'clock!

Out of failures—and who, that devotes himself to any pursuit, has not failures?—Boult made capital and invested in other branches of nature study. Insects falling short or dying off in hundreds in the caterpillar stage, as at first they frequently did, owing to lack of knowledge of their proper food plants, sent the entomologist to the study of the native wild plants, and incidentally again to the old thrush food—land and freshwater molluscs. And thus, besides insects, excellently preserved collections of plants and shells have also been made, which have proved of great value to local botanists and conchologists. So are the sciences inter-related.

It will readily appear that the above could only be undertaken by increase of the love of the field and rambling therein. Unquestionably it would mean health, as he says, both to body and mind. Constant touch with nature is marvellously rejuvenescent of all the powers, including the desire to get and give mutual aid in those subjects we have at heart. Thus it came about that the first Hull Field Naturalists' Society was thought of, J. W. Boult being one of the first to suggest such an organisation. Accordingly, together with Mr. Redyard, from Liverpool, sometime resident in Hull, a

little coterie was gathered together with the object of making excursions into the fields, of meeting fortnightly to identify specimens, exhibit "finds," and of listening to papers on appropriate subjects. This was in 1880. It will not, however, be needful here to write the history of the Club, but we are glad to put it on record that the same original ideas, developed and improved to some extent, we trust, are still the foundation underlying our interesting and fascinating fabric.

Before the Hull Field Naturalists had been at work five years, Mr. Boulton had made a large collection of the lepidoptera (moths and butterflies) of the district. Then arose unfortunate circumstances which somewhat discouraged the ardent entomologist, and led him to part with his collection, gathering apparatus, and cabinet, with the determination to give up his "hobby." Three weeks of a sort of mental agony over this untoward dénouement plunged our friend into a very "slough of despond." But emergence from this was made sooner than anyone anticipated; for the sight of the unique collection of European Noctuæ (night-flying moths) made by N. F. Dobrée, Esq., of Beverley, and now happily one of the greatest treasures of the Hull Municipal Museum, together with that gentleman's kindly advice and gift of preserved larvæ, to quote Boulton's own words, "Set me off again, and I went at it night and day to get another collection together." "Breeding" operations were resumed. Besides the usual "pinning" and mounting of the perfect insects, at which there are few finer hands, the preservation and setting up of larvæ were added to his work; and, surely enough, after a few years a finer collection than the former one was accumulated, and contained about 6000 specimens, beautifully preserved and scientifically arranged (Mr. Boulton has never favoured insect "picture" (?) making). Besides the lepidoptera, it may be mentioned that other classes of the insect fauna had not been neglected, for the second collection above described had in addition a fairly large number of local beetles (coleoptera).

As might be expected, the name of our local entomologist became widely known, especially as note after note of his personal observations and experiences appeared in the various collectors' journals. Exchange of insects with brother entomologists in other parts of the British Isles, and even on the Continent and in America, became a very common occurrence, so much were the results and products of his excellent work appreciated.

Never weary of exhibiting his insect trophies to any one ever so slightly interested in the subject, about twelve years ago his collections came under the personal notice of Mr. Miall, the distinguished biological professor of the Yorkshire College, now Leeds University. The eye of the keen student and teacher of Natural Science saw at a glance that the preserved insects might prove invaluable as practical illustrations in biological and other educational work; so, after considerable hesitation on the part of their owner, and some bargaining on the part of both entomologist and professor, the cabinet changed hands at a fair price, and is now doing duty according to the original intention in the University already referred to.

Thus a second time Boulton found himself bereft of his beloved insects, and there seemed nothing for it now but to dispense with the remnants of his paraphernalia, which was accordingly done. A few months of unwilling and uncomfortable idle leisure ensued. When rambling one Saturday afternoon in October, 1893, near the Alexandra Dock, Hull, Boulton's eyes fell upon some caterpillars feeding on the seed capsules of the bladder campion (*Silene cucubalus*, vel. *S. inflata*). The larvæ were new to him, and the temptation to gather some and see them through their metamorphoses, and thus prove their identity, was irresistible. Accordingly a batch was taken home and observations recommenced. The naturalist was "red-hot at it again," and from that day till now he has not ceased to collect, "breed," observe, preserve, and mount as before!

Further, it may be stated that Mr. Boulton's latest work in every way shows improvement and marked development upon that of any former period, having been conducted with even greater energy and enthusiasm. Thousands of examples of that garden pest, the currant moth (*Abraxas grossulariata*), have been reared and watched to the perfect insect stage for the purpose of noting the variations in colour and marking; and the remarkable series in his present collection is the result. Here it may be interpolated that the above does not necessarily indicate anything of the exterminator about our friend. Just the reverse is the case. He never kills an insect that is not of use to his series, but on the contrary lets more thousands fly away on airy wing than the writer dares mention, not wishing to call down upon the entomologist's devoted head the anathemas of horticulturists.

The question of "Melanism"—the tendency to become black or darker in colour and marking—has had great atten-

tion at the hands of Boulton, particularly in the case of *Amphydasis betularia*. He informs us that this species, taken near Hull thirty years ago, would be light coloured (the type) to dark in the ratio of eleven to one. Now the case is exactly reversed, the darker varieties being in the ascendant. This modification is probably due to the growth and extension of the city which has encroached upon the habitats of *betularia*. At all events, it has its bearing upon certain problems which the evolutionist knows well to appreciate.

The foregoing suggests to the writer's mind some of the sorrows of the true naturalist, ever jealous of the extinction of native species. Boulton has his lament to make in this respect, and has furnished us with a big list of species that are now partially or entirely extinct in the Hull district. On this point he has a whole stack of information which lack of space prevents inclusion here.

As evidence of what the amateur and local worker may do for science generally, it may be remarked that in several instances where only one food-plant of insects was mentioned in Newman's book and other of the early manuals, Mr. Boulton has practically demonstrated that there are several plants upon which certain species are now known to be in the habit of feeding.

The unbounded energy and assiduity of purpose manifested by our subject in the above outlined directions during the past twelve years has resulted in the production of the third and finest collection that he has yet made. It embraces almost everything lepidopteral that is to be found locally, together with an almost exhaustive representation of British moths and butterflies. Not merely is the perfect insect (*imago*) included, but also the eggs, larvæ, chrysalides, &c. Any one privileged to inspect the collection—and a slight wish to see it is at once responded to—cannot but be struck with the immense amount of work it must have entailed.

There is no secret, however, as to its accomplishment, although holidays, as ordinarily understood, have not figured much in the stonemason's life—perhaps a fortnight in twenty-five years. But evenings, Saturday afternoons, and Bank Holidays (Sundays invariably excluded), have been his sole times of operation, but as previously stated few of these have been neglected.

After the hard day's work with mallet and trowel and much heavy lifting, relaxation has been sought, feeding or preserving caterpillars, and setting or mounting the perfect insects, work which, perhaps, too often has robbed the

stonemason of much needed sleep. In connection with the preservation of larvæ, which is a rather tedious and unpleasant task, it is amusing to hear Boulton tell the story of its commencement in his own case. A fellow entomologist had apparatus for the purpose which cost some pounds; nevertheless, after a few attempts, the well equipped tyro gave up the larvæ business and stuck henceforward to the *imagine*. Our friend, on the other hand, took up the work; his tools, including blowpipe and small portable oven, costing altogether under a shilling; and now he is an acknowledged expert in this interesting department.

When not engaged indoors at work such as the above, the entomologist takes advantage of nights when the weather is favourable to secure night flying moths by the device known as "sugaring." A compound consisting of treacle and rum is made in a portable vessel and taken to the haunts of the insects, where it is painted on palings, tree trunks, walls, and other objects. The smell of this stuff attracts moths, and on settling to sip thereof, they are taken by the light of a small pocket lantern. The practice is certainly productive of insect booty, but now and again brings down on the entomologist's devoted head the execration of absent minded lovers who likewise get involuntarily caught in the sticky mess. The somewhat prowling habit of the man with the lantern and treacle pot have been known to arouse the suspicions of the police until they became fully aware of his harmless intentions, and ended by becoming, not infrequently, assistant collectors. On the other hand orchard and garden thieves, mistaking the entomologist for the police, have been suddenly frustrated in their evil designs. Perhaps the most amusing, if somewhat serious, episode in connection with "sugaring" and in direct contravention of Boulton's non-alcoholic principles, was that in which certain naughty boys, having learnt the nature of the sweet compound, followed the operator at a distance and with their tongues licked the rum and treacle off the palings! But "All's well that ends well," and this has generally been the case in our friend's ramblings. Nothing has happened more untoward than the extinction of the light, and subsequent involuntary wading or ducking in an unseen dyke (ditch) or pond.

In all his many daylight and nocturnal rambles, Boulton has not always been mindful of the notice, "Trespassers will be prosecuted," although no one is more desirous of being law abiding. Damage or spoliation of any sort he invariably avoids, and so does not deem his trespass within the meaning

of any act, and only on one occasion, some years ago, when using his insect net in a field near Springhead, he was accosted by the tenant and ordered off the ground with much expletive English and flourishing of a horse whip. In relating this little incident our friend always chuckles when he comes to the concluding sentence:—"But you know, the farmer was drunk," and little else could be expected.

Of inquisitiveness of the natives, as well as of their banter, our collector frequently has had to run the gauntlet, generally coming off best man. On once sweeping the long grass near Sutton Drain he was accosted by an agriculturalist with: "Are ye catchin' fish?" "Yes," was the ready reply, "flying fish." "A've heerd tell o' flyin' fish, but a' did'n't think there were any about these parts," was the rustic rejoinder. Youthful remarks are perhaps most frequent, but generally evince a somewhat limited acquaintance with natural history pursuit, which in their opinion may be summed up in the word "striggling" (alternative for "stickleback catching"). The most effective mode, however, of settling all unnecessarily inquisitive people was by answering their questions with the scientific name of the insect caught, although this had its limits of endurance on the part of those informed, who occasionally construed the answer as insolence.

Had the subject of this sketch been favoured with a little better literary training, and had not an unfortunate life-long impediment of speech hampered vocal demonstration of his pet subject, Mr. Boulton's name as writer and lecturer undoubtedly would have been more conspicuous. As it is, he has made valuable contributions to the Transactions of the Hull Scientific and Field Naturalists' Club. His "List of the Macro-Lepidoptera (Butterflies and Large Moths) collected within eight miles of Hull," which appeared in the Club's Transactions, Vol. I., No. II., 1899, is the fullest account of the subject so far as the East Riding is concerned that has yet been published.

Besides these, he has read several papers, accompanied by practical illustrations and demonstrations at the Club's meetings.

We have already hinted that Mr. Boulton is by no means to be considered as a man of merely "one book." Of local mollusc shells (land, freshwater, and marine) he has a very complete collection, as beautifully selected and preserved as is the case with his insects. Together with the writer one Saturday afternoon, some years ago, he was the co-

discoverer and first recorder for Yorkshire of that rare and somewhat erratic shell, *Limnea glutinosa* (now *Amphipeplea glutinosa*). His *hortus siccus* of East Yorkshire wild plants, all well preserved and mounted, numbers over 800 specimens. Even amongst the vertebrate animals few are better informed. With the grass snake, so common in Holderness, as well as the adder, on most sandy, heathy commons, Boulton is a perfect "sapengro" (*vide* G. Borrow's "Lavengro.")

Further, it must not be supposed that there is the slightest element of idleness or disinclination for activity in the entomologist stonemason. His fellow-workmen, as well as observers unknown to himself, tell us a far different story. It is needful to touch upon this aspect, for one has heard the village worthy and naturalist sometimes dubbed with opprobrious epithets suggesting the idle character. An instance of our friend's activity and untiring energy may be given as evidence. It is one of many visits that he has paid to Spurn, which, for some things, is a favourite resort of naturalists. A Saturday morning's work at the ordinary avocation, and often involving much walking; train to Patrington, thence on foot to Spurn—13 miles—"sugaring" all night on the sandy strip of land forming the peninsula, and ending in the well-known Spurn Head, a walk back next morning to Patrington or Withersea, and then home by the first train, is a favourite and typical piece of Boultonian pastime, and not at all a bad sample for one approaching three-score years of age. Even during the present year (1905) one has frequently felt that there need be no fear of the rambling party missing a train if the nimble little entomologist is there to set the pace, as he usually is, although stouter and more inert members of the rambling contingent may feel somewhat punished in "wind and limb" in making the necessary effort to follow their leader.

One would need the pen of a Samuel Smiles or William Jolly in describing the Scottish Naturalists' heroes—R. Dick, T. Edwards or John Duncan—to do full justice to our East Yorkshire Naturalist, J. W. Boulton. But what fails in a letterpress description may be made up by a glance at the accompanying excellent and eminently characteristic portrait.

May that kindly, cheerful, and observant eye still gaze sympathetically on the green fields of East Yorkshire and their plant and insect denizens many years hence, as it does now, is the hopeful and earnest wish of James Wm. Boulton's fellow members and natural history associates.

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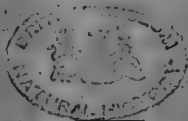
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NOTES ON A COLLECTION OF ROMAN ANTIQUITIES FROM SOUTH FERRIBY, IN NORTH LINCOLNSHIRE.

PART I.

BY THOMAS SHEPPARD, F.G.S.

BETWEEN the Hall and the chalk pit at South Ferriby there is a small piece of cliff, about a mile in length, which is alternately assailed or neglected by the water of the Humber, according to the trend of the currents in the estuary. It will occasionally happen that for years the tide never reaches the cliff foot; consequently, the clay slips, vegetation flourishes, and collecting is not a success. Then, without any apparent reason, the waters will suddenly begin to wash all the loose material away and expose a good clean section. Of the nature of this, which varies from 2 or 3 to 12 or 15 feet in height, detailed particulars have been given

elsewhere.* In the present notes, however, I propose to deal with some of the various antiquities of Roman date which have from time to time been washed out of the cliff. Unfortunately, at the present time objects are rarely met with, and certainly, from my own experience, they do not occur in anything like the profusion in which they did twenty years ago. I am informed that in earlier times it was a much better collecting ground still, and of this I have abundant evidence. Unquestionably the person who loved more than all others to gather the various objects as they were washed out of the cliffs, was a somewhat eccentric collector, Thomas Smith of South Ferriby, locally known as "Coin Tommy," who died recently. With a very few exceptions the whole of his collection was secured for the museum at Hull, being sold at Barton-on-Humber, and these specimens, together with others collected by Mr. J. Hatcliffe, Mr. T. Havercroft, and myself, form the material upon which the following notes are based. I have also had an opportunity of seeing a small but interesting collection in the possession of Mrs. Pechell, whose late husband, formerly residing at Barton, secured several interesting objects.

South Ferriby is within quite a short distance of Winteringham, which was the point on the south bank of the Humber at which the Roman soldiers, on their way from Lincoln to York, along Ermine Street, embarked for Brough, the landing-place on the Yorkshire side. In addition to the various Roman remains found at Winteringham, there is evidence that small parties of Romans occupied various suitable sites in the district. One of these was at Horkstow, about a mile from South Ferriby, where there is a wonderful mosaic pavement, upon which a chariot race is represented, and which is figured in Fowler's well known coloured plate. This pavement is about all that is left of what was once a magnificent villa, probably occupied by some Roman of note.

From Horkstow, over the hills behind South Ferriby, along what is now known as Middlegate, was a Roman road leading to a spring near the Humber side. This spring, surrounded by trees, still exists, though it is now much nearer the Humber shore than it was in Roman times. It is referred to in old documents, and still known amongst the older Ferriby folk as St. Chad's Well, or Cadwell; hence the name often applied to the natives of Ferriby,—“Caddles.” The name alone of this spring is evidence of its antiquity,

* "Notes on the Geology of South Ferriby, Lincs.," by the present writer; Trans. of the Lincolnshire Naturalists' Union for 1905, pp. 53-72.

and unquestionably in Roman times such a natural source of water was a necessity to the occupiers of this little tract of country. Around this well, then, was a small settlement, and within a few hundred yards of it nearly all the objects presently to be described were found.* Near the Hall, on the Humber bank, I have unearthed human skeletons at a depth of about five feet, and a skeleton from the same place was found by Mr. Havercroft which had a number of beads around its neck. These would appear to indicate a cemetery. Nearer the well "Coin Tommy," on more than one occasion, found cinerary urns of Roman date, in which cremated human remains were still preserved; and one of these, he thought, contained nothing but bones of fingers and toes. I have also secured portions of cinerary urns, some containing bones. Several objects were obtained many years ago whilst digging a gravel pit to the east of the spring, amongst them being a number of swords, a small lead coffin, etc.; but these appear to have been lost.

At the present time remains of two wells, lined with squared stones, exist; one is now some distance from the cliffs, and the other is at low water mark and cannot be reached. From these facts it would appear that on this site was not only a small settlement of Romans, but they must have existed there for some length of time, judging from the artificial wells, from the enormous quantity of pottery, &c., which has occurred, and from the fact that their dead were both inhumed and cremated, and buried in the vicinity. Some fourteen or fifteen years ago an interesting section of the cliff showed a fireplace still in position at a depth of four or five feet. This was built of flat angular pieces of Oolite (not the local chalk), and amongst them was the half of a Roman millstone, or quern, of sandstone. The stones were

* The occurrence of the extraordinary collection of fibulæ, rings, beads, and coins near this spring (and especially the coins, which number some thousands) is very suggestive of many of the objects having been thrown into a well as votive offerings—as was the case elsewhere in Roman times. In this way the unusual accumulation of relics at Ferriby may be accounted for. A similar instance is on record in the well-known well of the Goddess Coventina at Carrawburgh, near Chesters, on the Roman wall. In this well were over 13,000 coins (ranging from B.C. 31 to A.D. 383), altars, fragments of Samian ware, bones of animals, earthenware vases, brooches, rings, beads, dice, and other objects. See "Description of Roman Remains discovered near to Procolitia, a Station on the Wall of Hadrian," by John Clayton, "Archæologia Æliana," 1876, vol. viii., p. 1; also "An Account of the Roman Antiquities preserved in the Museum at Chesters, Northumberland," 1903, pp. 145-173.

well burned, and in the ashes at the bottom of the fireplace was a flat disc of earthenware with four small holes partly bored through it, which had evidently been used in games.

Perhaps the most satisfactory way in which to deal with the objects found, would be to take them in some order.

FIBULÆ.

Under this head are the various fibulæ or brooches, of a great variety of patterns and types, some being of altogether exceptional interest. Unquestionably the collection of fibulæ is the most interesting of the various objects found.

Aucissa Fibulæ. There are two brooches and a fragment of a third of altogether exceptional interest, as they bear inscribed upon them the makers name, *Avcissa*, (*Aucissa*). In general shape and ornamentation these brooches do not differ greatly from the ordinary types of fibulæ. The arch is half pear shaped. One end—the stalk, as it were, of the pear, terminates in a knob, and is beaten out into a thin wing or flange, bent round along the entire outer edge to form a rolled up outwards into a small hollow cylinder, which is cut through in the centre, and the pin inserted here, plays or hinges upon a piece of bronze wire thrust lengthwise through the cylinder. It is just above this cylinder that the name catch for the pin. The other end is flattened transversely and “*Avcissa*” is placed. The ornamentation of these brooches is very simple. Along the centre of the uppermost side of each are three raised parallel lines, the centre one being broken up into a series of raised points or dots, and parallel to each edge is another raised line. On the flattened hinge portion, lines at right angles to the preceding are drawn, between two of which the name “*Avcissa*” is placed. In each case, unfortunately, the pin is missing, although in one of the brooches a portion still remains, showing a projecting piece which prevents the pin from going too far inwards, and at the same time makes a spring unnecessary.

An important paper dealing with the *Aucissa* fibulæ occurs in “*The Archæological Journal*” for 1903. This is from the pen of Mr. F. Haverfield, M.A., F.S.A., of Oxford. From it we learn that:—“These brooches all, so far as is recorded, belong to one and the same type of fibula. It is a simple type, devoid of elaborate devices or complicated ornament, but it possesses definite features. Instead of the usual spiral coil or spring to control the pin, it has (like some other Roman types) a hinge working inside a tiny cylinder, which

is so short as hardly to project sideways beyond the breadth of the rest of the object. The name Aucissa is in each case placed just above the cylinder. The pin is straight; the sheath in which its points rests, when it is fastened for use, is plain and small, and often terminates in a knob. The bow is roughly semi-circular; it is a flat narrowish band of metal, widest near the hinge, and decorated only by lines and beading which run along it. Enamelling seems in no case to be used. This type of fibula is not confined to the name Aucissa. It occurs occasionally with other names. It occurs exceedingly often uninscribed, having been found very commonly in many parts of the Roman Empire, north

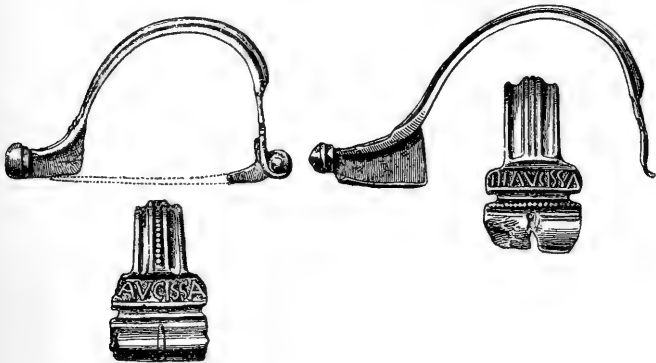


Fig. 1.

Fig. 2.

AUCISSA FIBULÆ FROM SOUTH FERRIBY. (Actual size.)

of the Mediterranean, and outside it; Almgren quotes an example found as far away as the Government of Tomsk in Siberia, and Tischler mentions instances from the Caucasus.

Then follows a list of the known examples of this brooch and the places where they occur. Among them are localities in Italy, Germany, France, Siberia, &c. With regard to its name "Aucissa," Mr. Haverfield writes: "The name 'Aucissa' appears to be Gaulish, or at least Celtic. It has been called Etruscan or Etrusco-Roman, but names ending in 'issa' do not occur in Etruscan, while in Latin they first appear in the Romance period, and then only as feminines. On the contrary, they are common, as masculines, in Gaul and in the Celtic lands of Central Europe. The first part of

the name is also inexplicable as Celtic, since names beginning with 'auc' and 'auci' are not uncommon in Gaul, and the whole name 'Aucissa' seems to occur on a broken piece of 'Samian' found in Paris about a hundred years ago. Moreover, a Gaulish fibula maker is no novelty. The Gauls are well known to have been skilful in the manufacture of small metal objects like fibulæ, and we can point to traces of actual work in fibulæ, which constitute a good parallel to 'Aucissa.' Mowat has recorded in the *Bulletin Epigraphique* about a score of names inscribed on fibulæ found in Gaul. They are obviously makers' names, and while about half of them are ordinary Roman names, about half of them are Gaulish names. Accu, Atrectos, Boduos, Carillus, Durnacus, Iovincillus, Iulios Avo, Litugenus, Nertomarus, and the like. The fibulæ which bear these names, vary in character, but some belong to the 'Aucissa' type, as, for instance, the fibulæ of Durnacus. Now these names are not only Gaulish, but most of them occur only in Gaul; they do not belong to any Eastern Celtic district in Central Europe. And it is to be added that the whole practice of placing makers' names, whether Gaulish or Roman, on fibulæ, seems especially Gaulish. That country has yielded the largest number of recorded fibulæ thus inscribed. In other provinces the inscribed fibulæ are generally of a different kind; they bear such inscriptions as 'Constanti vivas' or 'utere felix,' and they usually belong to a far later date than that which we have assigned to the 'Aucissa' species. It is possible that we should go on to trace some connection between the practice of stamping 'Samian' ware made in Gaul, and the practice, a much rarer practice, of stamping fibulæ made in Gaul. But the Gaulish potters copied an Etruscan fashion, and the Gaulish fibula makers might have done the same, so that the argument is not much advanced by such a consideration. On the whole, the balance of direct and indirect evidence, favours the view that the fibulæ stamped with the name 'Aucissa,' were made in Gaul, or at least copied from 'Aucissa' fibulæ made in Gaul. It does not follow that the uninscribed fibulæ of the same type were Gaulish, or that the type had a Gaulish origin. In deciding these questions, caution will be desirable, and until further evidence be discovered, the verdict may be reserved."

It is particularly gratifying to find two brooches of this character from South Ferriby. In addition to the examples figured above, there is a fragment of rather more than half of a fibula of undoubtedly the same type. This is much

corroded, but the name can partly be seen. With regard to other "Avcissa" fibulæ, it is interesting to note that only two examples marked with the name in this way, have previously been recorded in this country. These are figured by Mr. Haverfield, and were found at Charterhouse on Mendip, near Cheddar, in Somerset.* They bear a striking resemblance to the Ferriby brooches figured above, one of them having three upright marks before the name, similar to one of the Ferriby examples. The collection from this Somerset station is now in the Bristol Museum, and includes a series of objects remarkably similar to the Ferriby collection. †

As will be seen from the illustrations (Figs. 1 and 2 on p. 251), the letter "i" on one of the brooches is rather small, and seems to be crowded in between the "c" and "s." The other example has three upright marks before the word, the "c" and "i" are almost joined together, and between the last "s" and "a" there is a slight mark inserted.

Enamelled Brooches. Of these there are many varieties, which can be roughly divided into two forms, namely, the harp-shaped fibulæ and the flat disc brooches. Amongst the former the most important specimen is unquestionably that shown in fig. 3 and 3a, which was secured at the Barton sale by the Rev. W. Wyatt, of Broughton Rectory, Brigg. It is a massive object in bronze, harp shaped, and weighs slightly over $2\frac{1}{2}$ oz. Its length is $2\frac{3}{4}$ inches, its width at the broadest part $2\frac{1}{2}$ inches, and at the narrow end one third of an inch. The acus, which unfortunately is missing, worked from the top of the fibula by a very elaborate and strongly attached bronze wire spring (known as a "rat-trap" spring), which was held in position by a hook cut from the solid bronze at the top. At the top of the pin there are three cup-shaped hollows with holes in the centre which have evidently

* Since the above was written, Mr. Haverfield has made a further contribution to the "Archæological Journal" (Vol. 62, No. 248, 1906, pages 265-269), entitled "Notes on Fibulæ." In this the Ferriby specimens are described and figured, and other examples are recorded.

† I have recently had an opportunity of examining the Mendip collection which is now in the Bristol Museum of Antiquities. The general resemblance to the series of objects from South Ferriby is most striking. Not only are there two Aucissa fibulæ in each instance, but almost every type of brooch, ring, bead, pin, etc., etc., is represented in each collection. In a paper on "Roman Mining on the Mendip Hills," by Mr. Waldron, read at the January meeting of the Cardiff Naturalists' Society in 1875, and printed in the following year, are figured several specimens from Charter House. Many of the figures in this paper would serve equally well in illustration of South Ferriby objects.

originally held jewels or other ornaments, now lost. One of these hollows is towards the top, and there is also one on each side. The bronze around each of these depressions is moulded into a conventional foliate design. Between the orifice at the top, and the bottom of the pin, are eight lozenge-shaped pieces of cobalt-blue glass or enamel, the greatest axes of the lozenges being across the width of the pin. The sixteen triangular interstices left between the lozenges and



Fig. 3.



Fig. 3a.

ENAMELLED BROOCH FROM SOUTH FERRIBY. (Actual size.)

the sides of the fibula were filled in with sealing-wax-red enamel, traces of which remain. The flange, which is very massive and intact, is perforated by two circular holes (see fig. 3a). This brooch is similar in type to the Ferriby examples shown on Plate XXVI., figs. 2 and 8, and is attributable to the first half of the second century A.D.

A precisely similar example to fig. 3 was found in the Victoria

Cave, Settle, Yorks., which was discovered in 1838. Various descriptions of the discoveries then made, and which involved several items similar to those found at Ferriby, have been printed. In the account of the cave and its contents in Professor Dawkins' "Cave Hunting" (1874, pp. 81-125), reference is made to this brooch:—"One harp-shaped brooch is ornamented with diamonds of blue enamel, separated by small triangles of red, and shows in its Roman design and Celtic ornamentation the union between Celtic and Roman art. A similar specimen from Brough Castle, Westmorland, is preserved in the British Museum, and may have been turned out of the same workshop." From the coloured figure of the Victoria Cave specimen which appears on the frontispiece of Professor Dawkins' book, there is evidently a very great similarity in the specimen from Settle and Ferriby.

Others are shown in Plate XXVI., figs. 1-6, etc. Most of these date from the first half of the second century. Of some of the fibulæ it is difficult to say whether enamel has really been inserted in the incisions or not. The brooches are generally of bronze, one or two are of iron, and a few are silvered, if, indeed, they are not made entirely of that metal. The enamelled harp fibulæ are of two types, namely, those with the acus or pin working loosely on a short hinge, and with a flat foot or base near the point of the pin; this form is usually provided with a loop or ring at the top of the brooch for fastening to the garment. The other type, the T fibula, has a very wide hinge or crosspiece, and generally has the opposite end pointed, though occasionally a rounded foot appears as in the other examples. Whilst the brooches are generally in a fair state of preservation, and do not appear to be much damaged, it occasionally happens that they are twisted and bent in a curious manner. The pins are frequently preserved, and though generally of bronze, are apparently occasionally of iron; possibly in some cases where the pin is missing, they were of iron also. Some of these brooches, as, for example, the large one already referred to, contain deep holes or grooves, which have evidently originally held jewels. Unfortunately these are mostly missing. The various devices adopted for giving a spring to the acus are very instructive. In some cases the bronze wire has been twisted round and brought under a catch on the top of the brooch; in others the spring is held in position underneath the brooch. Some of the fibulæ, which are provided with loops at the top by means of which they would be sewn on

to the dress, are more artistic in pattern, and are much more elaborately ornamented (see Plate XXVI.)

In a coloured illustration of Roman fibulæ, which appears in Hume's "Ancient Meols" (1863), Plate III., are represented two examples, figs. 4 and 7, identical in type with those from Ferriby shown on Plate XXVI., figs. 2 and 8. The specimen shown in figs. 1 and 1*a* of Plate XXVI. is almost exactly similar to a fine Roman fibula from Doncaster, figured and described in "Hull Museum Publication No. 27," p. 17. It is precisely similar to a specimen figured in Prof. W. Boyd Dawkins' "Cave Hunting" (1874), fig. 5 of frontispiece.

Flat Brooches. Of the flat brooches there are nine, some of which still retain the enamel, and others would undoubtedly originally be ornamented by enamel or by jewels. Some of these are exceedingly small, and as they contain the remains of the spring and the catch upon which the acus was fastened, they are evidently complete, and almost bear the appearance of having been toy brooches used by children.

Perhaps the most interesting of these small examples, is a very fine one, $1\frac{5}{8}$ inches in length, which is in the form of a fish. This is in excellent preservation, the pin and the catch being still intact (see Plate XXV., figs. 3-3*a*). It is ornamented by blue enamel let into the bronze.

Two other examples of fish fibulæ of precisely this type have been previously found in England. They are figured and described in the *Reliquary* for October, 1902.* To the proprietors of the *Reliquary* we are indebted for the use of the illustrations herewith of the two previously recorded specimens. On comparing these with the Ferriby example it will be seen that the three are so very much alike that there can be little doubt that they are from the same Roman workshop, if indeed they are not the work of the same artist. Figs. 4, 4*a*, and 4*b* are different views of a specimen found in London; fig. 5 gives a representation of an example found in Wiltshire.

The following notes in reference to the previously discovered fish-shaped fibulæ are extracted from Mr. Reader's paper :—

"During the past winter [1901] Mr. A. S. Kennard and myself have been investigating the site of some pile structures that have occurred near the street known as London

* Vol. 8, No. 4, "Notes on an Enamelled Fish-shaped Fibula," by F. W. Reader, pp. 274-276.

Wall right on the bottom of a stream. It was among these piles at a depth of 18 ft. below the level of the present street, and associated with other Roman objects, that the subject of

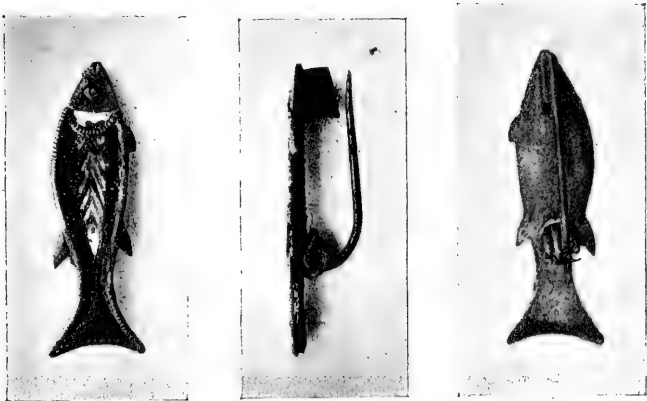


Fig. 4.

Fig. 4a.

Fig. 4b.

FRONT, SIDE, AND BACK VIEWS OF FISH-SHAPED FIBULA FOUND IN THE BED OF THE WALL BROOK NEAR LONDON WALL.

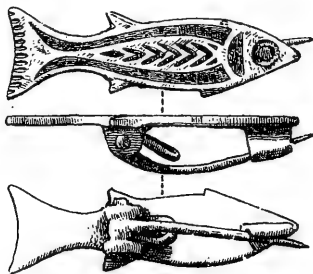


Fig. 5.

FISH-SHAPED FIBULA FOUND IN ROMANO-BRITISH VILLAGE, ROTHERLY, WILTS.

this note was found by Mr. Kennard. It is made of bronze, ornamented with black and white enamel. The upper surface is quite flat, except for a delicately-raised fillet of metal

marking the outline of the body and the division of the head, but this is missing from the head itself, probably through decay. Two bands of black enamel extend from the head to the tail, enclosing a space in the centre of the body which is picked out with chevrons of white enamel, apparently to represent scales. The eye, which is in relief, remains, but the other details of the head have disappeared. The spring is formed by the end of the pin being bent round in a double spiral, which is hinged to a flange protruding from the under side of the upper portion or bow, although in this type the term "bow" can scarcely be applied, this member having become absolutely straight.

"So far as I am aware, only one other of like pattern has yet been discovered in this country. This was in the Romano-British village of Rotherly, excavated by the late General Pitt-Rivers, and during the time that I was entrusted with the supervision of the operations. For comparison, the Rotherly specimen is here reproduced from General Pitt-Rivers' 'Excavations in Cranborne Chase', Vol. II., Plate XCVII., p. 118. In size and general shape the two are identical. The enamel is dark blue, however, in the Rotherly specimen, where in the London one it is black; there seems to be some slight difference also in the arrangement of the spring. Both these specimens are reproduced full size."

Another brooch, also complete, is in the form of the sole of a sandal; this is also $1\frac{5}{8}$ inches in length (Plate XXV., figs. 9-9a). It is provided with a small loop at the heel, by means of which it would be secured to the dress. It is precisely similar to one found at Warrington, and figured in "Warrington's Roman Remains," by Mr. T. May (1904, page 79). In the Warrington specimen, however, traces of enamel are preserved, whereas the hollow inside the sole in the South Ferriby example is entirely empty. Mr. May's description of his specimen is as under: "An early perfect bronze fibula, length $1\frac{1}{2}$ inches, shaped like the sole of a sandal, filled with blue enamel, having four yellow spots, and only the ring for attachment of the pin partly corroded." A further specimen (see Plate XXV., fig. 8) is oval in form, with a sunk ring round the edge, probably originally filled with enamel, and an oval hollow in the centre, which may have been filled with enamel or by a jewel. This brooch has been silvered, traces of which still remain. Three brooches of a somewhat similar type are shown in Plate XXV. The first (fig. 5) is a very fine example, almost perfect, and has both a spring and a catch for the pin complete. It is

1½ inches in length, and in the form of a round shield. The central boss or elevated portion has four oval receptacles containing a beautiful blue enamel. Surrounding these are eleven other enamel discs in blue, and round the edge of the brooch are six smaller and two larger projections of bronze, part of one of the latter being broken away. Of a somewhat similar type, though only measuring 1¼ inch in greatest width, is that shown in Plate XXV, fig. 6. It has originally had eight projections, but two of these are now missing. There is a central depression, and two sunk circles, which have probably been enamelled, though all trace is now gone. A somewhat unusual form occurs in Plate XXV., fig. 4, the catch for the acus being under the large projecting portion, in addition to which there are seven other points, each of which appears originally to have had a small knob at the apex. In the centre of this brooch is a jewel, possibly a garnet, which has been inserted in a hole drilled right through the brooch, and shows on the under side. A ring running round the outside appears to have been filled with blue enamel, and there are traces of red in the centre. A pretty brooch in the form of a small shield, and measuring seven-eighths of an inch across, is shown in Plate XXV., figs. 7 & 7*a*. This does not appear to have been ornamented; it contains a catch and a hinge for the acus complete. Two very small brooches, each of which is enamelled, are shown in Plate XXV., figs. 1 & 2. The first of these consists of three discs touching each other on the edges, and having a triangular design in the centre. The other, when complete, evidently had four similar discs, with a design consisting of four concave sides in the centre. The first brooch is the most complete, and has traces of red enamel in the centre of each disc, the triangular area in the middle being also filled with enamel. The other brooch has red enamel on each disc, the middle being occupied by blue. Types of brooches similar to figs. 1-9 on Plate XXV. are generally thought to be of the 2nd and 3rd centuries A.D.

Other brooches. Of evidently a somewhat early type of brooch, are several examples in which both the fibula and the acus are made out of one piece of bronze. On these (see Plate XXVII., figs. 9, 10, 11, & 12) the bronze has been carefully wrought, twisted round in the centre to form the spring, and flattened and bent over at the opposite end to receive the point of the acus. On some of these the spring is held in position by the catch on the back of the brooch, which in one instance has been hammered flat over the

bronze wire. One of these brooches is of particular interest, from the fact that it is to all intents and purposes precisely of the pattern of the modern safety pin (see figs. 9 & 9*a*). This specimen, which is of the La Tène period, is still in working order, the pin having quite a good spring with it, and the catch for the reception of the point is complete. There are a number of brooches of a somewhat unusual type in the collection, some being plain, and others highly ornamented. Plate XXVIII., figs 1, 2, & 3, show some of these; they consist of a straight piece of bronze, hammered round to form a massive straight hinge, with the pin and catch beneath. An elaborate variety of this kind of brooch, which has a lozenge-shaped piece of bronze surmounted by another incised piece, is shown in fig. 2. Evidently Plate XXVIII., fig. 1, is a larger example of this type, the ornament being missing; and we have an ornament which appears to have been affixed to another example. In fig. 4 is a flat brooch of iron, which appears to have been silvered, and has originally had a jewel or other ornament in the centre of the circular portion. What may be a part of a similar brooch is shown in fig. 5. Figs. 5, 6, & 7 show other curious forms of brooches, most of which are complete with the exception of the acus. Mr. F. Haverfield considers that Plate XXXIII., Nos. 1, 2, 4, & 5, are of Gaulish origin, and of the 1st century A.D. Figs. 3, 6, & 7 are of late 1st century or 2nd century. In Plate XXV., fig. 13, only a very small portion of which is missing, appears to show Celtic influence. The acus underneath is still in position, and in working order.

Of particular interest are the two brooches shown in Plate XXIX., figs. 1 & 2. The larger one is $2\frac{3}{4}$ inches in length. Both examples are provided with a "rat-trap" spring, and the flat piece of bronze forming the catch is perforated by three almost rectangular holes. These two brooches, together with that shown in Plate XXXIX., fig. 3, which is of a somewhat more advanced type, were found together with some British silver coins,* the whole being enclosed in a hollow

* These silver coins, some of which have recently been described at a meeting of the British Numismatic Society by Mr. Bernard Roth, belonged to the Brigantes, a British tribe which inhabited Yorkshire, Lancashire, Lincolnshire, and other northern counties. According to Sir John Evans, "being situated so far north, it is not until A.D. 50 or 51 that we find any mention of the Brigantes or their rulers in Roman History; but in the former year we learn that Ostorius quelled an insurrection among them, and in the latter year we are told that Caractacus, having sought refuge with Cartimantua, their queen, was by her treacherously given up to the Romans."

in the clay, and had apparently been buried together. This type of brooch is rare at Ferriby, though small portions of other examples are in the collection.

Penannular brooches. A very primitive form, of which there are several examples, is the penannular or buckle brooch, Some of these are shown in Plate XXVII., figs. 1-8. This is a very early type of brooch, and is also met with in Saxon and later interments. Being simple in form, the type lasted long. Occasionally specimens have been found which bear evidence of having been forced open and almost straightened (figs. 7 & 8). With the Ferriby specimens, the rings are sometimes of plain bronze wire, the ends being formed by small knobs, or curved over in small loops, the loops being either plain or ornamented. One example is made of square bronze wire; another is marked by numerous small lines converging towards the centre; whilst still another example is ornamented by half of the bronze wire being twisted. In many of the Ferriby examples the acus of bronze is still preserved, and whilst in some cases it is no longer than the diameter of the brooch, in others it projects more than a quarter of an inch.

In Plate XXX., figs. 8 & 9, are two types of fibulæ which are represented by one example only of each. With regard to the former, a very similar example of a T or cross-shaped fibula, from Chesters in Northumberland, is figured in "An Account of Roman Antiquities Preserved in the Museum at Chesters," 1903, fig. 1154; and in "The Brooches of Many Nations," 1904, fig. 57. Fig. 8 is the late Roman Crossbow brooch of the 4th century; No. 9 is of an early type, probably of the 1st century A.D.

In Plate XXX., figs. 10-14, are shown one complete and four halves of brooches, with small cups, which originally would probably contain jewels. In one example (fig. 13) two of these jewels still remain. With the exception of the acus, which is missing, fig. 10 is complete, and fig. 11 was evidently a similar example, the latter would also probably have four jewels when complete. Fig. 13 is a portion of a brooch of a somewhat similar type, and would probably have four jewels; and fig. 12, when perfect, would be oval, and contain either six or seven jewels. In the four hollows remaining, the cementing material is still preserved, and between the bosses the bronze is ornamented by a number of minute circular impressions, averaging twelve between each cup. These brooches, however, are

later than Roman times, and probably belong to the 13th or 14th century.

As evidence of the district having been occupied in later times, we have the remains of a number of brooches of unquestionably Saxon type. The most complete of these is a square-headed fibula of bronze, three inches in length, shown in Plate XXX., fig. 1. In figs. 2-4 are shown representations of the remains of three flat cross-headed bronze fibulæ, one of which (fig. 4) is almost complete; and in figs. 5-6-7 are the remains of the pointed ends of large Saxon cross fibulæ. On each of these is a representation of a horse's head, similar to those which appear so frequently on fibulæ found in Norway and Sweden, and in Anglo-Saxon grave-mounds of North and East England. This horse's head is also shown on some large Anglo-Saxon fibulæ from East Yorkshire recently placed in the museum.* It is somewhat strange that the only remains of this large type of Anglo-Saxon fibula found at Ferriby should be these three similar pieces, each representing the horse's head.

I am much indebted to Mr. F. Haverfield, F.S.A., for examining the specimens herein described, and for giving valuable assistance as regards the dates, etc., of the fibulæ.

(To be continued.)

* See paper by the present writer in the "Antiquary" for September, 1906, pp. 333-338, and "Hull Museum Publication," No. 33, pp. 10-18.

EXPLANATION OF PLATES.

PLATE XXV.

- Figure 1. Enamelled flat Roman fibula, consisting of four discs joined; 2nd or 3rd century.
- „ 2. Enamelled flat Roman fibula, consisting of three discs joined; 2nd or 3rd century.
- „ 3. Front view of fish-shaped fibula, enamelled; 2nd or 3rd century.
- „ 3a. Side view of ditto.
- „ 4. Flat bronze fibula with jewel in centre; 2nd or 3rd century.
- „ 5. Fibula highly ornamented with blue enamel; 2nd or 3rd century.
- „ 6. Flat bronze fibula; 2nd or 3rd century.
- „ 7. Bronze disc fibula, in form of round shield.
- „ 8. Oval bronze fibula, silvered; possibly late Roman.
- „ 9. Bronze fibula in form of sole of sandal, probably originally enamelled; 2nd or 3rd century.
- „ 9a. Side view of ditto.
- „ 10. Front view of bronze fibula.



PLATE XXV.



Figure 11. Side view of 11a.

- „ 11a. Front view of bronze fibula with arms.
- „ 12. Bulbous fibula with ring attached; possibly early 2nd century.
- „ 12a. Side view of ditto.
- „ 13. Nearly complete fibula of bronze; 2nd or 3rd century.
- „ 13a. Under view of ditto.

PLATE XXVI.

Figure 1. Harp-shaped fibula of bronze, with acus, and ring for fastening complete; ornamented by boss on front.

- „ 1a. Side view of ditto.
- „ 2. Harp-shaped fibula, ornamented on front with rectangular holes, which probably originally contained enamel; first half of 2nd century.
- „ 2a. Side view of ditto.
- „ 3. T fibula, silvered, with acus complete.
- „ 3a. Side view of ditto.
- „ 4. T fibula, with three incisions on the top for jewels or enamel.
- „ 4a. Side view of ditto.
- „ 5. Top view of bronze harp-shaped fibula.
- „ 6. T-shaped bronze fibula, with two incisions on the top for the reception of jewels or enamel.
- „ 6a. Side view of ditto.
- „ 7. Front view of plain bronze fibula.
- „ 7a. Side view of ditto.
- „ 8. Bronze harp-shaped fibula, with ten diamond-shaped incisions on the front, similar in type to the specimen figured on page 254; first half of 2nd century.
- „ 9. Plain bronze fibula of similar type to fig. 7.
- „ 9a. Side view of ditto.

PLATE XXVII.

Figure 1. Penannular brooch of bronze wire, with acus missing.

- „ 2. „ „ „ „ complete.
- „ 3. „ „ „ „ with coiled ends.
- „ 4. „ „ „ „ with twisted wire, and acus missing.
- „ 5. „ „ „ „ portion of acus missing.
- „ 6. „ „ „ „ with coiled ends.
- „ 7. „ „ „ „ pulled out of shape, acus missing.
- „ 8. „ „ „ „ pulled out of shape, acus complete.
- „ 9. Brooch with coiled wire spring, made from one piece of bronze wire; la Tène period.
- „ 9a. Side view of ditto.
- „ 10. Fibula with rat-trap spring.
- „ 11. Fibula made from bronze wire, early type, acus missing.
- „ 12. „ „ „ „ „ complete.

PLATE XXVIII.

Figure 1. Portion of large Gaulish fibulæ—part missing; 1st century.

- „ 2. Fibula of thin bronze, with elaborate lozenge-shaped ornament, Gaulish; 1st century
- „ 2a. Side view of ditto.

- Figure 3. Fibula of thin bronze; late 1st or 2nd century.
 ,, 3a. Side view of ditto.
 ,, 4. Fibula of iron, silvered, Gaulish; 1st century.
 ,, 4a. Side view of ditto.
 ,, 5. Portion of brooch (?) of apparently similar type to 4.
 ,, 6. Fibula of thin bronze; late 1st century.
 ,, 7. " " " " (larger specimen).

PLATE XXIX.

- Figure 1. Fibula of bronze, with rat-trap spring, early type, possibly pre-Roman, found with British coins.
 ,, 2. Fibula of bronze, with rat-trap spring, early type, possibly pre-Roman, found with British coins (smaller example).
 ,, 3. Bronze fibula, probably 2nd century, found with British coins.
 ,, 4. Bronze fibula, possibly 2nd century.
 ,, 5. " " " " (smaller example).
 ,, 6. T-shaped fibula, with cavities for enamel; 1st half of 2nd century.
 ,, 7. Side view of Aucissa fibula; early 1st century.
 ,, 7a. Front " " " " "
 ,, 7b. Top " " " " "
 ,, 8. Side " " " " " (larger example).
 ,, 8a. Front " " " " "
 ,, 8b. Top " " " " "
 ,, 9. Portion of Aucissa fibula.
 ,, 10. Bronze harp-shaped fibula; 2nd or 3rd century.
 ,, 11. T fibula; 1st half of 2nd century.
 ,, 12. " " " "
 ,, 13. " " " "
 ,, 14. " " " " (large grooved example).

PLATE XXX.

- Figure 1. Square-headed fibula of bronze, Anglo-Saxon; front view.
 ,, 2. Upper half of cross-shaped fibula, Anglo-Saxon.
 ,, 3. " " " " " (smaller example).
 ,, 4. Front view of nearly perfect Anglo-Saxon fibula.
 ,, 4a. Side view of ditto.
 ,, 5. Lower portion of large Anglo-Saxon cross fibula, in form of horse's head.
 ,, 6. Lower portion of large Anglo-Saxon cross fibula, in form of horse's head (smaller specimen).
 ,, 7. Lower portion of large Anglo-Saxon cross fibula, in form of horse's head (still smaller example).
 ,, 8. Roman crossbow fibula; 4th century.
 ,, 9. Fibula of bronze; probably 1st century.
 ,, 10. Squared buckle brooch, ornamented by jewels; 13th or 14th century.
 ,, 11. Half of similar brooch of same period.
 ,, 12. Portion of oval brooch, ornamented by jewels, same period.
 ,, 13. Portion of circular brooch, ornamented by bosses and jewels, same period.
 ,, 14. Portion of squared brooch, with jewels still intact, same period.



PLATE XXVI.



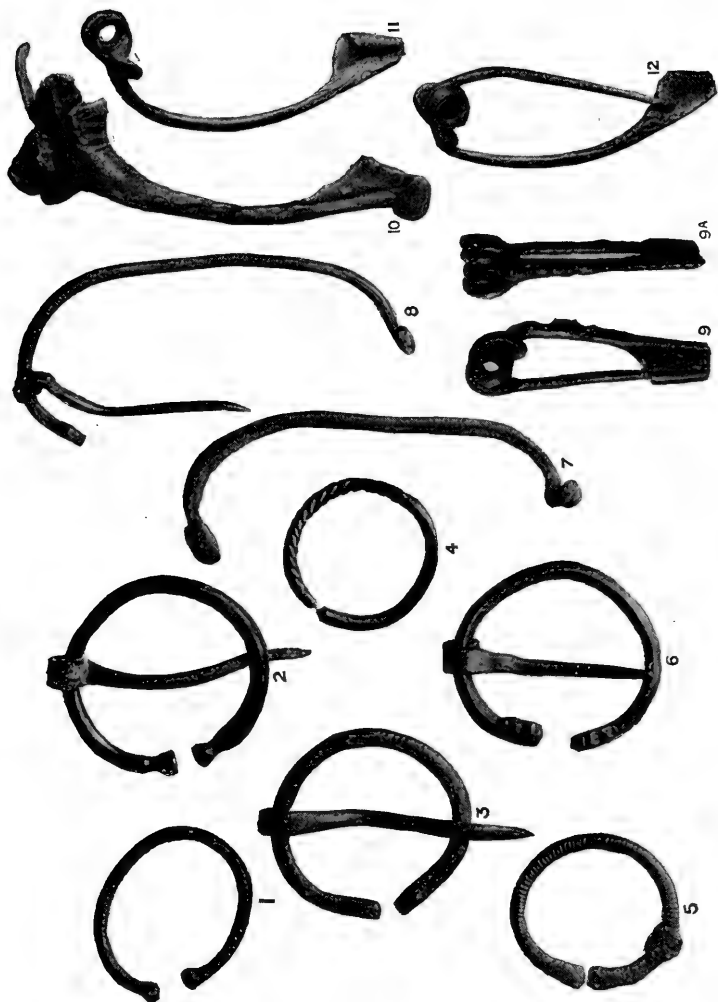


PLATE XXVII





3A



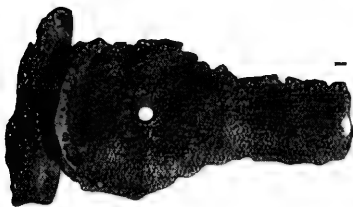
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2A



2



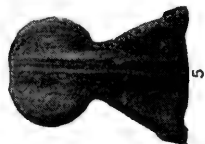
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7



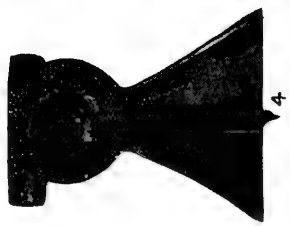
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5



4A



4

PLATE XXVIII.



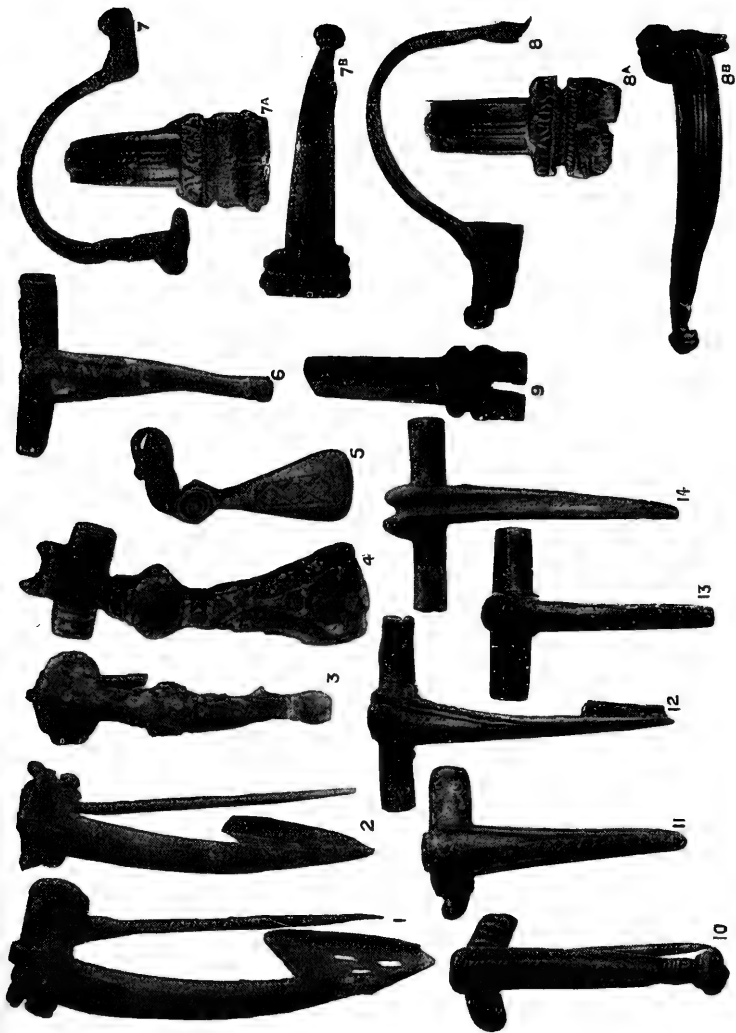


PLATE XXIX.



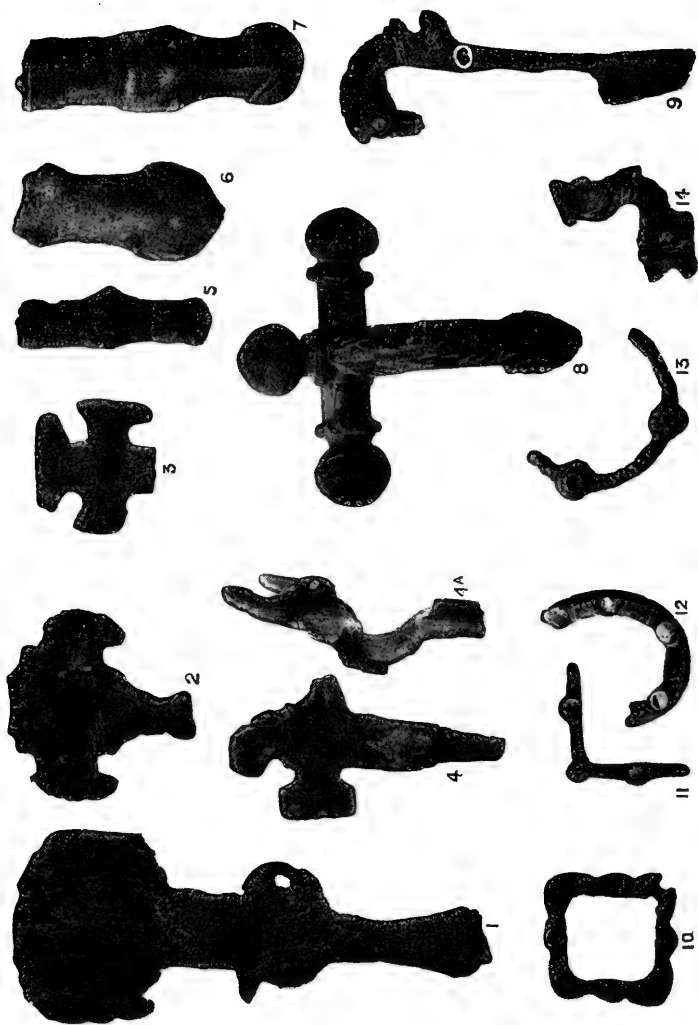


PLATE XXX.



SOME HOLDERNESS DIALECT FIGHTING WORDS.

By JOHN NICHOLSON.

(Read January 18th, 1905).

OUR Holderness dialect is rich, not only in words of individual richness, power, quality, and expressiveness, but it owns a vocabulary varied and extensive, a veritable wealth of words. It is archaic and picturesque, possessing peculiarities and graces, not a few, and it is a perfect arsenal of fighting words.

I know not if East Yorkshire men are more quarrelsome than their neighbours, or indeed than anyone else, but their dialect abounds in words which express quarrelling and fighting. Just as a *weapon* can be anything from a hatpin to a crowbar, or from a "dishcloth" to a pair of heavy "dikin' beets," so a word may be a mild, harmless sort of thing, or it may call up memories of childhood that are far more painful than pleasant.

The following word-list arranged alphabetically does not profess to be complete, but it contains enough to show the wealth of dialect words at the command of Holderness belligerents:—

Bam—To browbeat; as, "Ah couldn't get niver a wod in neeah hoo, that lawyer chap *bammed* mǎ seeah."

Bash—To clash together. A good word is *bash*! There's some momentum about it. A story is told of a clergyman, who, going into the country to preach, was caught in a heavy shower of rain, and was wet through to the skin. As the bad weather continued, he was asked to stay over night, and changed into the clothes of his host. His hostess went upstairs to fetch the big family bible for evening worship, and as she came out of her bedroom, she saw in the dim light a man on the stairs landing, whom she thought was her husband, so lifting high the ponderous volume in her hands, she *bashed* him on the head with it, exclaiming, "Tak that, thoo great soft-heed, for axin' him to stop all neet!" It was the parson, and he "saw sparks," as well as obtaining a peep behind the scenes. A good word is *bash*.

- Baste.**—Here is a word which is a technical tailor's term, meaning "to tack," "to fasten down by means of large stitches;" it is also a domestic culinary term, the pouring of melted fat over a roasting joint of meat; so that to "baste" anybody is to give them a "roasting;" but there is an Icelandic word, "beystæ," which means "to beat," hence when an East Yorkshire man threatens to give a person a "basting," he may actually be using a word brought over by the warlike Northmen who did so much "basting."
- Bat**—A rap, a blow. Originally taken from the name of the instrument used. "That pawky lad ou't to hev a *bat* ower heead for his pawk." From the word *Bat* we get
- Bats**—A beating. This is cumulative punishment, an enlarged plural of "bat," a veritable multum in parvo. An irate mother may say to her wilful, wayward boy "Thoo'll get thi *bats*, mi lad, when thi fayther cums yam?" and that self-same lad at once feels what a fearsome thing the future is.
- Beltin'**—A flogging with a belt, and the flogged one ought to be thankful if there be no buckle on the said belt. There is another word perhaps etymologically akin to "beltin'," which also means a punishment inflicted—the word "bell-tinker." It is not an uncommon saying, "Noo, Ah'll giè tha *bell-tinker*, if tha disn't dthrop it!" (cease, or give up doing).
- Bencilling.**—Here is another word of difficult origin, but its meaning is well understood. A good *bencillin'* is a thing not easily forgotten, and has been the means of salvation to not a few.
- Bray.**—The word "bray" means literally to crush, to pulverise, and is nothing assenine. It recalls mortar and pestle and the fool that was brayed so vainly within, the operation only demonstrating how inseparably commingled are a fool and his folly. A broom handle or a besom shaft is an excellent instrument with which to "bray" anybody. One of the characters in the York Mystery Plays complains that "yone boy with a brande *brayed* me full well."
- Bunch.**—Once when seeking to reach Riplingham Clump we wished to cross a field in which a labourer was hoeing turnips. We asked if we might cross the field. He said, "Yo can gan across clooas, nobbut deen't *bunch*

tonnaps up." We went "an bunched not nowt." In an assault case at the Driffield Police Court the magistrate said to the plaintiff, "Well, my good woman, what did she do?" "Deeah? Why sha *clooted* mi heead, *rov'* me cap, *lugged* mi hair, *dhragged* ma doon, an' *bunched* mà when Ah was down." The magistrate turned to the clerk, exclaiming piteously, "What *does* she say?" Up rose the tall, thin form of the clerk, and slowly and seriously he answered: "She says the defendant *clooted* her heead, *rov'* her cap, *lugged* her hair, *dhragged* her doon, and *bunched* her when she was down," and as he ended the court revelled in laughter.

Bung up—To close as with a bung. This term is limited in its application, and is anatomical, being applied to the eyes, applied by the fists of an opponent as a sedative, in the hope of bringing the quarrel to an end. A keenly-interested spectator of a street quarrel shouted out to his favourite, "Go it Jim; *bung* his e'es up for him! That'll *sattle* him." **Plug** is a word of similar meaning.

Bussle—To drive away angrily. Often applied to tiresome children, thus: "Noo, away wi' yo', or Ah'll *bussle* yo' off i' quick-sticks."

"**Callitin**"-boot.—Now comes Billingsgate to the front. In this preliminary overture to fisticuffs the tongue wags supremely, and the domestic history of the wordy combatants is made public property with a strength of diction worthy a better cause. Blows may not succeed words; the quarrel may begin and end in a *callitin-bout*.

Catch it—Is a threat pure and simple, but perhaps all the more dreadful, because of the mystery attached to it. 'Tis the unknown that is dreadful, and to tell a fearful boy that he will "*catch it*" for something he has done, or not done, is to add another terror to his upbraiding conscience.

Cherrup.—A cherrup is a sharp, stinging blow given by the hand on the ear, a sort of box on the ear. A long-suffering father said to his boy, "Ah'll gi'e tha a *cherrup* *ower* lug, an' then thoo'll mebbe think on what thoo's *telled* ti deeah."

Chin-chopper—Is a blow on the jaw or the chin (the "undercut" in the language of the prize-ring). The word "chin-choppy" is sometimes used, and reminds one of the nursery rhyme, "Brow brinky, eye winky, nose nopy, mouth mopy, chin-choppy."

- Chip.**—To “chip in” is to make a beginning, and to “chip out” is to make an end, and a “chip” is a baby quarrel, a slight difference; so is a “scrap.” Example: “Bayns nobbut had a *scrap*; they didn’t hot yan anuther.” A man telling proudly how well he and his wife got on together, said, “We’ve nivver had a *chip* sin we was wed.” A *tiff* or *tift* is also a slight quarrel.
- Clap.**—A stroke given with the flat hand, or some broad instrument, making a noise. “Smack” is a word of similar import: “*Clap* his lugs;” “*Smack* his mooth.”
- Clash.**—A violent knock against a hard substance, a *resounding* collision, generally between the head and some immovable impediment, such as a yat stowp, or a dear pooast, or a steean wall: “Bob caught Jack by scruf o’ neck, an’ *clashed* his heead an’ wall tighther.”
- Clip.**—To strike quickly and smartly. “A *clip* ower lug.”
- Cloot.**—To strike as with a “cloot,” a cloth. Only those who have been beaten by handkerchiefs (noos cloots), especially knotted handkerchiefs, can fully appreciate the plenitude of its primary meaning. The secondary meaning is to strike with the hand.
- Crawk.**—A knock on the head; as, “He ga’e me sikan a *crawk* wi hand-brush.”
- Crack.**—A stunning blow on the head; as, “Ah fetched him a *crack* ower heead at meead him ‘see sparks’.”
- Cob.**—A kick with the knee, instead of the foot. We used to call it a “lasses’ bunch.”
- Cuff.**—Literally a blow with the cuff or forearm; when the fists are used the strife becomes “*fisti-cuffs*.” A “cuff” is most frequently delivered on the head.
- Dab.**—A dab is not a fish, but flesh; a foreward movement intercepted by the opponent’s eye. It is a rather feeble stroke, as if ashamed of itself—just an earnest of what it might be. But for all that, a “dab” in the eye is an “eye-opener,” even if it closes that eye for a time.
- Daffener.**—a stunning blow, felling the opponent and producing insensibility; as, “Ratcatcher ga’ ratton a *daffener* wiv a speed, an’ then he killed it.”
- Dandher.**—Another violent blow, producing a different effect. Its force produces trembling and collapse; as, “Last neet, when Sons o’ Brotherly Luv left lodge meeting,

tweea on em gat agate o' fightin'. Yan on em landed tuther a left-handed *dandher*, an' doon he went." (Nice Sons o' "Brotherly Luv" they was!)

Dhrissing (Dressing)—A flogging, general, particular and extensive, with whatever weapon or instrument comes first to hand. A good dhrissing doon is a specific for laziness and other forms of disinclination to work, and Solomon doubtless had this operation in mind when he uttered his familiar proverb, "Spare the rod and spoil the child."

Dhrop—To knock down with the fist. We use another word "dhrop," meaning to "give up," or "cease to do." Hence the two can be combined thus in a pun: "Noo, if they dizzn't *dhrop it* (give up) Ah'll *dhrop* thoo." The old Norsemen, our fighting ancestors, had a word (Ice., drepe) meaning a blow, from which the word "dhrop" probably comes. To **drop in for** it is an expectation, in which you hope that the realisation will be very much less worse than the anticipation. Another threat is "Ah'll **come fo' yo'!**" and a certain scholar thought the 23rd psalm was awful because both rod and staff "**come fo' me.**"

Dhrub is a general flogging, a "dhrissing doon," only more so. To be "weel dhrubbed" is not soon to be forgotten, and not talked of lightly.

Differ—A wordy quarrel, like a "*callitin-bout.*" Said one man to another, "Ah heeahd tell 'at thoo an' thi neebors had a *differin'* bout, bud whativver meead yo' differ?"

Dig—To poke with a stick or finger, &c. "He ga' mà a *dig i' ribs*, and it's as sare as can be."

Ding or Deng.—The Old Norse word *dengja*, to hammer, gives force to this word, which Prof. Skeat describes as a true English strong verb, though not found in A.S. The word is used in the York Mystery Plays thus: "Dyng tham doune tylle all be dede." Our nursery rhyme again helps us: "*Ding dong bell.*" "Deng" it, also an interjection, or imprecation, a sort of incipient swearing.

Drive.—When an opponent "lets dhraave" at you, you may hope he is not a disciple of Sandow, for in the blow thus given is put all the strength of mind and muscle to the very last particle. It may be said, "He up wiv his neef, an' *let dhraave* at him full slap."

Dust is another Northman's word. (Ice., *dustra*, to tilt, to fight.) To "kick up a *dust*" is to create a disturbance, to "live the strenuous life," and to bustle, hustle, and be hustled; and to have your jacket *dusted* is an operation, during which it is better to be out of the jacket than in it, for something considerably harder and more aggressive than a clothes brush is used.

Esh is so call from the esh (ash) sapling, being the instrument used by the castigator. A well-dried young esh plant is a refined instrument of torture; it is supple, and twines lovingly round arms, back, or legs. It is the thing par excellence for administering the "dusting" of the jacket above referred to.

Feeat—To foot, to kick. The West Riding and Lancashire equivalent of this is "*pawse*," a truly terrible punishment when carried out by means of heavy iron-bound clogs.

Fell—A *knock-down* blow. "If tha dizzen't mind (take care), Ah sa'll be givin' tha a *fell* inoo" (soon).

Fetch—To deliver a blow. You have doubtless noticed the dialect use of the word "fetch," meaning to *bring*, not *to go for and bring*. When we say a thing *fetches* £20, we mean that was the amount realised; so when you have been fetched a blow you realise something has happened, and indeed you may have lost something (equilibrium) while you gained perhaps two lovely black eyes. *Illustration*: "Ah *fetches* him a crack ower heead, an' that sattled him."

A **Filip** is a quick, stinging blow, while a **Gob-fight** (literally a mouth-fight) is a wordy quarrel, another edition of Billingsgate; but however, whenever, and by what means did **Gruellin'** become bellicose?

Hammer—To flog severely. We all know, by experience or knowledge, what a "hammerin'" is. Here no blacksmith's "stiddy" or cobbler's "lapstun" receives the resounding blows, but cringing, human flesh that bears the pain and the mark of the "hammerin'" for many a day.

Haze is another Viking word, indicating a beating or a chastisement. The Holderness Glossary says "haze" to beat, as with a hazel stick." This I doubt, for the dialect pronunciation of "hazel" is "hezzle" (hezzle pears, hezzle e'es, hezzle nuts); and the same Glossary

gives "hezzle, to castigate with a hazel or other stick;" thus, "If Ah catch tha, mi lad, Ah'll *hezzle* thi hide fo' tha."

Hidin'—A hidin' is a No. 8 flogging on the hide or back; not lightly administered nor lightly forgotten, a thing of awe and reverence. It inculcates remembrance, and the memory of it accelerates present action. It is often given with a vehemence not usually associated with the administration of justice. Yes, a good *hidin'* is beneficent in its result.

Hod is the common word for "hold." When tired, we like a seat with good "back-hod;" to "tak hod" is figurative language for beginning or commencing any work; thus, "hod," as a flogging or a punishment, is something that takes "hold" of you, and its embrace is anything but pleasant. It is a dire threat to say "Ah'll gi'e tha some *hod* afooar lang."

Hum is a punishment inflicted by boys on an obstinate or "stunt" player. They "lug" his hair, or strike him with their caps, saying, "Hum, hum, hum," and the louder their victim cries the louder do they "hum' hum, hum," until their leader cries out "Off," when all must at once desist.

Jowl has some momentum about it, as "bash" has. It reminds one of the conundrum, "When the irresistible comes into contact with the immovable, what happens?" Far more pleasant things could be mentioned than the "jowling of yo'r heead an' wall tighther." The violent introduction of these two induces "heead-work," and it is little comfort to be told that they "deeah wark afooar they come off."

A Knap is a slight blow with knuckles or cane, an admonition in deeds, not words (the embryo of a "*leathering*" administered by strap, belt, or cat of nine tails, the last, emblematic of the nine lives which a cat is said to possess—nine times cumulative, biting, and lacerating.

Lam is not the gentle lamb that Mary had. It is a word said to spur on the castigator to more heroic performance. There is nothing half-hearted about the injunction, "*Lam* intiv him, an' mak him think on!" It recalls a police case in which it was said that a bystander had urged two women combatants to further duelling by saying, "Goo it, Sal; Ah'll hod thi bonnet."

"**Leeacin'** yan's jacket" is another little performance that none of us would go through voluntarily. The "lacing" is painful and tedious, and if one cared to investigate the origin of the phrase, we might find it a piece of prehistoric humour, dating from the antiquity of the buttonless age, when men were saved from profane language because they had no buttons to come off.

The original **Licking** was done by the tongue, but the later "licking"—figurative, sensational, painful—was, and yet is, done by something that appeals to the feelings even more strongly than the tongue, an appeal the strength of which is proportionate to the strength of the arm of the "licker." We still speak of things being "licked into shape," an expression suggestive of toil and trouble.

Linch, Slinge, Swinge, Swipe, and Slipe are words of similar import. In order to be carried into effect they require some pliable, supple instrument, a whip for preference. The word "swipe" is indeed the old Norse word for "whip," and from it we obtain the word "swipple," the shorter, swinging, whipping part of a flail, the part which, if you use a flail carelessly, takes a malicious delight in descending on your head instead of on the sheaf it is intended to thresh.

The word **Lug** calls up memories of the torture of childhood's days, when we thought tidy hair a curse and tousled locks a blessing. The pain undergone in the "reeting" operation shewed what could be done to an enemy if only a handful of his hair could be grasped and "lugged." It could bring the doughtiest warrior to his knees suing for mercy.

The word **Lump**, used as a compound with "heed" and "skull," forms expressive words—"lump heed," "lumpskull"—and both beauty and expression are enhanced if "greet" be added thereto. To "lump" the head is to beat it with sufficient violence to cause a lump; but curiously, if such lump be isolated and detached, and not one of a chain or ridge, it is known as a "cool."

A **Mallet** is called a "mell," so "to mell" anybody is to give them a "hammering." This is another of the Northmen's words so common in our dialect.

To **Mob** is a boy's collective punishment meted out to any delinquent, not niggardly, but of full measure, pressed down and running over. On Royal Oak Day, the 29th of May, any boy who lacked the loyal symbol, a sprig of oak tree (not dog oak), would be "*mobbed*," *i.e.*, pelted with ancient, oderiferous eggs, or struck by caps or knotted handkerchiefs. Oh! a fine malak was *mobbing* on Royal Oak Day.

A **Mump** is a back-hander on the mouth, and that selfsame "mump," quickly delivered, disfigures the aforesaid mouth considerably.

Mill.—This is either another form of "mell," or refers to the action of a flour mill, where the object worked upon is skinned and pulverised, and greatly improved thereby. So by figure of speech, a person who receives a "milling" is put through the small sieve, and is benefitted, or how was he ever milled?

However came the word **Nail** to mean a beating or a flogging? But so it has! It also means "to catch," to hold; and to tell anyone that he will "catch it" is a threat of the direst import. It also means "to clench an argument," "to overcome an adversary in a controversy." The Holderness Glossary gives the following illustration:—"He said Ah sud nivver win if Ah bet o' Sunda', an' Ah said, 'Sattenly yan on us must win,' an' that *nailed* him."

To **Nevell** is to beat violently with the neef, or fist; while **Nobble** and **Nope** are both used when the hand or some instrument is brought into violent contact with the head. In that serio-comic, domestic tragedy, *Punch and Judy*, once universal, but now nearly obsolete, *Punch* kills *Judy* by *nobbling* her—the more resounding the whacks the more laughter they provoked in the juvenile audience.

Pick and **Pooak** are of like meaning, though "pick" is accomplished by hand and "pooak" by some instrument. There is more celerity in "pick" than "pooak." "Pooak" is to push, but "pick" is to push suddenly, unexpectedly, like a torpedo attack; as, "He *pickt* ma doon, just fo' nowt at all, an' then thowt better on't, an' *pickt* ma up agean."

A half-hearted antagonist, anxious to hide his want of courage, makes much to do by sparring with the empty air, knocking down imaginary foes, imbruing his feet in

their gore, and executing a war-dance on their mangled remains. He is only pretending. In terms of scorn, he is told, "Thoo's nobbut **Quaverin'** about!"

Surely "**To rag**" must be akin to the word "rage." The operation of "ragging" certainly enrages.

A **Rap** is a quick blow with a hard instrument, a **rattle** is a "clout ower heead," and a **Rossellin'** is literally a roasting, a real good, sound beating, which enables the victor to bring the beaten one triumphantly along bound to the chariot wheels.

A **Rumpus** is a disturbance of the peace, a quarrel, a kicking up of the dust, a social upheaval (limited), an eruption of pent-up feelings, a safety valve for slandering, back-biting, and all uncharitableness, bringing about a much-needed calm.

Scrag and **Scaup** take their names from the part of the human anatomy thereby affected—the *scrag* of the neck and the *scaup* of the head. An offender's neck seems to fit easily between the thumb and forefinger, by which he can be hurried away willy-nilly.

A **Set teeah** is a melee, a faction fight more or less infectious, necessitating the advent of the doctors and the police. In it all is fair, and anything or everything can be used as weapons, whether natural or artificial, ancient or modern, projectile or prehensile, and is very exciting while it lasts.

Skelp, **Spank**, and **Slap** are infantile punishments, when bare arms and bare legs afford ample opportunity for the performance of these operations.

To Skin is to flog severely, and is figurative only, though the attempt to realise it is painful enough. I have said it is only a figurative expression, yet the recent sale of a piece of pirate's skin, taken from a church door in Essex, proves that at one time, and in one place at least, "to skin" has not been an idle threat for sacrilege. In the East Yorkshire story of Peg Fyfe an informant, who sought to evade the consequences by *telling the horses* of an intended robber raid, while men listened and planned a counter-stroke, such informant was waylaid and skinned alive. As illustration, we may say, "Bon tha! Ah'll *skin* tha wick, thoo young rackapelt."

To give anyone a **Slatin'** has nothing whatever to do with slates. It is a Northman's word meaning to slap, to dab, &c., and is cousin germane to a good **Blowing-up**.

A **Slipe** is a sharp, gliding blow with the open hand; as, "Jack gat sike a *slipe* over gob, his lips was all brussen."

A **Sloonge** is a heavy, sweeping blow given sideways with the open hand, in which the whole arm participates. A "sloonge ower side o' heead" is something to be going on with.

To **Slug** is to beat with any instrument, including the hands. When one boy says to another, "Let's *slug* Tom Smithers; he put saut uppa slitherin'-spot," poor Tom has a bad time in store for him. **Slog** is another word of similar import, and the word is sometimes indulged in.

Snape is a peculiar word meaning to check, to restrain. The Norseman used this word, meaning to disgrace, to hold back. A forward child needs "snaping." There is something of "Thou shalt not" about it.

The word **Sooal** brings up visions of the maternal slipper, the sharp application of which made sitting-down, for a time, a pain rather than a pleasure. A word nearly like **Sooal** is **Sowle**, meaning to chastise, and is used by Shakespeare in "Coriolanus" (Act iv., sc. 5): "He'll go," he says, "and *sowle* the porter of Rome gates by the ears."

A curious combatative word is **Sneezer**, which, of course, is nasal in its application. As a rule, a **sneezer** is a settler, of the superlative degree, an ultimatum and coup de grace rolled into one. It "taps one's claret," and is gory in its nature and essence.

One might think that the word **Suff** is a contraction of the word *sufficient*. Well, that is its meaning exactly, for when you have received a knock hard enough to make you draw your breath suddenly, as though from a spasm of pain, you have had *sufficient* for one day at least. The word, however, is the dialect pronunciation for *sough*, the sound made by wind, and is given because it has that effect.

A **Switch** is a thin, pliant rod, the shoot of willow, or hawthorn, or dog-rose. Boys use them, stripped of their leaves, to play at switch-egg. The application of these switches to the stockinged legs of fellow-youngsters is termed **Switchin'**, and is a highly-prized form of torture.

A **Tannin'** is a good all-round flogging, impartially laid on whatever part is most convenient. A *tannin'* is no respecter of parts, all being marks that comes in its way. It is painful but salutary, especially if executed by a rod that has been "in pickle" for some time.

For living the strenuous life, commend me to a **Tew**, "a teeafish tew." In it is something of Hackensmidt, but none of football. It is a struggle in excelsis, whether physical or mental, whether muscles strain and breath comes hard, or whether exhaustion follows brain conflict. Oh! a grand sight is a "teeafish tew!"

In the word **Thresh** we have a common word diverted from its original use in the barn and staggarth to the wider outside world; so that you may be *threshed* anywhere and any time.

To **Throonce** is to bustle about, to drive or beat off, and to **Thropple** or **Throttle** is to seize your adversary by the thropple or throat, a pocket edition of Jiu-Jitsui, the Japanese system of doing much to your assailant and receiving little or nothing yourself.

A **Thump** on the back may be meant as first aid in a case of choking, but it may also be akin to an assassin's blow, and may nearly knock the breath out of you. Many things could be mentioned that are more pleasant than a thump on the back.

Pliancy is needed to deliver a **Twenk** with effect. A whip-lash will answer the purpose well, but when two or three boys are breaking through a hawthorn hedge, and one fails to hold back the branches for the next following, they fly back with vengeful force into the face, and *twenk* that face with glee—"if aught inanimate e'er gleees."

A counterpane or quilt is called "twilt" and **Twiltin'** (quilting); one's jacket is thus akin to "dusting" and "leacing" that unfortunate article of clothing, to say nothing of the wearer.

To **Wale** is no child's play; the aforesaid jacket affords but little protection to a '**Walin'**, for sufficient force must be behind the stick used to merit the name and to raise "Wales." **Wallopin'** is a near relative of **Walin'**.

Warm and **Warming**.—"Ah'll *warm* thi jacket fo' tha!" Alas! poor jacket, thou art dusted, leaced, twilted, and warmed all for the sake of thy temporary inmate. Methinks 'twould be better to go and be a scarecrow."

A **Weltin'** is administered by a strap of leather, sewn by shoemakers on the boot upper. This strip of leather is called a "welt," and the boot sole is sewn to it. It is indeed a severe punishment to be flogged by a wet welt. With malicious cruelty it wreathes round the writhing limbs, and clings as only wet leather can. For some things, many things, "there's nothing like leather."

A **Whack** is another punishment that derives its name from the noise it produces. It is what Paddy gave the drum, but 'tis no less painful for all that.

To **Whap** is to flog or beat as a punishment; to conquer an antagonist in a fight; to surpass in competition. A **Whappin'** is a flogging, and **Whaps** is a strong plural: "Thoo'll get thi *waps*, mi lad, when thi fayther comes whom!" Another form of this word is **Whop** and **Whoppin'**.

A **Whistle** is a box on the ear, which perhaps derives its name from the whistling, whew! it causes.

A "**Wipe ower lugs**" is not the gentle thing one might expect from the expression. It needed a poet to tell us that "things are not what they seem;" and the person who receives a "wipe ower lugs" fails to perceive either the poetry or the humour.

When a hedger is cutting and preparing thorns to make a dead-fence, he needs thick ones for stakes, and long, supple ones for binders, or *yethers*; so he will say of a branch, "If it ween't mak a steek, it'll mak a yether." To **Yether** anybody is to flog them with a yether, and it is not a mean sort of flogging either.

The list may be concluded by **Yark**, **Yenk**, **Yuck**, all chastisements, not as brief as the names themselves.

A peculiarity of these fighting words is that many, if not all of them, are in common use as adjectives, denoting superlative greatness or extraordinary firmness. The word retains the same meaning, but the figure is changed from warlike strife to the strife of competition and comparison.

A hawker enters a shop, and asks, "De yo' want any rabbits to-day?" "No; I think not!" "Yo' think not?" "I think not!" "Why, them rabbits is greeat, big, *sooaling* rabbits, hauf as big as this coonther!" Thus we say "a *clinking* big egg; a *nailin* stoory; a *slappin* hoss; a *sluggin* knife; a *spankin* mear; a *switchin* ton out; a *thumpin*, big lass; a *wallopin*, big pig; a *whackin* lie; a *wappin* crood."

Nouns also are made from these words, conveying the idea of excellence or curiosity. Thus: Whacker, thumper, cracker, nailer, nobbler, pluggger, rattler, skelper, slapper, slugger, spanker, &c.

In fact, the dialect is a living, vigorous language, and its life is shewn by its active versatility. If a certain word does not convey the meaning required there are many others ready to hand.

EAST YORKSHIRE ENTOMOLOGY IN 1906.

THIS year is the worst on record in East Yorkshire for insects. "Sugaring" is a total failure. Mr. Chapman has been to Spurn, Driffield, and other places "sugaring," and has only set one moth all the season. Mr. Head of Scarborough reports that insects are very scarce there, "sugaring" is a failure, and larvæ do not pay for the time beating for them, they are so scarce. He has had larvæ die by hundreds with the hot dry weather. He has had scores of insects pair and produce ova, but none of them were fertile, owing probably to the cold late spring and hot dry summer. Some insects were two or three months late in coming off.—J. W. BOULT.

EAST YORKSHIRE CONCHOLOGY IN 1906.

THE summer having been a very dry one, the collecting of specimens has been very much hindered. I obtained specimens of *Paludestrina jenkinsi* in the ditch inside the guard bank at Saltend, Hedon, last April. On the same occasion I obtained on Saltend Common, under some stones, several dead specimens of *Cochlicopa* or *Azeca tridens*, which, according to Mr. T. Petch's "Land and Fresh Water Mollusca of the East Riding,"* has not been recorded.—T. DOBBS.

* "Trans. Hull Scientific and Field Naturalists' Club," 1904, page 151.

HYMENOPTERA OF THE EAST RIDING OF YORKSHIRE.

BY W. DENISON ROEBUCK, F.L.S.,
Ex-president of the Yorkshire Naturalists' Union.

Read July 25, 1906.

WHEN engaged on the task of compiling a list of the Hymenoptera for the forthcoming Victoria County History of Yorkshire, I was struck by the extreme paucity of records for two divisions of the county, viz., York N.W. and York S.E. I was not much surprised in respect of the former division, with its sparse population and want of scientific activity, but it was indeed surprising to find so little known for the East Riding, with its host of active and enterprising investigators. It therefore seemed to me that a complete summary of all that is actually on record for the Riding would be a useful and, I hope, acceptable paper for the Transactions of the Hull Scientific Club—my hope being that it might stimulate the Entomologists to collect insects of that order—and those who are Lepidopterists to carefully preserve the ichneumon flies they rear, and have them properly identified. It would be a service not only to the East Riding naturalists themselves, but to Mr. Claude Morley, who is very ably studying and monographing the British Ichneumonidæ, if he should be liberally supplied with specimens, care being always taken to give the full and complete data as to locality, species on which parasitic, date, etc., so as to ensure the best scientific results being achieved. In like manner specimens of other groups might be submitted to the specialists. The best thing would be, however, for some of the young and active entomologists to take up the study of Hymenoptera themselves.

I first give a complete bibliography of all the papers I have seen, and then a systematic list of the species on record.

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1788. Mr. MARSHALL.

Provincialisms of East Yorkshire [in Holderness "Bumblem Bee" = *Bombus*].

Marshall's "Rural Economy of Yorkshire," 1788, Vol. II., p. 319.

1870. J. C. BRENTANO.

To get rid of the House Ant [*Diplorhoptum domesticum* = *Monomorium pharaonis*].

Ent., Jan. 1870, advertisement on cover, pp. ii.-iii.

1878. WM. DENISON ROEBUCK.

Yorkshire Hymenoptera: Report on Present State of Knowledge, and First List of Species [*Perineura nassata* = *Tenthredopsis cordata*, *Athalia centifoliæ* = *A. spinarum*, *Tenthredo cingulata* = *Strongylogaster cingulatus*, *Selandria costalis* = *Sciopteryx costalis*, and *Cimbex maculatus* = *C. connata*].

Trans. Yorks. Nat. Union, Part I., publ. 1878, p. 27.

1879. WILLIAM DENISON ROEBUCK.

Yorkshire Hymenoptera in 1878 and Second List of Species [*Sirex juvencus* = *S. noctilio*].

Trans. Yorks. Nat. Union, Part II. publ. 1879, p. 64.

1881. W. W. FOWLER.

Vespa norvegica in Yorkshire.

Ent. Mo. Mag., March, 1881, p. 237.

1881. W. W. FOWLER.

Vespa norvegica at Stamford Bridge.

Ent., March 1881, p. 71.

1882. S. D. BAIRSTOW, W. DENISON ROEBUCK, AND THOMAS WILSON.

Yorkshire Hymenoptera: Third List of Species, based upon Observations made in 1879, 1880, and 1881 [*Tenthredopsis nassata* = *T. cordata*].

Trans. Yorks. Nat. Union, Part IV., publ. 1882, p. 94.

1884. W. D. R[OEBUCK].

The Yorkshire Naturalists' Union at Spurn Point [*Pompilus plumbeus*].

Nat., Nov. 1884, p. 92.

1886. J. B. BRIDGMAN.

Further Additions to the Rev. T. A. Marshall's Catalogue of British Ichneumonidæ [*Sagaritis laticollis*].

Trans. Ent. Soc. Lond., 1886, p. 349.

1888. N. F. DOBRÉE.

Sirex juvencus [= *S. noctilio*] at **Hull**.

Nat., Feb. 1888, p. 51.

1891. W. HEWETT.

Sirex juvencus [= *S. noctilio*] near **York**.

Ent., Oct. 1891, p. 248.

1893. H. H. SLATER.

Sirex gigas and . . . in **Holderness**.

Zool., Feb. 1893, p. 76.

1896. B. B. HAWORTH-BOOTH.

Sirex gigas near **Hull**.

Nat., Feb. 1896, p. 34.

1896. B. B. HAWORTH-BOOTH.

Plague of Wasps near **Hull** in 1893 [species not stated].

Nat., Feb. 1896, p. 34.

1896. HENRY B. WILSON.

Sirex gigas [at **Bridlington**] and **S. juvencus**.

Nat., March 1896, p. 90.

1897. G. C. BIGNELL.

Mesochorus tetricus, **Holmg.**, [also *Apanteles octonarius*] bred in **England** [at **Skipwith**].

Ent. Mo. Mag., Nov. 1897, p. 257.

1900. JAMES R. LOWTHER.

Hornet [*Vespa crabro*] at **Beverley**.

Nat., March 1900, p. 80.

1900. J. R. LOWTHER.

Sirex gigas [and *S. juvencus* = *S. noctilio*] at **Beverley**.

Nat., Nov. 1900, p. 336.

1901. F. BOYES.

Wasps [at **Beverley**; species not stated].

Field, 17th Aug. 1901, p. 303.

1902. E. MAULE COLE.

Sirex gigas at **Wetwang-on-the-Wolds**.

Nat., Oct. 1902, p. 314.

1902. F. BOYES.

Sawfly (*Sirex gigas*) [at Beverley].*Field*, 4th Oct. 1902, p. 606.

1903. T. STAINFORTH.

Camponotus herculeanus at Hull.*Nat.*, Dec. 1903, p. 456.

1903. F. BOYES.

Superstition about Bees [*Apis mellifica* in East Riding].*Field*, 1st Aug. 1903, p. 232.

1903. ANON [signed "D"].

Superstition about Bees [*Apis mellifica* at Cherry Burton].*Field*, 1st Aug. 1903, p. 232.

1906. CLAUDE MORLEY.

Notes on the Hymenopterous Genus Bracon, Fab. [*Bracon mediator*].*Ent. Mo. Mag.*, May 1906, p. 109.

1906. W. DENISON ROEBUCK [not signed].

Yorkshire Naturalists at Flamborough [*Pachynematus apicalis*, *Dolerus picipes*, and *Andrena albicans*].*Nat.*, July 1906, p. 246.

SYSTEMATIC LIST OF THE EAST RIDING
HYMENOPTERA.

TENTHREDINIDÆ (SAWFLIES).

Tenthredopsis cordata (Fourc.). I have seen an old MS. record, of about 1835, of *Perineura nassata* being "common" either at Hull or Askham, most probably the former place.

Sciopteryx costalis (Fab.). The same old record marks *Selandria costalis* as at "Sutton Road Spring."

Dolerus picipes Kl. Bempton Cliffs, June 1906, G. T. Porritt.

Strongylogaster cingulatus (Fab.). The old record of 1835 gives *Tenthredo cingulatus* for "Hull."

Athalia spinarum (Fab.). The same old record gives *Athalia centifolia* as "common at Hull."

Pachynematus apicalis (Htg.). Bempton Cliffs, June 1906, G. T. Porritt.

Cimbex connata (Schr.). Heslington near York, Robert Cook.

SIRICIDÆ (WOOD-WASPS).

Sirex gigas (L.). Hullbank Hall, Sep. 1887, B. B. Haworth-Booth. Holderness, July 1892, Rev. H. H. Slater. Abundant in Hull and the East Riding in 1887, owing to large cargoes of foreign timber being brought into the port, H. B. Wilson, 1896. Beverley in 1894, 1899, and 1900, J. R. Lowther, 1900. Beverley, where it has been resident thirty years, the larvæ feeding in an old pine-wood near, F. Boyes, 1902. Hornsea, 1895, B. B. Haworth-Booth. Wetwang-on-the-Wolds, three only observed during a residence of 37 years, Rev. E. Maule Cole, 1902.

Sirex noctilio Fab. Hull, buzzing about lilac trees in 1854 at Geo. Norman's place of business in the middle of the town, G. Norman. Albert Dock, Hull, August 1897, N. F. Dobrée. Hull, E. R. Waite, 1892. Beverley town in 1897, J. R. Lowther. Heslington near York, Sep. 1891, William Hewett.

All these records were made under the name of *S. juvenicus*, a species which is not yet authenticated for the East Riding.

CYNIPIDÆ (GALL FLIES).

None on record for the East Riding.

OXYURA.

None on record for the East Riding.

CHALCIDIDÆ.

None on record for the East Riding.

ICHNEUMONIDÆ (ICHNEUMON FLIES).

Sagaritis laticollis Hlmg. Hull, P. Inchbald, 1884, bred from larvæ of *Mania typica* in the People's Park.

Mesochorus tetricus Hlmg. Skipwith, hyper-parasitic on *Apanteles octonarius*, parasitic on *Notodonta dromedarius*, C. D. Ash, 1897.

BRACONIDÆ.

- Bracon mediator** Nees. Skipwith, three ♀ and one ♂ bred from a single cocoon of *Sesia bembeciformis*, June 1899, and one or two more failed to emerge, C. D. Ash.
- Apanteles octonarius** (Ratz.). Skipwith, reared from *Notodontu dromedarius*, C. D. Ash, 1897.

CHRYSIDIDÆ (RUBY-TAILS).

None on record for the East Riding.

ACULEATA.**HETEROGYNA (ANTS).**

- Camponotus herculeanus** (L.). Foreign importation, taken alive on the Western Dock Reservation at Hull in September 1902, T. Stainforth.
- Monomorium pharaonis** (L.). The House Ant infests a house at Hull, J. C. Brentano, 1870.

These two foreign importations are the only ants as yet on record for the East Riding.

FOSSORES.

- Pompilus plumbeus** (Fab.). Abundant at Spurn Point at Y.N.U. excursion, Sep. 1884, C. F. George.

DIPLOPTERA (WASPS).

- Vespa crabro** L. The Hornet. One taken at Beverley, 22nd Sept. 1900, J. R. Lowther.
- V. germanica** Fab. Beverley, J. D. Butterell, 1882.
- V. austriaca** Pz. Beverley, J. D. Butterell, 1882.
- V. norvegica** Fab. Stamford Bridge, Rev. W. W. Fowler.

ANTHOPHILA (BEES).

- Andrena albicans** (Kby.). Bempton Cliffs, June 1906, W. Pearson.
- A. nigroænea** (Kby.). Cottingham, G. C. Dennis, 1889.
- Apis mellifica** L. Domesticated at Beverley by F. Boyes and others.

The whole list thus amounts to 23 species out of the nearly 600 included in the complete Yorkshire list.





A. Spence.

BYGONE HULL NATURALISTS.

III.—WILLIAM SPENCE.

1783-1860.

PLATE XXXI.

MOST Hull citizens have long been familiar with the enormous buildings belonging to Messrs. Blundell, Spence & Co., at the corner of Beverley Road and Spring Bank; buildings which, though originally erected towards the outskirts of the town, are now, by the growth of the city, becoming dangerously near its centre. Few people, however, are aware of the fact that one of the founders of the firm was William Spence, F.R.S., F.L.S., &c., who was so well known by his entomological work.

Spence was born at Bishop Burton, near Beverley, and lived for many year in Drypool, Hull, and consequently holds a prominent place amongst Hull's "Bygone Naturalists."

From "Blundell of Liverpool, Lincoln, and Kingston-upon-Hull," (1906), by Dr. G. B. Longstaff, we learn that Spence served his apprenticeship with a firm of Russian Merchants and Ship Owners in Hull. He married Elizabeth, sister of Henry Blundell, with whom he shortly entered into partnership, a partnership that lasted nearly fifty years. From 1806-1811, and probably later, he lived at Drypool, but in 1820 he was living at 40 Dock Street. For years he suffered from a severe headache, "and as a consequence received the special permission of the Commandant to walk on the ramparts of the Citadel, which afforded a quiet and secluded promenade close to his house at Drypool."

In Freeman's "Life of Kirby" (pages 317-318), we find the following interesting note contributed by Spence himself: "In the spring of 1814 I had the great delight to receive a long-promised visit from Mr. Kirby, but which, unfortunately, the delicate state of Mrs. Kirby's health obliged him to restrict to about ten days. These were chiefly spent in seeing the lions of Hull and neighbourhood, and in visiting the many friends eager to pay their respects to him. We did little in insect collecting, but I had the great satisfaction of seeing him fish out with his own hands and secure a specimen of the then rare *Donacia (Macrolepa) Zosteræ*, from the pond on the banks of the Humber, a quarter of a mile from my house, where I first took it, and the source for a considerable period of the first British specimens."*

* The insect above referred to now appears in the British List as *Hamonia Zurtisi* Zac.

No doubt this meeting on the Humber Bank, in a district where certainly the appearance of the land has considerably changed since his day, and where *Donacia Zosteræ* would now be rare indeed, led to that correspondence and friendship which ultimately resulted in the publication, between the years 1815 and 1826, of Kirby and Spence's classical "Introduction to Entomology: or Elements of the Natural History of Insects." This work is perhaps the most popular, and certainly the most widely circulated, of all the early entomological works. The first volume, which contains 538 pages and 3 plates, was issued in 1815; the second volume, which contained 530 pages and 2 plates, was issued in 1817; the third volume, containing 740 pages and 15 plates, was issued in 1826; and the fourth volume, containing 634 pages and 10 plates, together with explanations of the plates, an anatomical index, orismological index, index to the genera of insects, and an English index to the whole work, in the same year. Undoubtedly the great charm of the plates lies in the beautiful drawings showing the details of various parts of the insects. Plate XXIV. is very interesting, as it contains sketches of the various appliances used in Spence's day in connection with the catching and rearing of insects. The objects figured are as follows:—"The bag-net; the landing-net; Mr. Paul's net; the fly-net; the forceps; the breeding-cage; apparatus for effectually killing large moths, &c., (a) the upper piece of the tube, (b) the lower, (c) the saucepan; a beetle transfixed by a pin; a butterfly, ditto, with the wings set out by card braces," &c. The frontispiece to the fourth volume is a portrait of Spence, from which the illustration herewith (Plate XXXI.) is made. My own copy of this work was a presentation copy to the Holderness Agricultural Society, and contains the signature from which the block on the same plate is made. Kirby and Spence's work is still frequently consulted by entomologists, and the original edition has been largely reprinted in England and abroad. By 1843 a sixth edition had been issued. The delay in publishing this work was on account of Spence's ill health, which also necessitated his leaving Hull for the South of England, about 1819.

As might be expected, Spence played a prominent part in the intellectual welfare of the town. He was intimately associated with the Literary and Philosophical Society of Hull, and took a great interest in its collections, which are now absorbed in our municipal museum. The cabinets of insects were originally arranged by him. An admirable marble bust of Spence, by Marachetti, was presented by his son to the Literary and Philosophical Society, and is now in our museum. He was a prominent member of the Subscription Library, at that time principally used and influenced by the scientific and educated men of the town, and for some time was its treasurer.

In 1805 Spence commenced his entomological researches, and was at first chiefly interested in coleoptera. In connection with the "Introduction to Entomology," Spence spent several months in the summer of 1812 in London, making various researches, principally in the library of Sir Joseph Banks. He was the first editor of the Hull *Rockingham*, a noted Whig newspaper, which started



MARBLE BUST OF W. SPENCE, BY MARACHETTI,
IN THE HULL MUSEUM.

in 1808, and survived till 1843. In 1807 he wrote a pamphlet, formerly well known, entitled "The Radical Cause of the Present Distress of the West Indian Planters pointed out, and the Inefficiency of the Measures which have been hitherto Proposed for Relieving them Demonstrated." This work was followed by "Britain Independent of Commerce" (a work which established his reputation as a political economist) and other similar produc-

tions. In 1809 he commenced writing scientific papers, and in that year submitted a "Monograph of the British Species of the Genus *Choleva*" to the Linnæan Society. Some "Observations on the Disease of Turnips, termed in Holderness Fingers and Toes," were read to the Holderness Agricultural Society in 1811, and printed at their request in the following year. This runs into twenty pages. Later, he was President of this Holderness Society. Other scientific papers of his are:—"On an Insect which is Occasionally very Injurious to Fruit Trees," "Vulgar Errors among Gardeners respecting Insects being Destroyed by Cold," "Observations relative to Dr. Carn's Discovery of the Circulation of the Blood in Insects," "Remarks on Planting Trees and Shrubs in Masses of the Species," and numerous others, printed in the *Gardeners' Magazine*, the *Magazine of Natural History*, the *Transactions of the Horticultural Society*, &c. In 1811 the *Rockingham* contained an able article from his pen on the "Pleasures and Advantages to be Derived from the Establishment of a Botanical Garden in Hull."

In 1883 was published an interesting work, "Extracts from the Minutes of the Holderness Agricultural Society, from the formation of the Society in 1795 up to the Year 1850." From this we find that Spence joined the Society on December 23rd, 1811. In 1814 he was its President, and he frequently attended its meetings and contributed to its proceedings. At the meeting held at the Sun Inn, Hedon, on Monday, the 30th of March, 1812, Mr. Spence produced three hundred copies of his essay on the disease called "Fingers and Toes in Turnips," and it was resolved that a copy of the essay be sent to each member of the Society and to each agricultural society in the kingdom. Mr. Spence had read this at a previous meeting.

To the "Life of the Rev. William Kirby, M.A., F.R.S., &c., Rector of Barham," by John Freeman, M.A., Spence contributed the following interesting notes:—

"Our acquaintance began in this way. Chancing, one evening in August, 1805, when walking on the Humber bank, to meet my friend George Rodwell, Esq., then a resident at Hull, he told me he was about to visit Barham in a few days, and said if I had any insects to send to Mr. Kirby he should be happy to convey them. This offer I gladly accepted, and prepared a box, which was taken by Mr. Rodwell, along with the following letter:—

"DRYPOOL, HULL, 26th August, 1805.

"SIR,—Your friend, Mr. Rodwell, knowing me to be a smatterer in that branch of natural history to the advancement of which, in Britain, you have so largely contributed, told me the other day that he was about to visit your neighbourhood, and said he would be glad to convey to you any duplicates of insects I might have, that I judged might possibly be new to you. I embraced his offer with pleasure, and I have accordingly sent a few insects which I have reason to think scarce, or not described in 'Entomologia Britannica.' . . .

"In June, 1806, I accepted Mr. Kirby's pressing invitation to visit him on my way from London to Hull, and spent ten delightful days with him at Barham. Five or six of these were devoted to a minute examination together of his Coleoptera, species by species, and I need not say what a fund of knowledge I derived from this inspection, accompanied by his comments, nor what a large accession my collection received from his very liberal contribution of his duplicates. Three or four days were given to an entomological excursion in his gig, to visit the shores of the Orwell, where I found many insects new to me." . . .

"Agreeably to Mr. Kirby's invitation I transferred myself to Barham in the summer of 1809, and for several weeks we were hard at work laying the foundations of our book, which conceiving to be the Letters on External Anatomy and Orismology, it was to these we first directed our attention, and before I left Barham we had drawn out a general sketch of the whole, founded on the examination of Mr. Kirby's insects, and discussions, often very long, as to the propriety of various terms." . . .

"We had found the various investigations required, so much more numerous and difficult than we had calculated on, that at the time of our separation in consequence of other engagements, we had not done anything towards the preliminary and popular portion, not having even definitely fixed what particular letters each should take; and though we had drawn up a provisional table of all the anatomical and orismological terms which the science seemed to demand, there were many of these still requiring further discussion before they could be finally adopted. To these discussions the thirty-seven letters we exchanged during the years 1809 and 1810 were mainly devoted. . . . We spared no labour either of mind or pen to attain accurate notions on the subject."

"At length, in the spring of 1815, the first edition of 750 copies of Vol. I. of our book appeared—just in time to allow me to take one with me to show to our entomological friends on the Continent, where I made a four months' tour after the battle of Waterloo. A second edition was called for the next year, and a third in 1817, when also was published Volume II., of which a second edition was required in 1818, and a third in 1822.

"A sad interruption of our joint labours took place in 1819, in consequence of my ill health, caused by severe headaches, gradually increasing, until at last they were excited by the slightest effort of attention in reading or writing. After struggling against them a year or more, and trying various remedies recommended by medical advisers, I was obliged to give in, and, adopting Dr. Baillie's prescription of being "for several years an idle man," to lock up my books and cabinets; to put in order and send to my co-adjutor, whose grief and disappointment were equal to my own, my large pile of unfinished MSS. for my share of the work; and to transfer myself and family from Yorkshire to the more genial climate of Exmouth, where we resided several years.

"During this period, though I took no active share in the completion of our book, I gave suggestions on various points in the letters which we regularly exchanged; and one summer Mr. Kirby, accompanied by Mrs. Kirby, made the journey from Barham to Exmouth, expressly to spend a few days with us—I need not say how greatly to my delight.

"In 1826, our concluding volumes (Vols. III. and IV.) appeared; and in this same year, as I found travelling always suit my health, which was still far from being re-established, I removed with my family to the Continent."

In 1833 he had settled in London after visits to Italy and Switzerland, and he assisted in the formation of the Entomological Society of London, of which Kirby and himself were the only

two British honorary members. He was President of the Entomological Society in 1847-8. He was elected a Fellow of the Linnæan Society in 1806, and of the Royal Society in 1834 (of which he later became a vice-president), and served on the Council of both Societies. The Linnæan Society possesses a portrait by J. J. Masquerier, from which an engraving was made by W. Riddon. There is also a portrait in the offices of Messrs. Blundell, Spence, & Co., Hull.

He died at his residence, 18, Lower Seymour Street, London, on the 6th January, 1860, aged seventy-seven.

Further references to Spence occur in the "Dictionary of National Biography" and in the Proc. of the Entomological Society, new series, V., 92; Proc. Royal Society, XI., p. 30; Freeman's "Life of Kirby," Chap. XV.,; and Gent. Mag., 1860, I., 631.

T. S.

REMAINS OF *GYRODUS* FROM THE CORAL RAG OF EAST YORKSHIRE.

I HAVE recently obtained from the well-known quarry at North Grimston, a palate with teeth of a species of *Gyrodus*. In this genus the palatine and vomerine bones are united by fine longitudinal rows of teeth. The largest teeth are in the middle row, and are almost, but not quite, circular, each having a depression and a papilla in the middle. The teeth of the outer row are slightly pentagonal, and are highest on the outside—the inside being almost level with the palate. Each tooth is provided with two circular sets of papillæ—one within the other.

H. C. DRAKE.

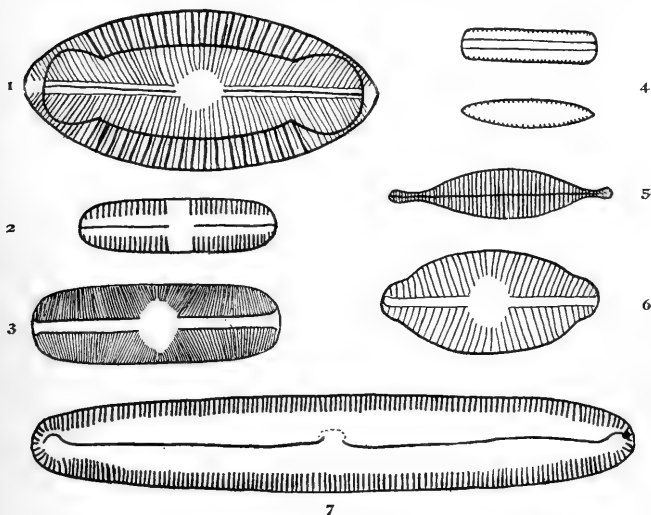
OUR PAST-PRESIDENTS.

THIS year we present our members with photographs (Plate XXIV.) of the Past-Presidents of the Club:—Messrs. J. F. Robinson, J. Hollingworth, R. H. Philip, T. Audas, and E. Lamplough. These gentlemen have done much towards ensuring the present successful position of the Club; they are all still prominent members, and it is to be hoped may long be spared to be so.

NOTES ON DIATOMS IN 1906.

By R. H. PHILIP.

THE most interesting gatherings made during the present year are the following :—From brackish ditch, Green Lane, Newland, *Mastogloia dansei* Thw., and var. *elliptica* Ag. ; from ditch at Saltend Common, near Hedon, *Melosira nummuloides* Ag., at one end nearly pure, and from the other end *Melosira jurgensii* Ag., almost equally pure ;



- | | |
|---|--|
| <p>1. <i>Mastogloia dansei</i> var. <i>elliptica</i> Ag. 2. <i>Navicula fontinalis</i> Grun. 3. <i>Navicula bacilliformis</i> Grun.</p> | <p>4. <i>Fragilaria brevistriata</i> Grun. 5. <i>Synedra famelica</i> Kutz. 6. <i>Navicula protracta</i> Grun.</p> |
|---|--|
7. *Pinnularia brevicostata* Cl.

from pond in Boynton Woods, near Bridlington (Y.N.U. excursion), five different species of *Stauroneis*, *S. anceps*, *S. acuta*, *S. Legumen*, *S. Phenicenteron*, *S. Smithii*; from stream falling into Little Thornwick Bay, *Campylodiscus Hibernicus* Ehr., and *Surirella spiralis* Kutz. ; also very

unexpectedly in same stream, *Coscinodiscus radiatus* Ehr., a marine species, apparently having been thrown up by the foam of the waves, and becoming domiciled in the stream, which, though well above high water mark, may have received sufficient salt water from drifting foam to keep the diatom alive. In Weedley Springs, in April, I found *Pennularia gracillima* Greg, recorded by Norman, from Saltersgate, as rare, also *Pinnularia brevicostata* Cleve., a new record for this district. The following are also new, *Synedra famelica* Kutz., and *Fragilaria brevistriata* Grun., from Sod House Lock, Market Weighton canal. (The latter was also found at Askern, on the occasion of the Y.N.U. excursion in July); from ditch near Patrington, *Navicula protracta* Grun., and from River head, Driffield, *Navicula bacilliformis* Grun., and *Navicula fontinalis* Grun.

EAST YORKSHIRE FUNGI IN 1906.

THE total number of distinct species found in this district was thirty-eight, including one new Yorkshire record, viz., *Hypholoma leucotephrum*. This fungus was found on the grassy roadside at Holmpton, near Withernsea, during the month of October, 1905.

The fungus *Tricholma personatum* was exceedingly common during the whole season (September to March).

During the month of September 1905, large quantities of the Myxomycete, *Spumaria alba*, were found on the grass, mainly on the cliff tops, and the sand-dunes of Sand-le-merc.

From April to August 1906, very few species have been found. During April I obtained permission to visit Drewton Dale, and made a thorough search which resulted in finding a few specimens of *Hirneola Auricula-Judæ* (the Jews ear) only.

During the month of June, in Skidby pits I found three species only, all of them being small and on dead twigs.

The month of July was even worse, and at Hull Bank and Hornsea Mere, one species only was found in each place, both of them common.

During the month of August I searched the Hull Bank end of Wild Cat Lane, with very poor results, finding one species of fungus and one myxo., viz. *Stemonitis fusca*.—
ARTHUR R. WARNES.

EAST RIDING COLEOPTERA IN 1906.

By T. STAINFORTH.

THE past year has been somewhat productive of good results. At least six new records can be placed on our lists, and the known localities for many previously recorded species have also been increased. It is all the more pleasing that this work has been done for the most part on the society's official excursions, many of which the recorder has been able to attend.

From a coleopterist's point of view, the most successful excursion held was at Flamborough, under the auspices of the Yorkshire Naturalists' Union. Inclusive of all the commoner beetles, between 100 to 120 species were here obtained, the more obscure of which have not yet been identified. The most interesting species found were *Dyschirius thoracicus*, Rossi.; *Amara fulva*, Dej., *Aleochara nitida*,* Grav.; *Cafius xantholoma*, Grav. (extremely common in rotting seaweed); *Epuræa æstiva*,* L.; *Rhagonycha limbata*;* and *Ceuthorrynchus assimilis*;* and in addition to these, a list sent by Mr. M. L. Thompson, supplies *Tropiphorus tomentosus*.

On the Figham Common excursion, on June 9th, Mr. H. C. Drake obtained from the Barmston drain a specimen of *Brychius elevatus*, a species for the occurrence of which we had previously been content with an unconfirmed though trustworthy record. On the excursion to Driffield the following week, the recorder obtained another specimen from the river Hull, together with *Platambus maculatus* (previously recorded for Sutton drain only) in abundance. The banks of Sutton drain supplied a new record in *Bembidium flammulatum*,* which occurred on the mud in some numbers. On the Skipwith Common excursion, on September 1st, were obtained *Bembidium lunatum* and *Tachypus flavipes* (on the banks of the Ouse), *Notiophilus palustris*, and the larva of the Tiger Beetle, *Cicindela campestris*. Numerous borings from which larvæ were obtained, proved the occurrence of this beetle, which does not appear to have been previously recorded for this locality, although its presence there has doubtless been known. Mr. W. Ward informs me that his father used to obtain the Tiger Beetle on the sandy tract at Snake Hall near North Cave.

* New records.

Weedley Springs, near South Cave Station, yielded an interesting species in *Chrysomela marginalis*, Duft., identified by Mr. M. L. Thompson, hitherto unrecorded for the East Riding.

In this report it may not be out of place to mention that a cabinet in the Hull museum is to be devoted to a type collection of British coleoptera. This has been labelled throughout with a complete list of the British species, of which, as many as possible have been correctly identified and inserted, but there are naturally many blanks, to fill up which we hope to have the assistance of the entomological members of our society. As far as possible the specimens are localised, but in the case of certain rare species which were found in an old museum collection, this, unfortunately, has been impossible. Here is work in which entomological friends could assist, by picking up specimens when on their holidays in various parts of the country. Mr. J. Porter and G. Mason have already assisted in this direction with specimens from Market Rasen, including *Saperda populnea*, *Phytodecta viminalis*, *Adimonia Tanaceti*, and *Attelabus curculionoides*.

BRITISH EGGS OF PALLAS' SAND GROUSE.

THE erratic invasion or irruption of the Pallas Sand Grouse (*Syrrhaptes Paradoxus*) in Europe has, at various times, given rise to much comment amongst ornithologists and the public generally.

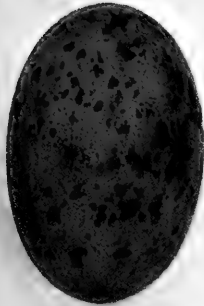
It is regarded as a very singular and exceptional movement, and although almost every county in Britain can include this Eastern bird as a visitor, only one or two have the distinction of claiming it as a breeding species; and to Yorkshire alone falls the honour of producing the only British eggs known to science. These consist of two clutches, each a pair, the normal number, both taken on the high wolds west of Beverley, one on June 15th and the other on July 5th, 1888. The specimens, here figured, were obtained by the late Mr. Johnson Swailes, and were at the time submitted to Professor Newton, who mentions them in his "Dictionary of Birds," p. 808.

These two instances, and the finding of a young bird in the down by a gamekeeper in Morayshire, are the only instances we have of the Pallas Sand Grouse breeding in Britain.

These unique specimens fortunately still remain in the East Riding of Yorkshire, in the collection of Mr. T. Audas, who has kindly allowed them to be figured herewith (Plate XXXII.)—
T. S.



1



2



3



4

BRITISH EGGS OF PALLAS' SAND GROUSE. (Actual Size.)



THE RELATIONSHIP BETWEEN PROVINCIAL MUSEUMS AND LOCAL SCIENTIFIC SOCIETIES.

By T. SHEPPARD, F.G.S.

(Being the Presidential Address, delivered at a Conversazione held at the Museum, Hull, on October 17th, 1906).

THE fact that your President for this year is at the same time Curator of our local Museum, makes the opportunity particularly appropriate for considering the relationship which exists between the museum and the local scientific societies.

In visiting various institutions throughout the country, it is found that in all towns the connection between the museum and the scientific societies is not so close as obtains in our own city. In some places the museum is maintained entirely at the expense of the local societies. In these instances the enthusiasm on the part of the various workers in the interests of the museum is not commensurate with the income which the societies possess, or with the amounts they are able to place at the disposal of the museum. The charge for admission, which is generally made by these institutions, has its serious drawbacks.

Semi-private museums of this character also suffer from a further disadvantage. It is found, as the result of experience, that ladies and gentlemen are not so much inclined to present specimens to a museum which is not absolutely public property, as they are to an institution which has the guarantee of existence for all time, such as is possessed by a municipal museum. I have in mind at the moment two or three admirable institutions in the North of England which contain most valuable specimens, but which are not able to display them as they should be displayed on account of lack of funds; and they also occasionally miss valuable collections merely from the fact that they have no guarantee of permanency.

In other museums that might be mentioned one finds that there exists a sort of superior feeling on the part of the officials, who ignore the work, and court not the help, of the local societies. In such cases there is no doubt that both the

societies and the museums suffer, though probably the museums are the greater losers.

Without wishing in any way to pose as a model to other institutions, I think we can claim in Hull that the greatest harmony exists between the local societies and the museum, to the advantage of both. Perhaps it is not too much to say that were it not for the fact that the local scientific societies took an active interest in the public museum at a time when, possibly for ulterior motives, it was suggested that the collections in the Literary and Philosophical Society's possession should be handed over to the town, the Municipal Museum at Hull in its present form might never have existed at all. The club over which I have now the honour of presiding, with the help of the Hull Geological Society, waited upon the Technical Instruction Committee when the matter was being considered, and unquestionably the claims then put forward by the deputation from these two societies, which attended at the Town Hall, carried some weight with the Committee in their decision. From the time when the museum became public property the most cordial relations have existed between it and the local societies, and it is to be hoped that these may continue. Whilst others have materially assisted the museum in its work, it can be fairly claimed that our own club has taken the lead in the help that has been given. Through its relationship, members of this club have considerably added to the value of our natural history objects, particularly as regards the *local* specimens, which we are endeavouring to make a strong feature in our collections. Through the forethought of our late lamented member, Charles Russell, we are able to display in our natural history galleries an almost complete series of British lepidoptera: a most valuable acquisition which was sorely needed to replace the incomplete, faded, and generally delapidated specimens previously existing. The collections of Swiss and South African butterflies left to us by Mr. Russell, as well as the exotic coleoptera, have also been most useful. The arrangement and exhibition of the butterflies in this museum was largely carried out by our member, Mr. John Porter, and Mr. H. E. Johnson assisted here in a similar way with the Coleoptera. Our friend and foundation member, Mr. J. W. Boulton (recently eulogised in our annual volume of Transactions by the club's biographer, Mr. Robinson), has helped us, particularly as regards the Coleoptera. The East Riding type collection of these insects, representing the identical specimens recorded in the various

lists printed in our Transactions, are kept together in the natural history gallery, and are being added to by Messrs. Stainforth and Drake. In this way the Transactions form a sort of catalogue of the specimens in our gallery, and at the same time the museum possesses the material for verifying the records published in our annual reports.

Amongst the Mollusca, our member, Mr. T. Petch, who is now occupying an important position in Ceylon, has handed over to us his excellent series of land and fresh water shells, mostly collected in the district, amongst which special attention should be drawn to the semi-fossil mollusca from the ancient meres of Holderness.

Our present very excellent show of birds' eggs is largely due to the specimens presented by our Past President, Mr. T. Audas, and Vice-President, Mr. E. W. Wade. Largely through the efforts of the former also we received the valuable collection of eggs formed by the late Johnston Swailes, of Beverley, consisting almost entirely of locally gathered specimens. Our aquarium is kept replenished by the efforts of another of our members, Mr. A. J. Moore.

The geological gallery has recently been considerably increased in value by the addition of numerous specimens, handed over by our recorder for palaeontology, Mr. H. C. Drake, to whom we are also indebted for the assistance he has given and is giving in the matter of classification and labelling of the specimens.

Others of our members have also added to the value of the local geological gallery by presenting specimens of exceptional interest.

Amongst the antiquities the specimens we possess relating to the interesting Anglo-Saxon period, which are very complete for a local museum, are due to the efforts of Dr. J. W. Wilson, of South Cave, a prominent member of our club, and one to whom we are in many ways indebted.

The show of wild flowers which is such a feature in our museum during the summer months owes its very existence to Messrs. Brumby, Robinson, and Waterfall, and Miss Jackson, and other members of our society.

From the preceding remarks I trust it has been shown that the museum is greatly indebted to the members of the Hull Scientific and Field Naturalists' Club, collectively and individually, and in return our museum endeavours to show its gratitude in a practical way. I am hoping that the museum's indebtedness to the club may be still further increased at no very distant date by receiving at the hands

of our past president, Mr. J. Fraser Robinson, his collection of local plants, as enumerated in the "Flora of the East Riding."

To our colleagues, the members of the Hull Geological Society, the museum is also considerably indebted. Through the efforts of that society it obtained some little time ago a very fine collection of geological specimens from Leicestershire which are of value in our general series. Through Mr. J. W. Stather we had presented to us by Mr. C. G. Danford, of Reighton, a unique series of belemnites (including some hitherto undescribed specimens) and a general collection from the Neocomian Clay, as well as a nearly complete skeleton of *Ichthyosaurus thyreospondylus*, a new record for Yorkshire from the Kimeridge clay of Speeton. Mr. Stather used his influence in assisting the museum to secure the Lether collection of Oolitic gasteropods, &c., which we are able to show for the first time to-night. With this collection our local geological series is nearing completion, and Mr. Stather has kindly promised to further assist us by filling in the gaps. In addition to the preceding we have received assistance from the members of the Hull Geological Society generally. Largely through its secretary the British Association is undertaking excavations in different parts of the district; and from a deposit near Kirmington an excellent series of fossil plant seeds was obtained, and after being identified by Mr. Clement Reid, F.R.S., was handed over to our collection. The same committee has more recently undertaken some excavations from which some valuable mammalian specimens have been obtained. These are at the present moment within the walls of this building, and it is possible, at any rate, that they may remain here.

Another local society of some importance, namely, the East Riding Antiquarian Society, has undertaken some excavations in the district. When this society was founded some years ago one of its objects was to form a permanent East Riding Museum for the reception of its collection, and for East Yorkshire antiquities generally. Since the formation of the society, however, the Hull Municipal Museum has come into existence, and from the fact that it is now a permanent institution, and has also made a strong feature of local antiquities, the East Riding Antiquarian Society passed a resolution two years ago adopting the Hull Museum as a home for its collections, and in this way we have the further co-operation of an influential society. It was through the influence of this society, and particularly its member, the

Rev. C. V. Collier, F.S.A., that we became the possessor of the Roman pavement from Harpham, and the various antiquities found on its site. These were presented by Mr. W. H. St. Quintin, J.P.

A county society, the Yorkshire Naturalists' Union, has its headquarters now in Hull, and it has contributed indirectly its share to the value of the municipal collections. It was at the annual conversazione of the Yorkshire Naturalists' Union held in this museum four years ago that Mr. N. F. Dobrée, F.E.S., of Beverley, a member of the Union as well as of our society, intimated his intention of handing over his unrivalled series of European Noctuae which is on exhibition this evening. This collection has proved most useful to entomologists, and is frequently consulted. Another member of the Yorkshire Naturalists' Union, Mr. R. H. Barker, of Scarborough, who noticed our lack of land and fresh water mollusca, has added very considerably to our collection of those objects, and where his own specimens did not enable him to fill up our gaps, he has induced others to assist us. Still another member, Rev. F. H. Woods, B.D., has recently come to our assistance in endeavouring to make our collection of marine shells more complete, and with his help and that of the chief engineer of the s.s. Huxley, the fisheries investigation steamer employed by the Marine Biological Association, it is hoped that our section devoted to marine zoology may be made more representative and worthy of this seaport.

In addition to the societies already enumerated, there are others such as the East Riding Nature Study Association, all of which are working directly or indirectly in the interests of this museum.

Having regard to the number of valuable specimens enumerated in these notes which have been added to our permanent collection as a result of the association of this museum with the various local societies; also having regard to the fact that numerous other specimens have been added in recent years in other ways; and bearing in mind that the museum was already full to overcrowding when first taken over from the Literary and Philosophical Society by the Corporation, it is only natural that we are somewhat embarrassed by the lack of exhibition space. However, I have every hope that in the near future the accommodation available for the proper display of specimens may be considerably increased; and when that occurs we shall have a much better opportunity of exhibiting and classifying our specimens than is now possible, though it will be conceded that the

present arrangement is somewhat an improvement upon that existing say six years ago. When this further accommodation is added I am hoping that it will be possible to set a small room apart with a table and a case of reference books, which students can consult in identifying their specimens, &c. ; and in other ways I am hoping that our museum may be brought into line with the more advanced museums in other parts of the country.

From the preceding remarks I trust it has been shown that in Hull at any rate it is found that by working together both the local societies and the museum certainly benefit. I am quite prepared to admit that the museum has by far the best part of the bargain, but it is perhaps as well even to make this clear, as one hears sometimes doubts expressed in certain quarters as to the desirability from the ratepayers' point of view of the museum and the local societies being so intimate. I think my remarks have shown, though it was surely not necessary to an audience such as this, that our mutual good relationship results in the ratepayers benefitting considerably, and what is perhaps even of more importance, the educational value of the museum is exceedingly enhanced.

EAST YORKSHIRE BOTANICAL NOTES IN 1906.

By J. FRASER ROBINSON.

THE past year, so far as the meteorological conditions are concerned, has been very favourable to botanical pursuits, and again steady, if not very brilliant work has been done. On all the Club's excursions, the botanical section has been represented, the localities visited being chiefly old and former haunts. So it comes that little in the way of "new to the flora" can be said of the discoveries.

One plant is almost a new record for the East Riding of Yorkshire, and it is certainly the first record for Holderness or the river Hull district. This is *Cardamine amara*, first found by Mr. G. R. Cook, at the Figham Excursion in May or June last, and reported to us by Mr. Waterfall. This proves a welcome addition to our local plant list, for it will probably help more than anything else to clear up the identity of the unusual form of cardamine hybrid, found near "Gibraltar" farm some years ago. It seems most likely that as both parents, viz. *C. amara* and *C. pratensis* are

found near the River Hull, this strange plant is a hybrid between them. For other plants, although very significant and instructive, one can only claim new stations, and perhaps the best of these is *Astragalus danicus* which was found at the Driffeld excursion on 16th June, growing on the canal banks. Mr. R. H. Philip was the first to note the plant east of the Wolds, viz. at Brandesburton (Coneygarth). Since then one of your recorders discovered it on the roadside gravelly hillocks between the Sykes Monument and the village of Garton-on-the-Wolds.

Yet another locality for the Bee Orchis has been added to our list by the secretary, Mr. T. Stainforth. This is not far from the western-most extension of our Hull Docks and on the Humber bank!

The Autumn Crocus was this year not only known at South Dalton, but also by the River Ouse near Barlby, where also grew great quantities of *Pimpinella magna* and *Campanula glomerata*, together with a few spikes of *C. latifolia*.

The plants at Skipwith were the usual ones—and deserve mentioning, for the time may arrive and at no distant date, when all will have vanished before the plough. *Hypericum elodes*, *Drosera rotundifolia*, *Rhamnus Catharticus* (in red and black berries), *Salix argentea*, *Stellaria palustris*, and *Gentiana Pneumonanthe*. The sight of the last as it expanded its deep blue Campanulate corollæ in the brilliant sunshine of September 1906, and, dotted as it was in profusion amongst the grass and heather, over acres of the Skipwith Common, was a sight such as one gazes very seldom upon, even in a life time, and which, once seen can never be forgotten.

One of our corresponding members, Miss Piercy of Tibthorpe, on the Wolds, sent for our inspection, plants of *Pyrola minor*, which she had found in a wood last July, not far from her residence. Previously this plant was known in very few localities in the East Riding of Yorkshire.

Aira præcox, a tiny grass, was first seen on our coast at Flamborough Head, at the excursion of the Y.N.U. on Whitsuntide last.

The Sedge, *Carex remota*, not at all common in our vice county, was found growing in two or three very big and graceful tufts in Beverley Long Lane, in the beginning of June.

Mr. Philip and the writer had a most wonderful vision of floral profusion in Carey Chalk pit on 18th August 1906.

As late as 15th September, an interesting time was spent on Sutton drain, studying the fruits of aquatic plants like the yellow water-lily, bur-reed, and arrow head, etc., particularly as regards the dispersal of their seeds.

It is a pleasure to report that such a rarity as *Lathyrus palustris* flowered well during the past season.

One plant is quite a new record for the East Riding, namely, *Cnicus acaulis*, the dwarf thistle, which was discovered two years ago near Beverley, and first announced to the Club by Mr. Cox, of Willerby, at a meeting held in November.

THE COMMITTEE'S REPORT ON THE WORK OF THE CLUB DURING 1905-6.

ALTHOUGH the past year has not been marked by any great increase in membership, it is nevertheless pleasing to the Committee to be able to report that the 1905-6 session shows no decrease in enthusiasm for natural history, and can be written down in the Club's annals as a satisfactory one. A feature of the meetings, both outdoor and indoor, has been that feeling of fellowship which in a society of our kind is so necessary a qualification for success.

Transactions of the Club.—Transactions, Vol. III., Part 3 (for the year 1905), has been issued to the members since our last Annual Meeting, and met with very favourable reviews from the scientific and ordinary Press. Owing to the general character of its contents, probably no part of our annual publications has appealed to a greater circle of readers than this one. Its contents, exclusively of local interest, are as follows:—

"Natural Aspects of Hull and District," by J. Fraser Robinson.

"The Mycetozoa of the East Riding," by T. Petch, B.A., B.Sc.

"The Hull Museum and Education," by T. Sheppard, F.G.S.

"Notes on Local Diatoms for 1904-5" (Plate), by R. H. Philip.

"In Memory of Thomas Blashill, F.Z.S., F.R.I.B.A." (Plate), by T. Sheppard, F.G.S.

"Notes on the Reclaimed Land of the Humber District," by T. Petch, B.A., B.Sc.

The Committee's Report on the Work of the Club during 1904-5.

"Mr. James W. Boulton, Stonemason and Entomologist" (Plate), by J. Fraser Robinson.

And short notes :—

- “East Riding Botanical Notes,” by J. Fraser Robinson and C. Waterfall.
- “Hull Naturalists ” (Plate).
- “Notes on East Riding Coleoptera in 1905,” by T. Stainforth.

The volume was illustrated by four plates.

The Club still possesses a small stock of its various publications :—Wade's “Birds of Bempton Cliffs,” Mills and Philip's “Diatoms of the Hull District,” and Blashill's “History of East Hull,” from which, together with the Transactions, a steady income is derived.

Natural History papers written by our members, but published apart from the Transactions, are :—

- “A Foray for Fungi,” by R. H. Philip, which appeared in the *Yorkshire Weekly Post* for Oct. 31st, 1905.
- “Natural History as a Hobby,” by Thomas Sheppard, F.G.S., in “Institute Notes,” 1905.
- “Notes on the Geology of South Ferriby,” by T. Sheppard, F.G.S., in the “Lincolnshire Naturalists' Union Transactions,” 1905.
- List of Papers, Maps, &c., relating to the Erosion of the Holderness Coast and to changes in the Humber Estuary, compiled by T. Sheppard, F.G.S., which appeared in the “Transactions of the Hull Geological Society,” Vol. VI., part 1 (1906).
- “Oor Natherilist Club,” by Mr. J. Nicholson, in the *Yorkshire Weekly Post* for August 18th, 1906.

Lectures.—Since the last Annual Meeting three syllabuses have been issued : One for the winter session, Oct. 4th, 1905, to March 28th, 1906 ; and two summer syllabuses of lectures and excursions from April 4th to June 30th, 1906, and July 7th to Sept. 29th, 1906, respectively. During the year indoor meetings have been held as follows :—

- Oct. 11—“Eclipses ” (illustrated by an orrery), Mr. A. Somerscales.
- „ 25—“Glaciers ” (lantern), Dr. J. Hollingworth, M.R.C.S.
- Nov. 8—“Methods of Preserving Plants and Flowers,” Rev. F. H. Woods, B.D., of Bainton.
- „ 22—“Life History of Molluscs,” Mr. T. E. Dobbs.
- Dec. 6—“Some Plant Diseases,” Mr. A. R. Warnes, M.S.C.I.
- „ 20—“The Fall of the Leaf,” Mr. H. Knight.
- Jan. 10—“The Modern Microscope,” Mr. H. M. Foster.
- „ 24—“The Life of Hugh Miller,” Mr. E. Lamplough.
- Feb. 7—Conversational evening.
- „ 21—“Ornithological Rambles in Holland ” (lantern), Mr. E. W. Wade.
- Mch. 7—Conversational evening.
- „ 21—“Modern Views of Evolution,” Dr. E. Turton, B.Sc.
- April 4—“The Romans in North Lincolnshire ” (lantern), Mr. T. Sheppard, F.G.S.
- „ 18—“Natural History of Scarborough ” (Members).
- May 2—“Flint Jack,” Mr. F. Lamplough.
- „ 16—“Some Rare and Interesting Yorkshire Plants,” Mr. J. F. Robinson.

- May 30—"Brachiopods," Mr. H. C. Drake.
 June 13—"Natural History of Flamborough" (Members).
 ,, 27—"Some Insect Studies," Mr. H. M. Foster.
 July 11—"Plants Found on the North Bull, Ireland," Mr. C. Waterfall.
 ,, 25—{ "Hymenoptera of the East Riding," Mr. W. D. Roebuck,
 F.L.S.
 "Oor Natherilist Club," Mr. J. Nicholson, F.R.H.S.
 Aug. 8—"Entomological Ramblings," Mr. T. Stainforth.
 ,, 22—"Holiday Reports and Exhibition of Specimens" (Members).
 Sep. 5—"Nitrogen and Nature," Mr. H. E. Johnson.
 ,, 19—Annual Meeting.

Most of the lectures were illustrated by either lantern slides, diagrams, or specimens.

During the winter months (October to March) the alternate Wednesday nights were devoted to a series of demonstrations or lecturettes on practical microscopy, certain members being responsible for the subject of each evening. The following subjects were dealt with :—"Mounting of Algæ," "Culture and Preparation of Bacteria," "Dry Mounting of Fungi and Measurement," "Mounting of Lichens, Liverworts, and Mosses," "Dry Mounting Whole of Vegetable Structure, Seeds, Pollen, &c.," "Preparing Specimens of Internal Vegetable Structures (Bleaching and Staining)," "Mounting of Foraminifera, Polycystina, and Sponges," "Dissection and Mounting of Insects and Spiders," "Stained Sections and Injections of Vertebrate Structures," "Micro-Zoology and Mineralogy : Sections of Rocks and Fossils," and "Crystallization."

The meeting on Oct. 14th was devoted to the Recorders' Reports on the past year's work, and on Feb. 14th to an exhibition of Botanical Lantern Slides by Mr. J. F. Robinson.

The average attendance at the indoor meetings has been twenty-eight during the winter months and twenty-three during the summer months.

Excursions.—During the summer months the following excursions were held :—April 7th, Kelsey Hill ; April 13th (Friday), South Cave ; April 16th (Monday), Scarborough (with the Hull Geological Society) ; April 21st, Hedon and Saltend Common ; April 28th, Mill Dam, Cottingham ; May 5th, Bentley and Risby ; May 12th, week-end excursion of the Yorkshire Naturalists' Union to Ingleton ; May 19th, Barton and South Ferriby ; May 26th, Sutton and Swine ; June 2nd to Whit-Monday, June 4th, excursion of the Y.N.U. to Flamborough ; June 6th, Figgham Common,

Beverley; June 16th, Driffield; June 23rd, Goole Moor; June 30th, East Halton (excursion of the Y.N.U. to Fewston for Washburn Valley); July 7th, Beverley Parks; July 14th, Bainton, with the East Riding Nature Study Association; July 21st, Hornsea Mere; July 28th, Broomfleet; Aug. 4th, Leven; Aug. 6th (Monday, Bank Holiday). Scarborough; Aug. 11th, Kelsey Hill; Aug. 18th, Haltemprice Lane, Willerby Lane, and Carey Pits (week-end excursion of the Y.N.U. to Guisborough); Sept. 1st, Skipwith Common; Sept. 8th, Withernsea for Sand-le-mere; Sept. 15th, Sutton Drain; Sept. 22nd, Marfleet; Sept. 22nd to 26th, Y.N.U. Fungus Foray at Farnley Tyas, near Huddersfield; Sept. 29th, River Hull.

To Miss Bainton, of Beverley Parks; Mr. Dry, of Driffield; and to the Rev. F. H. Woods, of Bainton, the thanks of the Society are due for their kind entertainment of our members on the excursions to their respective districts.

The Yorkshire Naturalists' Union has held excursions at Ingleton, Flamborough, Harrogate, Askern, Goathland (in connection with the British Association), Guisborough, and Farnley Tyas, near Huddersfield, at each of which our Society has been represented. The Flamborough excursion was perhaps the most successful of the Union's excursions, and upon this our Society may fairly congratulate itself. A full account of this appeared in the "Naturalist" for July and August, 1906.

Photograph Albums.—The Club's photograph albums contain a valuable record of our excursions, etc. In addition to photographs of local natural history objects are photographs of the various places visited on our excursions, as well as groups of the members attending. Every praise is due to our recorder of the Photographic Section, Mr. C. W. Mason for the careful way in which the album is kept. Our thanks are also due to those members who have supplied prints. As years go on these albums will become increasingly valuable, as they contain records of cliff and quarry sections and of some favourite natural history hunting grounds which are continually changing.

British Association.—The Hon. Sec. (Mr. Sheppard) represented the Club at the conference of delegates from the corresponding societies, two meetings of which were held in connection with the York meeting of the British Association. Various matters were discussed, the principal items being (a) the question of the meteorological stations distributed

throughout the country, when a complaint was made of the scarcity of observing stations in the north-east and south-east of Yorkshire. This discussion was introduced by Dr. H. R. Mill. (b) The question of the formation of a Natural History Photographic Survey for the collection and registration of photographs dealing with the various branches of natural science. A small committee was appointed to consider the matter, the Secretary of the Hull society being one of the members.

Membership.—The membership now stands at 146. The following members have been elected during the year:—Messrs. R. J. Fretwell, G. W. Griffiths, of Hornsea, W. Haskew, and W. Runton.

Committee Meetings.—During the year three Committee Meetings have been held:—June 13th, June 26th, and August 29th respectively.

Finance.—The finances of the Society are in a satisfactory condition.

The following is a list of the identified exhibits at the indoor meetings during the year, and apart from those used by the lecturers:—

MOLLUSCA:

- Terebratulina septentrionalis*, dredged off Iceland.
Tapes pullastra, Scarborough.
Trochus cinerarius var. *perforans*, Scarborough.
Unio tumidus, Sutton Bridge,
 „ *pictorum*, „ „
Anadonta anatina, „ „
Sphærium corneum, „ „
Bythinia tentaculata, „ „
Limnaea peregra, „ „
 „ *auricularia*, „ „
 „ *stagnalis*, „ „ and exceptionally large ex-
 amples from Hornsea Mere.
Planorbis corneus, Sutton Drain.

LEPIDOPTERA:

- Anthocaris cardamines* (Orange Tip), living larvæ and pupæ and preserved imagines.
Chortobius davus (Marsh Ringlet), Goole Moor.
Lycæna salmacis (Castle Eden Argus), Castle Eden.
Acherontia atropos (Death's Head Hawk), living, crippled.
Macroglossa fuciformis (Narrow Bordered Bee Hawk), imago and living larvæ, Market Rasen.
Bombyx quercus, var. *callunæ* (Northern Oak Eggar), preserved larvæ, Goole Moor.
 „ *rubi* (Fox Moth), Goole Moor.
Odonestis potatoria (Drinker Moth), Goole Moor.

- Chariclea umbra*, dark variety, Hymers College grounds, Hull.
 " " light variety, St. Annes, Lincs.
Trachea piniperda, larvæ, Market Rasen.
Anarta myrtilli, Goole Moor.
Scodionia belgiaria, Goole Moor.
Oporabia autumnaria, dark variety, Spring Bank West, Hull.
Hybernia marginaria, series showing a tendency to melanism,
 Hymers College grounds, Hull.
Ephestia kuhniella, Flour Mills, Hull.

COLEOPTERA :

- Cicindela campestris* (larvæ), Filey Brig.
Notiophilus palustris, Scarborough.
Bembidium biguttatum, Croxby, Lincs.
 " *articulatum*, " "
 " *quadriguttatum*, " "
 " *varium*, " "
 " *lunatum*, River Humber bank, Hull.
Badister bipustulatus, " " "
Sphæridium bipustulatum, var. *marginatum*, Scarborough.
Saperda carcharias, Norfolk.
 " *populnea*, Market Rasen.

PSEUDOSCORPION :

- Obisium muscorum*, Scarborough.

PHANEROGAMIA :

- Cardamine amara*, Figham Common.
Hypericum elodes, Skipwith Common.
Malva moschata, white variety, Stainton Dale.
Rhamnus catharticus, near Barlby.
Astragalus danicus, Banks of River Hull near Driffield.
Drosera rotundifolia, Skipwith Common.
Pimpinella major, Banks of the Ouse, Barlby.
Filago germanica, Beverley Parks.
Petasites albus, Snuff Mill Lane, Cottingham.
Senecio erucifolius, Banks of the Ouse, Barlby.
Campanula glomerata, " " "
Primula acaulis, retrograde form, with leaf-like calyces.
Gentiana Pneumonanthe, Skipwith Common.
Pinguicula vulgaris, Flamborough.
Salicornia herbacea, in fruit, Saltend Common.
Ulmus surculosa, corky, var. *suberosa*.
Colchicum autumnale, Banks of River Ouse near Goole.
 Proliferous form of the Marigold (Hen and Chickens).

FUNGI :

- Hypophoma leucotephrum*, Holmpton, near Withernsea.

GEOLOGY (Fossils) :

- Ammonites bucklandi*, boulder-clay, Withernsea.
 Fruit of *Carpolithes conicus*, Malton.
Marsupites testudinarius, Sewerby.
Belemnites abbreviatus, Corallian, North Grimston.
 " *jaculum*, Speeton clay, Speeton.
Pseudodiadema hemisphæricum, Corallian, North Grimston.
Hemicidaris intermedia, " " "
Terebratula insignis, " " "
Pleurotomaria reticulata, " " "

- Holaster* sp (?), Middle chalk, Barton.
Ammonites braikenridgii, Scarborough limestone.
Myacites calceiformis, Cornbrash, Scarborough.
Homomya crassiuscula, " "
Echinobrissus clunicularis, " "
 " *orbicularis*, " "
Ammonites macrocephalus, " "
Phymatella reticulata, upper chalk, Burdale.
Verruculina milliaris, upper chalk, Sewerby.
 " *convoluta*.
Scytalia radiciiformis.
Seliscothon planus.
Pachnincon scriptum.

(Minerals) :—

- Lead ore, Darley Dale.
 Blende, Castleton.
 Bluejohn, "
 Malachite "
 Limestone rock formations, Fulwell Quarries.

PHOTOGRAPHS. ETC.

- Photograph of Egg Collectors at work at Bempton.
 " " Nest of the Meadow Pipit.
 " " " " Wheatear.
 " " " " Snipe.
 " " Trout.
 " " The Beverley Parks Excursion Party.
 " " a patch of *Valeriana sambucifolia*, Beverley Parks.
 Plan of a Neolithic Settlement on the South Wolds.
 Number of drawings and water-colours of local views by the
 Lowther family.

To increase the scope of usefulness of the Society, and to bring the advantages derived from membership and attendance at its meetings before the notice of those whose sympathies lie with natural history and scientific research, it was decided at the Committee Meeting held on Sept. 12th, 1906, to issue the following circular :—

HULL SCIENTIFIC AND FIELD NATURALISTS' CLUB.

(Meeting Place—Room No. 29, Young People's Institute.).

DEAR SIR,

The Committee of the Hull Scientific and Field Naturalists' Club to yourself and to all members past and present, as well as to many who take delight in the search, study, or beauty of Nature, send this greeting.

It is now upwards of a quarter-of-a-century since the combined Society above mentioned came into existence, and it is a pleasure to put on record that its progress and success have been both marked and continuous. The indoor meetings (fortnightly during one half, and weekly during the other half of the year), with the years, have become increasingly interesting, instructive, and useful. Weekly rambles during the favourable season into the country around have been no less

successful and profitable. In every way, physical and mental relaxation, health, pleasant instruction and, not least, fraternal camaraderie have accrued in a remarkable degree.

Still it is felt that the spirit of advancement, characteristic of the age, could have even larger growth and development in our own case; and it is on this account that the Committee would make its respectful and urgent appeal to you, not for increased subscription but for your continued attendance and interest in all the meetings.

The above already will have suggested reasons why this appeal is made, but if others be required it may be pointed out that, notwithstanding our much observation, recording, and demonstration in the past, we have scarcely yet ascended the first step of the flight leading up to the great Temple of Knowledge. To ascend the steps in our way is as reasonable and profitable a mode of occupation for our leisure time as any that others find, including athletics, literature, music, etc. . . . Never an excursion is made into the field but new facts of plant, insect, bird or human life history are observed, and yet a hundred-fold more remains to be learned. We desire your fuller and heartier co-operation to this end.

Microscopes—many of them excellent instruments—we have in plenty, but have we as many microscopists? Or have we got full value for the money spent on the instruments? What a mine of treasure, then, awaits our search on demonstration nights.

To whet your interest, if it require whetting, kindly peruse the enclosed syllabus, and you will agree with us that it is worthy of your special attention.

Then, too, and lastly, you will doubtless wish to rally round our President-Elect—Mr. T. Sheppard, F.G.S., the able and distinguished Curator of the Hull Municipal Museum, who is in every sense a growth, one might say, an efflorescence of our Club. He came amongst us as a boy, and has graduated through our most important offices, has most ably conducted our publication enterprise which made us a corresponding society of the British Association, and now he approaches the chair of our beloved institution. Kindly do us the favour and honour of your esteemed attendance regularly, and we remain and shall continue,

Yours most fraternally,

On behalf of the Committee,

EDWARD LAMPLOUGH, *President.*

J. FRASER ROBINSON, *Past President.*

The Museum.—We have again to thank the Corporation for the great use that the Museum has proved to members of the Club, who are amongst its frequent visitors, and whose voluntary efforts to supply exhibits in the shape of fresh wild plants, fossils, &c., have been adequately recognised by the Curator's display and helpful labelling. The complete enjoyment of the excellent institution in Albion Street is, however, somewhat spoilt by defective ventilation, for a stuffy odour in the main room is not exhausted as it ought to be. We should also like to congratulate the Museums' Committee on the additional Museum it has recently opened to the public at Wilberforce House.

Officers.—The officers for the year have been the following: President, E. Lamplough; Past-President, J. F. Robinson; Vice-Presidents, T. Audas, L.D.S., H. M. Foster, R. H. Philip, E. W. Wade; Committee, J. Hollingworth, M.R.C.S., W. R. Bromby, J. L. Strafford, Lt.-Col. C. H. Milburn, M.B., G. B. Walsh, B.Sc., W. J. Strachan; Librarian, J. Porter; Curator, J. W. Boulton; Treasurer, J. Ridley; Hon. Secretaries, T. Sheppard, F.G.S., and T. Stainforth (address—The Museum, Hull); Editor, T. Sheppard, F.G.S.

Recorders.—Microscopy, J. Hollingworth, M.R.C.S. Vertebrata, (Mammalia and Aves) T. Audas, L.D.S.; (Pisces) H. M. Foster; Invertebrata, (Mollusca) T. E. Dobbs; (Lepidoptera) J. W. Boulton and A. C. Wilford; (Coleoptera) T. Stainforth. Botany, (Phanerogams and Ferns) J. F. Robinson and C. Waterfall; (Diatoms) R. H. Philip; (Mosses) J. J. Marshall; (Fungi) A. R. Warnes, M.S.C.I.; Geology, T. Sheppard, F.G.S.; Photography (and lanternist), C. W. Mason.

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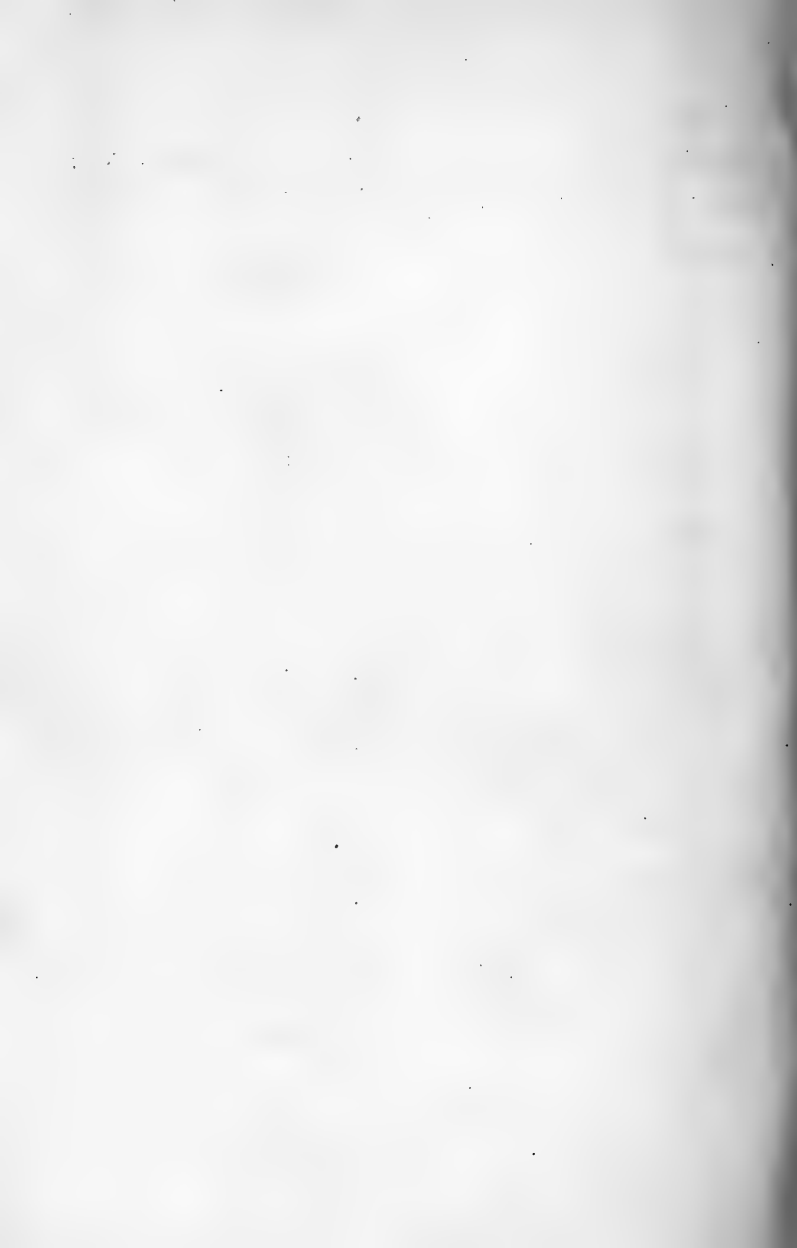
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PRESENTED

21 JAN. 1907





THE NATURALIST.

A MONTHLY ILLUSTRATED JOURNAL OF NATURAL HISTORY.

Editors:—T. SHEPPARD, F.G.S., The Museum, Hull;
and

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