Proceedings of the Berwickshire Naturalists' Club.

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PROCEEDINGS

OF THE

BERWICKSHIRE NATURALISTS' CLUB.

The Annual Address, delivered at Norham, on the 22nd of September, 1858. By the Rev. William Darnell, M.A. President for the year.

Gentlemen,

So many topics of local and general interest have been exhausted by my able Predecessors in this chair, and in the various contributions which grace our annals, that in confining myself to a recapitulation of our proceedings during the past year, coupled with such observations as the occasion seems to suggest, I shall best consult the dignity of the Club, and my own feeling of inability to fulfil the task assigned to me as your President. To proceed then at once, *in medias res:*

Our anniversary meeting was held at Alnmouth, on Thursday, the 24th September, 1857. The members present were, Messrs. P. J. Selby, Robert Home, Revds. J. D. Clark, George Walker, L. S. Orde, F. R. Simpson, Wm. Darnell, G. S. Thomson, G. H. Hamilton, Charles Thorp, Dr. G. R. Tate, Messrs. J. Church, William Dickson, jun., Capt. Geo.

Selby, John Church, jun., George Tate, and J. C. Langlands, the President and Secretary; and as visitors, the Revds. William Procter and C. Dowson, Messrs. William S. Church, Patrick Thorp Dickson, and Thomas Tate of Hastings.

The day was particularly fine, and after breakfast at the Red Lion, the members proceeded to the Church Hill, Amble, and Warkworth. It is not necessary to say much upon the subject of the Church Hill or of Alnmouth, for its history is pretty well told already by our late President, Mr. Dickson, in his "Four Chapters from the History of Alnmouth," which he published in 1852, for the perusal of the Archæological Institute of Great Britain, at their meeting at Newcastle-upon-Tyne, in that year. One thing may be noted, that it is there proved that in the old church of Alnmouth was held the Synod A.D. 684, at which St. Cuthbert was chosen Bishop of Lindisfarne. In the year 1856–7, a bridge was built over the river Aln, and a new road made at each end by which Alnmouth is brought within a mile of the Bilton station on the North Eastern Railway, a ready access obtained to and from Alnwick, and a great boon conferred on the inhabitants of both towns.

From the Church Hill the party proceeded to Warkworth, and here again all that can be said of the Hermitage, the Castle, and Church has been the frequent theme of the historian or the poet. The Castle and Hermitage are still the chief points of attraction, and Warkworth is still, as of yore, "proud of Percy's name." The present Duke of Northumberland has recently restored two apartments in the Castle, and, as might be expected, in excellent taste. The breakwater harbour and works at Amble, at the mouth of the Coquet, were next examined by the Club. The ancient history of this place will be found in the elaborate volumes of Mr. Sidney Gibson, F.S.A., relating to the history of Tynemouth, Amble having been part of the possessions of that religious establishment. After a pleasant walk along the shore, and by the sea-banks, the party again reached head quarters in time for dinner. After dinner, the minutes of the last meeting were read. The Rev. William Darnell was chosen President

for the year, and Mr. W. Sharswood, of Philadelphia, and Mr. Thomas Tate, of Hastings, were elected members. The following were severally proposed and seconded for election at the next meeting, to be held at Berwick-on-Tweed, on the 28th of October,—the Rev. John Woodham Dunn, Vicar of Warkworth, the Rev. William Procter, Incumbent of Doddington, Patrick Thorp Dickson, of Alnwick, Thomas Young Grete, of Norham, and the Rev. William Cumby, Incumbent of Beadnell. A paper was read by the President, Mr. Dickson, on the Marsh Samphire (*Salicornia herbacea*) which grows in great abundance at Alnmouth. Dr. Embleton exhibited a beautiful specimen of a gold quarter noble of Edward III., found at Dunstanburgh Castle. A nugget of fine gold from the Ballarat diggings, the same colour as the above coin, and weighing about an ounce, was exhibited by the President; also a piece of coarse stone interspersed with grains of sparkling gold, which is extracted by crushing and melting. A fine specimen of a fossil shell with its matrix, from Lord Grey's quarry at Hawkhill, was also shewn, which Mr. Tate pronounced to be "*Productus giganteus*," a characteristic organism of the mountain limestone formation. The Rev. J. D. Clark exhibited a pair of curious spurs, the particulars of which are to appear amongst our records. A specimen of a locust (*Locusta migratoria*) taken at Belford, was also shewn by Mr. Clark. The President then delivered his address, which was a most elaborate and interesting document. This concluded the proceedings of a day diversified with abundance of recreation and fresh air, and combined with some natural history and antique lore.

On the 28th October, the Club met as usual at BERWICK. It was a bright Autumnal day. After breakfast at the Red Lion, at which were present, the Rev. J. D. Clark, Messrs. Home, Clay, Boyd, Major Elliott, Lieut. Johnston, Dr. Clarke, Dr. Embleton, the Secretary, and the Rev. William Darnell, President. We were joined by the Vicar of Berwick, who conducted us to the Parish Church, the recent restoration of which must be an object of interest to all who

remember its previous condition and can appreciate ecclesiastical order and propriety. The various points of interest in the fabric, and some beautiful medallions of stained glass were minutely examined and described on the spot by the Vicar. On leaving the Church, we visited in the Church-Yard, with mournful interest, the last resting place of him who gave to our Club "a local habitation and a name." From thence we were guided to the site of the new Church of St. Mary, the foundation stone of which had been laid a few days before by the Bishop of the Diocese. The cemetery, the pier, the old fortifications, and the sea-banks comprised the extent of the day's ramble, and at dinner we sat down, fifteen in number, Capt. Carpenter, Mr. Langlands, Dr. F. Douglas, Mr. Logan, and the Rev. Thomas Procter, a visitor, having joined the party. A vacant chair indicated the absence of one who had filled it well in the morning and had since beat a retreat. After dinner Captain Carpenter exhibited several cases of Butterflies and Insects, chiefly collected by himself. An antique vase and two keys, found in digging the foundations of the new Church, were exhibited by the Vicar of Berwick. The meetings for the following year were fixed to take place at Beadnell, Earlston, Greenlaw, and Norham. The members proposed at the last meeting were duly elected, and the following new members proposed,—W. Sherwin, Esq., Barmoor Castle, the Rev. Thomas Procter and the Rev. Shepley Watson Watson, of Berwick, Matthew Culley, Esq., of Coupland Castle, the Rev. James Turnbull, of Graden, and Mr. John Clay, of Berwick.

The first meeting of the year was held at BEADNELL, on the 27th May. The morning was unpropitious, but after a sumptuous breakfast at Dr. Embleton's, the day cleared up, a boat was in readiness, and a visit to the Farne Islands was determined upon by the majority of the members. Others visited the ruins of the old Chapel on the point, and examined the geological strata of the coast, under the guidance and direction of Mr. Tate. At dinner which, from want of accommodation in the Inn, the Secretary had kindly ordered to

be laid in his own house, were assembled, the Rev. J. D. Clark, William Dickson, J. C. Langlands, P. T. Dickson, J. and W. Boyd, G. Hughes, G. Tate, Revds. W. Cumby, C. Dowson, C. Thorp, and F. R. Simpson, and the Secretary and President; Dr. Robson, Dr. Marshall, and Mr. Graham as visitors. After dinner Mr. Dickson read a paper on the ancient Font of the Parish Church of Rothbury, of which he exhibited a drawing. A paper on the prior existence of the Beaver (*Castor Fiber*) in Scotland, from the pen of Dr. Charles Wilson, and some observations on the habits of the Common Cowry (*Cypræa europæa*) were read by the Secretary. Dr. Robson, of Belford, and Dr. Marshall, of Annstead, were proposed as members, and the election of the members proposed at the last meeting was confirmed.

The next meeting of the Club was at EARLSTON, on June 24th, and was attended by only three members,--Dr. Geo. Douglas, Mr. William Boyd, and the Secretary. The Rev. Mr. Swan, of Smailholme, and his brother, favoured the members with their company as visitors. A sumptuous breakfast and dinner had been prepared in anticipation of a large gathering. The day was beautiful, and the haughs of Leader as enticing as of yore, and the rich golden flowers of the "bonnie broom" of Cowdenknows added greatly to the beauty of the scenery. Thomas the Rhymer, or Thomas of Ercildown, the ancient name of the Parish, was born here, in the thirteenth century, and there is still a fragment left of the Rhymer's Tower. Several insects were captured, and amongst the plants observed may be mentioned, *Mentha viridis*, *Lepidium Smithii*, *Geum intermedium* in both states, and *Rumex sanguineus*. The Church of Earlston is modern. It was erected in 1786, displacing the ancient structure. Its registers date from 1694. The Parish is not in general mountainous, though there is one hill to the south of the town 1000 feet above the level of the sea, on which there is said to have been a Roman encampment.

On the 29th July, the Club met at GREENLAW. The day was most favourable, bright and with a cool air. The major-

ity of the members, under the guidance of the Rev. Mr. Walker, the Minister of the Parish, proceeded up the valley of the Blackadder, which divides the Parish into two parts, the moor part, from the more cultivated land. They admired the dark grove of fir trees on the opposite bank of the stream, and the perpendicular cliffs above the river, called "Thomas's Grave," the common name of the place, but the origin lost in obscurity. Advancing forward, they came to a large mound called the "King's Grave," about which there is a legendary tale, which Mr. Walker has kindly undertaken to make us acquainted with hereafter. On the opposite side of the river, the spot was pointed out where, a few years ago, some gold nobles of Edward III. were found, now in the possession of the Lord of Marchmont. An encampment, called the "Black Castle Ring," very perfect, situated on the high grounds, was the next object of interest. On three sides there is an outer ditch, then a high dyke of earth, then a wide fosse, and then again an inner dyke—a large flat piece of rich grass ground forming the centre. On the other side is a broken bank, very precipitous, 100 feet and more above the river, from which the camp was quite inaccessible. Here the stream is formed of two branches, the Blackadder running from the east, the Fawngrass more from the west and south. The party followed the course of the latter, but diverging across the moors to view the extraordinary mounds called the Kames. Nine mounds are here found of porphyry gravel, smoothed by the action of the water and laid up in a huge ridge. They can be traced for eight miles in length. Mr. Stevenson has kindly undertaken to give us a paper on the origin of these mounds. Henolt's Dyke and some other places of interest were left to be visited on a future occasion. Another party crossed over the southern moor and passing by old Greenlaw, and Howlaw Rigg, inspected the ruins of Home Castle, the ancient stronghold of that powerful family. Towards the hour appointed for dinner the members might be seen straggling into the town from various quarters. The County-town was all alive, the courts being open, and with difficulty we procured a dinner at the Inn. The members

present on this occasion were as follows: The Rev. John Baird, Rev. J. D. Clark, D. Macbeath, William Dickson, Rev. W. Lamb, P. Clay, W. J. Watson, W. Stevenson, Dr. C. Stuart, Rev. Thomas Leishman, P. T. Dickson, and the President. The Rev. Nicholas Darnell of Edgbaston, and the Rev. Mr. Walker, of Greenlaw, favoured the Club with their company as visitors. After dinner the following members were proposed, the Rev. Mr. Walker, of Greenlaw, the Rev. Robert Kirwood, of Bamburgh, and Mr. John Crooke, of South Sunderland. The plants observed during the walk were, *Triglochin palustre*, *Arbutus uva-ursi*, and *Pinguicula vulgaris*. A motion, submitted to the meeting by the President, to the effect that a sum not exceeding twenty shillings should be devoted from the funds of the society towards the expenses of each meeting held during the year, met with general approval.

GENTLEMEN,—I have now passed in review, and as concisely as the subject matter would admit, our annual calendar of operations. If we have not added much to the contributions of science in general, we have at least made some individual acquisitions of knowledge sufficient to repay us amply for the time we have devoted to such pursuits. Few indeed of us, with avocations of various kinds, demanding all our energy and care, are able to bestow the attention we would wish on so engrossing a study as the works of nature. But if the highest flights of philosophy and science shrink into nothing when we bring them into competition with the wisdom of Him

> "———— the kingly sage, whose restless mind
> Through nature's mazes wandered unconfin'd;
> Who every bird, and beast, and insect knew,
> And spake of every plant that quaffs the dew:"

we may well be content to follow at a humble distance in our sphere of labour, accumulating knowledge gradually, sporting, as it were, with philosophy, and dimly realizing the extent and variety of its treasures. And now, in bringing these remarks to a close, I must not omit to notice the genial weather with which we have been favoured by a bountiful

Providence during the successive seasons of the year. The past harvest betokens abundance and plenty, and the Autumn promise is all that could be desired. It is stated that the potato crop has suffered in many parts from that mysterious disease with which it has been attacked for some years past. The appearance of the comet too, so plainly visible to the naked eye at nightfall, is a phenomenon to be recorded in our pages. We may number amongst our associates some whose knowledge of astronomy may tempt them to dilate on the peculiar characteristics of these heavenly bodies. It now only remains for me to wish, which I do in all sincerity, that the measure of success which has hitherto been accorded to the Club, may still attend our proceedings and enable us both to maintain the proud position we occupy, and to realize the brightest anticipations of our Founder, for generations to come.

THE MARSH SAMPHIRE.

Notes communicated by Wm. Dickson, F.A.S., *and read to the Club at Alnmouth, on 24th September*, 1857.

The Herbaceous Marsh Samphire (*Salicornia herbacea*) grows at Alnmouth on the Salt Marsh Lands, on both sides of the river Aln, in great abundance. Specimens were produced to-day to the Club, in their natural state and as a pickle at dinner. It is useful for this purpose when in a green state, being fleshy, salt, and a good sponge for vinegar. It is in other respects tasteless and has tough fibres running through the middle of it. It grows between high and low water mark, and must be covered with salt water at each tide. It will not grow in pure sand, but requires marl or clay to be mixed with the sand. It is like a tree in miniature, with stem and branches, and is generally about six or eight inches high, seldom more. When ripe it turns yellow and is then unfit to use as a pickle.

This plant differs entirely from the sea or rock Samphire (*Crithmum maritimum*), which does not grow in the water, but in rocky places, has a warm aromatic flavour, is without the stringy fibres existing in the centre of the Salicornia, and besides, it grows to the height of two feet.

Both plants take their name from the French *Herbe de St. Pierre*, and the Salicornia from its taste and form, *Sal* salt, and *Cornu*, a horn, the latter arising from the appearance of its branches.

The real Samphire (*Crithmum*) is common on the coast of the English Channel, but none grows within the district which our Club is confined to. It is now, as it was in old times, found on the cliffs of *Dover*, and in the most high and inaccessible places. The locality there is thus immortalized by Shakspeare, in his tragedy of *King Lear:* Edgar, in addressing the blind Earl of Gloster, says:

> "Come on, Sir, here's the place; stand still; how fearful,
> And dizzy 'tis, to cast ones eyes so low!—
> The crows and choughs, that wing the midway air
> Shew scarce so big as beetles: Half-way down,
> Hangs one, that gathers *Samphire;*
>
> —(*Act* 4, *Scene* 6.)

The difference between the two kinds of Samphire is not generally known, except to botanists. Wallis, author of the

Natural History and Antiquities of the county, mistakes the Salicornia for the Crithmum. "Samphire—Crithmum marinum,"—he says, "is on the sea-beach near Alnmouth plentifully.

I have prepared this account to induce members to give us papers on small isolated subjects in natural history, as such subjects can be treated here more fully than in larger works, and by inviting discussion, would stimulate our young naturalists to reflect, and furnish information and entertainment to the other members of the Club.

I conclude this paper with Dr. Johnston's account of this plant, in his Flora of Berwick, pages 1 and 2:

I.—MONOGYNIA.

Salicornia herbacea.—*Calyx* turned, undivided; *corolla*, none; *stamens*, 1 or 2; *seed*, single, invested with calyx; *plant*, leafless, much branched, and jointed; *stem*, herbaceous erect; *joints*, compressed, notched; interstices inversely conical; spikes, tapering upwards. *Common jointed Glasswort.* Hab. muddy sea shores.

WM. DICKSON.

Rothbury and its Saxon Cross. By Wm. Dickson, F.A.S.

Stephano.—Stephano is my name; and I bring word,
My mistress will, before the break of day,
Be here at Belmont; she doth stray about
By holy crosses, where she kneels and prays
For happy wedlock hours.
—*(Merchant of Venice, Act 5, Scene 1.)*

The town of Rothbury, on the north bank of the river Coquet, is just within the limits of our Club. From difficulty of access, it is one of those places which has not yet been visited. But, if salubrious air, the fall of waters, mountainous and rugged scenery, be a charm to the naturalist, I should hope it will, at an early period, be fixed upon as a place of meeting.

The Manor of Rothbury in ancient times was a Royal Domain, and of the inheritance of the Crown of England.

King Henry II. was seized of that Manor, and the Sheriff of Northumberland took the rents and accounted for them to the Barons of the Exchequer yearly at Michaelmas. His son, King John, by charter in the sixth year of his reign, gave to Robert Fitz Roger and his heirs the manor of Rothbury, to

hold by the service of one knight's fee for all services; with the woods of the manor and the forest according to the metes and bounds as it existed, while it was in the hands of that King, with vert and venison and all that pertained to a forest. And King John interdicted any one to hunt in that forest or take the venison, without the licence of the said Robert or his heirs, upon pain of forfeiting £10 of silver for the works of the King, and the horses, harness, and dogs then and there used which were to be forfeited for the use of the same Robert and his heirs. The same charter contains a grant of markets, and a fair, goods and chattels of felons, pillory, tolls, the assize of bread and ale, and many other privileges.

The King by letter on the Close Rolls (6 John, m. 4, 1205) acquaints the Barons of his Exchequer of his having made this grant, and commanded them to relieve the Sheriff of the County of his duties as a receiver of rents. And by another letter, dated at Colecester 15th October, (7 John, m. 12, 1205) addressed also to his said Barons, he desires them to compute with Robert Fitz Roger for the farm of the manor of Rothbury, which he had given to him, according to the tenure of his charter.

From this time the King ceased to have any claim to Rothbury, save for the military services in respect of one knight's fee, reserved by the charter.

The following short pedigree elucidates this subject:

I. Barons by tenure.

Hen: II. Roger Fitz Richard, Baron of Warkworth, living 1165. He married Eleanor, one of the daughters and coheirs of Henry Baron de Clavering.

Richard I. Robert Fitz Roger his son and heir, to whom King John granted this manor, as above mentioned. He died 12th John, 1212.

John —. John Fitz Robert, Lord of Rothbury, his son and heir, and one of the twenty-five Barons appointed to observe the Magna Charta; ob. 1240. King John, in the 14th year of his reign, confirmed the grant of this manor to him.

Henry III. Roger Fitz John, Lord of Rothbury, his son and heir; ob. 1249.

II. Barons by writ.

Edward I. to Edward II. Robert Fitz Roger, Lord of Rothbury, his son and heir, summoned to Parliament from the 2nd November, 23 Edw. I., 1295, to the 16th June, 4 Edw. II., 1311; ob. 1310.

Edward I. to Edward III. John Fitz Robert, Lord of Rothbury, aged 40, assumed the name of Clavering. his son and heir, summoned to Parliament from the 10th April, 28 Edw. I., 1299, to the 20th November, 5 Edw. III., 1331; ob. 1332.—*S. P. M.*

This John de Clavering for certain considerations made over to Edward II. the reversion in fee of the Barony of Rothbury, failing issue, and this reversion Edw. III. in the 2nd year of his reign, granted to Henry de Percy of Alnwick, in fee, which was confirmed by Parliament. John de Clavering had no issue, and this manor, on his death, vested in Henry de Percy, and it has continued in the Percy family ever since, and now belongs to Algernon Percy Duke of Northumberland.

About a mile below the town is the famous Crag End Quarry; a pure white close-grained freestone. Here the stones for the landings and staircases of Alnwick Castle have been procured.

The springs of Whitton and Simonside, the Reever's Well, the Bridge Well, and many other supplies from the bowels of the earth, are copious and refreshing.

The views from Simonside are most extensive; the whole of the coast as far as Tynemouth to the south, and Berwick to the north, is visible; and the eye takes in the Cheviot range, and some places far into Scotland. The prospect also from the ruins of the old hall is pleasing. All these objects are well worthy of a visit when the atmosphere is clear on some long summer day.

The village is sheltered from the north and east by high hills, and to a certain extent from the south and west. It has always been the favourite resort of invalids, and here medical men recommend their delicate patients to sojourn.

This predilection is not mere fancy, for by a late report from the Registrar General, he proves it to be one of the most healthy places in the country; there being as few deaths per cent. as in any other parish in England.

Let those members who pursue the finny tribe bring their rods with them, and after wholesome toil and filling their baskets, sit down by the Reever's Well (a characteristic term from the olden days), or by the romantic Thrum, or Scottish ford, and there enjoy an hour's repose amid scenes of rural beauty. Some may find their way to Brinkburn Priory, about three miles below the town, on the north bank of the Coquet, (still within our limits), where, in a dark dell and bend of the river, they may roam amongst monastic ruins, and admire

perhaps the best specimen we have of transitional architecture in England.

And nearer still is the romantic Thrum, the dark and deep shade of the Debdon Burn near the Fulling Mill. Whitton Tower with its beautiful grounds should be seen. Here is one of those strong Peel Houses, fortified to resist the marauding excursions of the Scots, in border warfare. Almost every vill had its Peel tower, many of which remain, but none in better order than that of Whitton.

The church has lately been almost rebuilt, still a portion of the ancient structure has been preserved.

Surrounding the church is the burial ground. A part of it is called the Cartington Porch; it got out of repair, and the owner being a Roman Catholic, omitted to keep it up, and it was therefore excluded from the church in A.D. 1658, by the arch being built up. It has since so continued, and is the burial place for that lordship.

The burial ground is of considerable extent, and many a beautiful form lies entombed there, blighted and destroyed by that insidious disease—consumption.

> "Beneath these rugged elms, that yew tree's shade,
> Where heaves the turf in many a mouldering heap;
> Each in his narrow cell for ever laid,
> The rude forefathers of the hamlet sleep."—

It is, however, the shaft or pillar of the Font in the church to which I wish at present to direct the attention of our members.

In the first place, I must refer to Dr. Charlton's account of an ancient Saxon cross, from the church of Rothbury, read at the meeting of the Antiquarian Society, at Newcastle, March, 1850, (4 Arch. Æl. 60) in which he gives a minute description of portions of this cross, accompanied by careful drawings.

That portion was discovered when the old church was restored, and I think they have been preserved at the time of the Reformation, by being buried in some part of the floor of the building. They were claimed by the contractor as old materials, and were carried off by him to Newcastle, and are now in the museum of the Antiquarian Society.

Dr. Charlton regrets that so small a portion of this fine cross has been recovered, but he does not appear to be aware that a part still remains in the church at Rothbury. That at Newcastle consists of the limbs of the cross and a portion of the shaft.

The limbs contain on the western side the figure of our Lord.

On the eastern side are three well-carved figures. On the north and south sides is Saxon knot-work.

The shaft on one side has a figure with a crossed Nimbus, and on the opposite side, a figure restoring sight to the blind. On another side, the well-known Dano Saxon figure of the Dragon or winged monster, while on the remaining side there is a group of heads, probably the celestial choir.

Dr. Charlton thinks this cross may have been made about the tenth or eleventh century. Now, it is worth recording here that the remnant of the shaft of this cross is still in Rothbury church.

The drawings now produced will shew how completely this portion of the cross is identified with the other, when they are compared with those in the plate accompanying Dr. Charlton's account.

The Stone Basin or Font upon which the shaft is placed is modern; the date 1664 is cut upon the basin. This is explained by the old vestry book; for at a meeting of the ancient church vestry, held April 1st, 1662 (Easter Tuesday) it is recorded that two of the Four-and-Twenty had gone over to the Romish church, and that two others were appointed in their stead. The meeting was one of a strong Protestant cast. The record states: "In regard that the late troublesome times had occasioned the spoil and deprivement of those things convenient and necessary for the celebration of God's public worship in His Holy Church, in regard of authority enjoining and the due consideration had thereupon, the Rector, together with the Curate and Four-and-Twenty" ordered that a cess of each man's ancient rent throughout the whole parish should speedily be raised, collected, and levied by the new Church Wardens for the present year for a Font, cover of a Font, and several other things.

The vestry were not very quick in their motions, for the stone basin was not placed where it now stands till 1664, and two years after, I find in the same book one guinea ordered to be paid for the Font cover and steps.

This was two years after the restoration, when things began to wear a more settled aspect.

The record of the meeting of Easter Tuesday, 1662, finished with the words:—"Vivat Rex—Floreat Ecclesia."

The Stone Basin has the date 1664 upon it, but it is the stem or pillar of the cross, and not the basin, with which we have to deal. The side having the Saxon Knot-work faces eastwards and into the church, and the chief sculpture to the west; so that a pious votary, kneeling in adoration, would have

his face to the east, as commented upon by Dr. Charlton.

The sculpture may represent three principal circumstances in the history of the world.

On the north side is portrayed an animal walking quietly amongst trees and foliage, and feeding upon the fruits of the earth, figurative of the peaceful and happy state of things before the fall of man.

On the south side there is carved a number of nondescript animals preying and feeding on each other, shewing the state of wickedness after that occurrence.

On the west side is seen the Saviour of the world, ascending up into heaven, and underneath, numerous heads of men looking upwards in a suppliant manner.

On the east side is the endless rope pattern, or the Saxon knot-work, before alluded to.

The sculpture is full of spirit in carving and design, as may be seen in the wood cuts at the end of this article, and is probably about the age Dr. Charlton represents it to be.

I think the parts at Newcastle are the upper portion of the shaft and the limbs of the cross, and that which remains at Rothbury is the lower part of the shaft or pillar.

I may add that Hutchinson in his view of Northumberland notices the pedestal of this Font thus:

"The stone is not exactly square; at the bottom, where it appears intended to be fixed into some foundation stone, two opposite sides are 18 inches in breadth, the other 14 inches, but where the sculpture begins, the edges of the stone are taken off. The work in bass-relief on the west side is about 26 inches long and 14 inches broad, and I presume represents our Lord sitting in Judgment. The principal figure has lost its head, but holds a sword in the left hand. On each side is the figure of an angel kneeling, and below them a crowd of heads lifted up, their hands clasping books, others elevated, or laid upon the breast. The other side contains rich ornamental sculpture of fancy figures interwoven with foliage; such as are seen upon the obelisk in Bewcastle church yard, in Cumberland. From their similarity, some people have presumed they were of the same date."

The use of Pillars of stone may be traced to a very remote period; perhaps the oldest on record are those mentioned in Holy Writ.

"*And Jacob took a stone and set it up for a Pillar.*"—(xxxi. Gen. 45.)

"*And Rachael died and was buried in the way to Ephrath which is Bethlehem.*"

"*And Jacob set up a Pillar upon her grave, that is the Pillar of Rachael's grave until this day.*"—(xxxv. Gen. 20.)

Stones or Pillars, with and without symbols or inscriptions, have been erected to commemorate events by all nations of the world.

It is recorded in "the Chronicles of Scotland, 2nd Buke, Cap. X," That King Reatha (who lived two centuries before the Christian Era) "was the furst king amang the Scottis that fund ingine to put nobillmen for thair vailyeant dedis in memory, and maide riche sepulturis for the bodyis of thaim that was slaine be Britonis in defence of this Realme. He commandit als monie hie stanis to be set about the sepulture of everie Nobillman as was slane be him of Britonis. In memorie hereof sindry of thaim remainis yet in the hielandis, that the pepill may under sic men now vailyeant in their dayis: throw quhilk it come in use that the sepulturis of nobilmen was holden in gret reverence amang the pepill. On their sepulturis was ingravin imageris of Dragonis, Wolfes, and other Biestes, for no inventioun of letteris was in thay days to put their deidis of nobilmen in memore."

For more particulars as to Pillars and Crosses, I refer to the volume of the Spalding Club for 1856, edited by that accomplished scholar, J. Stuart, Esq., F.A.S., entitled "*The Sculptured Stones of Scotland.*"

The common symbols on those ancient sculptured stones, in the north-eastern part of Scotland, are

Crescents and the Spectacle Ornament, with and without the sceptre.
Mirror, Elephant and Comb.
Arch, or Horse Shoe and Fish.
Serpent, with and without the sceptre.

Here, on the borders, we have the mysterious concentric circles carved on the rocks of Doddington and elsewhere, emblematical of eternity.

But as Mr. Tate, one of our members, has promised a paper on this subject, I forbear to add more.

There is a natural transition as to these Pillars; first, during the Mosaic dispensation, then among the Heathen tribes, the Druids and ancient Britains, and lastly, the early Christians. And thus it is, that most of our ancient stone pillars now in existence are symbolical of Christianity. Such is the case with the Rothbury cross, now under consideration.

But others again, such as Percy's Cross, at Hedgley, and the stone at Otterburn, and Malcolm's Cross, at Alnwick, and many others, commemorate stirring events in the history of our own country.

We have also the *Stane* Cross (the Hurl stone) at Chillingham and other March "Stains," set up, no doubt, as boundaries in very early times.—(Hodg. pt. iii., vol. ii., p. 119.)

Mr. Hodgson had not got as far north as Rothbury with his history, and, therefore, what is known about Rothbury is chiefly found in the Close and Quo Warranto rolls:

2 *Wallis* 515.

1 *Hutchinson* 227.

2 *Mackenzie* 50, (Ed. 1825.)

To give a history of Crosses in this paper would make it run to too great a length, but the proceedings of the Archæological Institute are full of information about them. They were erected by the sides of roads, on boundaries and in church yards; and as the weary pilgrim and the devotee approached one of them, down they knelt and offered up a short and anxious prayer of thanks for preservation and for success in some object to be accomplished.

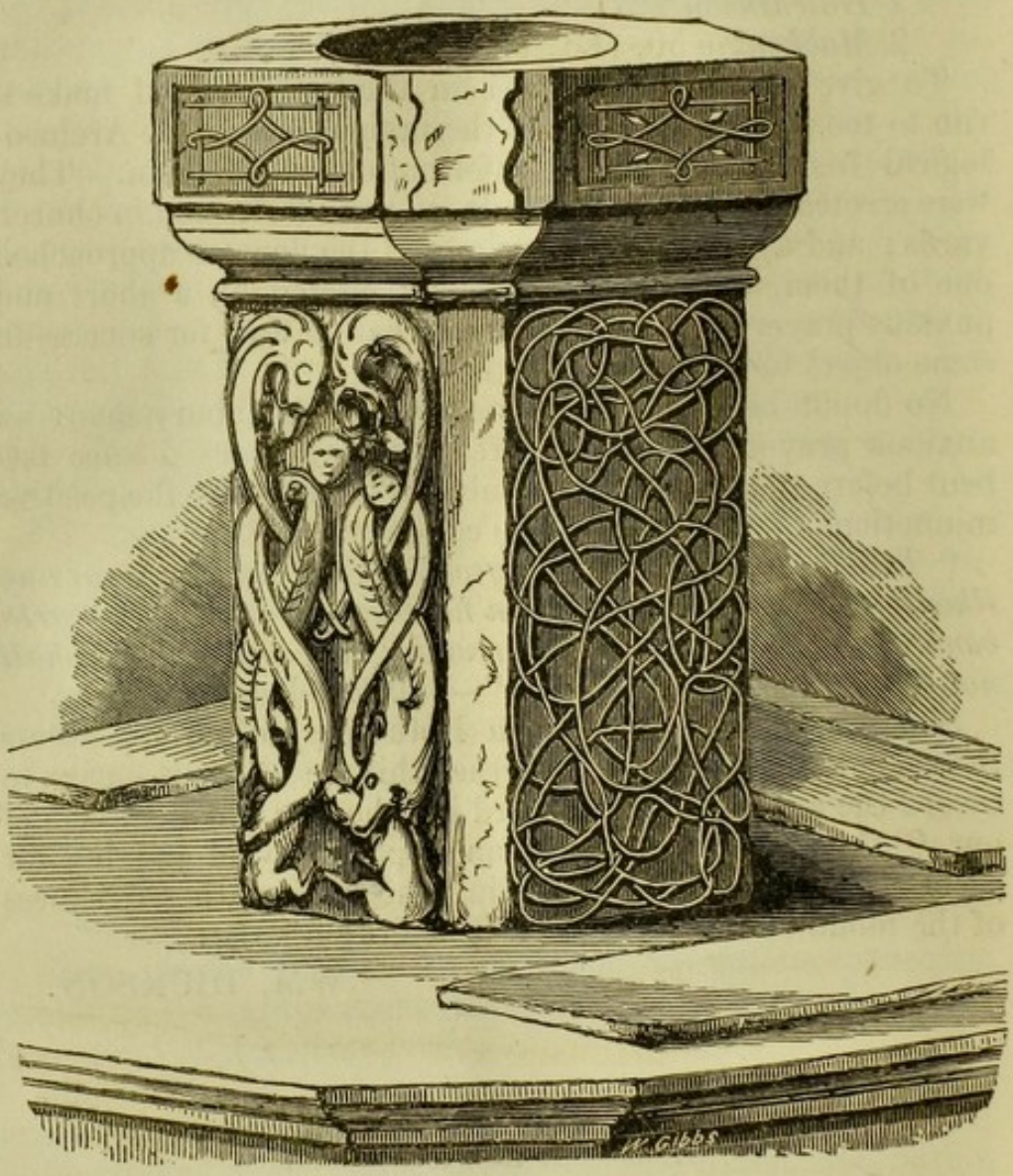
No doubt before this antique cross at Rothbury many an anxious prayer has been offered up, and many a knee has bent before those sculptured emblems; forgetting the positive injunctions of Holy writ to the contrary:

"*Thou shalt not make to thyself any graven image, or any likeness of any thing that is in heaven above, or in the earth beneath, or that is in the water under the earth: Thou shalt not bow down thyself to them*"—(20 Exodus, 4 and 5.)

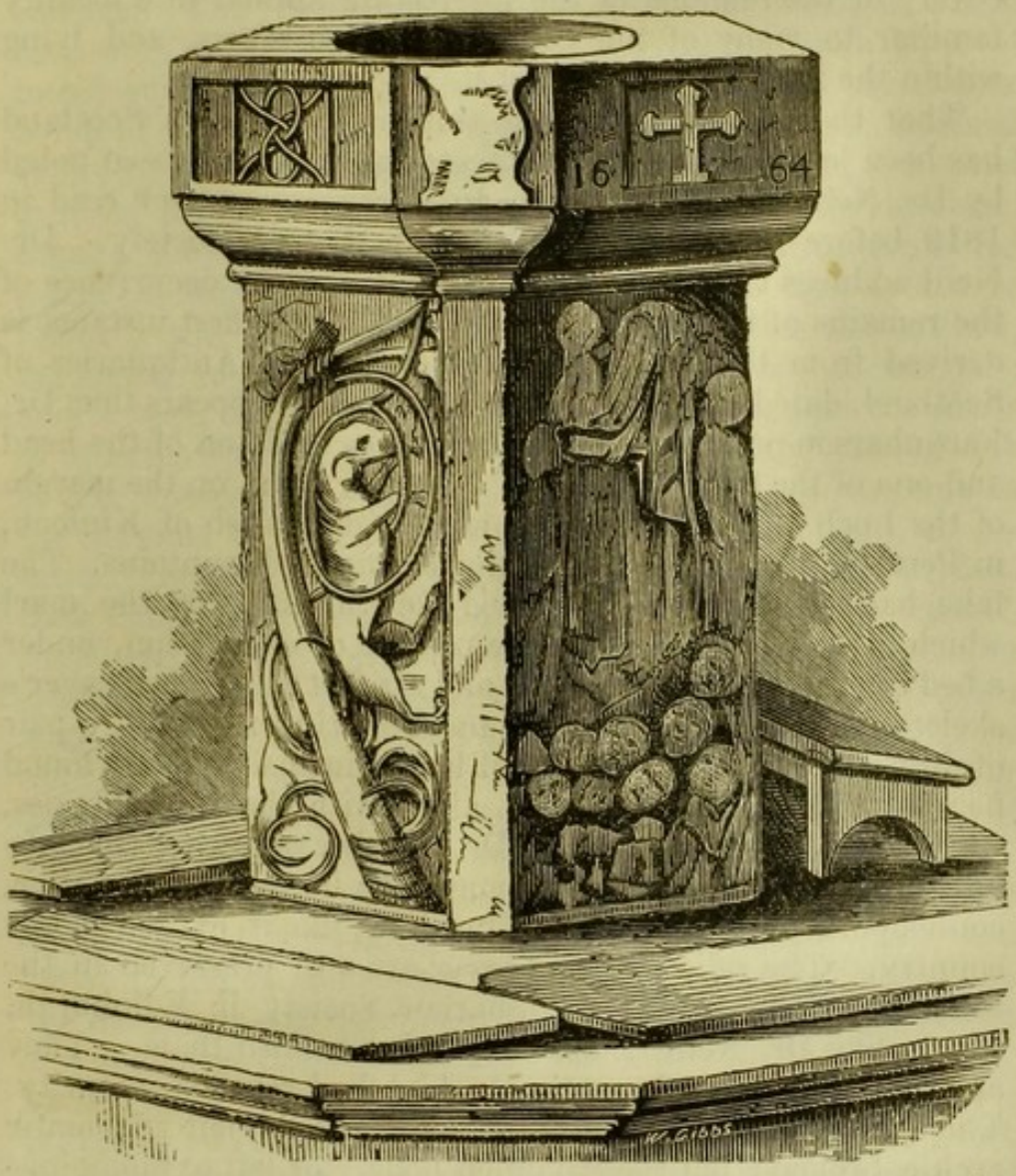
Some fancy the sculpture in Rothbury church represents the day of Judgment, but whether this be so, or it means to record the ascension of our Lord into heaven, the members of our Club will, I hope, have an opportunity of judging for themselves, as well as of enjoying the exhilarating freshness of the mountain air, in this most healthy district.

WM. DICKSON.

Alnwick, May, 1858.



[Wood cut referred to at page 71.]



[Wood cut referred to at page 71.]

Notes on the Prior Existence of the Castor Fiber in Scotland.

By Charles Wilson, M.D., F.R.C.P.E.

As a member of the Berwickshire Naturalists' Club, I beg to transmit the following notes on the former existence of the Castor Fiber, or Beaver, in Scotland; as suggested by a discovery of the remains of the interesting animal in a locality familiar to many of the Club's oldest members, and lying within the immediate circuit of its researches.

That the beaver was at one time indigenous in Scotland has been long known, and has, especially, already been noted by Dr. Neill of Edinburgh, in an interesting paper* read in 1819 before the Wernerian Natural History Society. Dr. Neill adduces two then known examples of the occurrence of the remains of the animal. The record of the first instance is derived from the Minutes of the Society of Antiquaries of Scotland, dated in December 1788; where it appears that Dr. Farquharson presented to the Society the skeleton of the head and one of the haunch-bones of a beaver, found on the margin of the Loch of Marlee, a small lake in the parish of Kinloch, in Perthshire, near the foot of the Grampian Mountains. The lake had been partially drained for the sake of the marl which it contained; and, in the process of excavation, under a bed of peat-moss between five and six feet thick, the beaver's skeleton was discovered. In a neighbouring marl-pit, a pair of deer's horns, branched, and of large dimensions, were found nearly at the same time; and, along with these, two bones, which our eminent anatomist Dr. Barclay suggested to have been probably the metatarsal bones of a large species of deer, contemporary with the beaver, but now, like it, extinct in our country. The relics of this beaver are still preserved in the Museum of the Royal Antiquarian Society in Edinburgh, where, like Dr. Neill, I have myself examined them. They appear to be those of an animal which had reached maturity. The back part of the cranium is gone, and the left zygomatic arch is broken; but the "haunch bone," or left os innominatum, is entire. A part of one side of the lower jaw-bone is also broken, and here only some remains of the very characteristic incisors still exist. The bones are dyed of a deep chocolate colour, the natural result of their long contact with the peaty substance.

The second instance adduced by Dr. Neill occurred in October 1818, on the estate of Kimmerghame, in the parish

* Memoirs of the Wernerian Natural History Society, vol. iii. (1821), p. 207.

of Edrom, near the head of that district of Berwickshire called the Merse. In the process of Draining a morass called Middlestots Bog, there was found, at the depth of seven feet from the surface, under a layer of peat-moss of that thickness, what appeared to have been the complete skeleton of a beaver, dispersed, however, in rather a promiscuous manner, as if through the gradual separation of the parts by unequal subsidence. The remains lay upon a surface of marl, in which they were partly imbedded, and partly in a whitish layer of mossy substance immediately superjacent. Only the denser bones of the cranium and face, and the jaw-bones, retained sufficient firmness to fit them for being removed and preserved in a dry state. Several of the long bones and the vertebræ, though they seemed perfect while lying *in situ*, crumbled under the touch, or after exposure. Near the same spot were found a pair of horns, of great size, and with fine antlers, belonging to the large species of deer already mentioned; and, among the vegetable remains in the peat, were the shells of filberts, with the wood of birch and alder, and that of oak in less abundance. The skull and lower jaw-bone are now in the museum of the University of Edinburgh. Both, as described by Dr. Neill, were entire, with all the incisors perfect, their cutting edges sharp, and the peculiar coloured enamel, found alike in the recent beaver, still subsisting on the outer convexity, though deepened to an almost jet-black. The molars were also complete. This is still the condition, with the exception that the right zygomatic arch is now imperfect. The animal, as in the preceding instance, appears to have been of mature, though not of advanced age. It is proper to add here, that, on the testimony* of the writer of the Statistical Account of the parish, several other heads of the beaver were then found in the same deposit, but in less perfect preservation. We have thus approximative evidence of the ancient existence of a colony in the locality.

Of a third instance of the discovery of the remains of the beaver in Scotland, a verbal report was given by me, in 1843, at a meeting of the Club, and is noticed† in the late esteemed Dr. Johnston's sketch of its proceedings for that year. On the verge of the parish of Linton, in Roxburghshire, there is a remnant of what has evidently once been a far more extensive loch, which had skirted for some distance the outer range of the Cheviot Hills, but which, from some alteration of the

* The Statistical Account of Scotland: County of Berwick (1841), p. 267.

† History of the Berwickshire Naturalists' Club, vol. ii., p. 48.

levels, has now, for the most part, gradually drained itself off to the westward. Into this loch had flowed the waters of the Cheviots, entering it, as the little river Kail, by a narrow gorge towards the eastern extremity: and it is doubtless through the agency of this often impetuous current, that those alterations have chiefly been effected which have diverted the stream from what is now the narrow limits of Linton Loch; and left it contracted to a few stagnant pools, imbedded in a deep but not extensive morass, from which, however, still flows a considerable body of water by an artificially constructed channel. The near vicinity of the loch presents many localities of interest, as well in legendary lore as from later associations. The hollow at Wormington, still known as the "worm's hole," marks, according to the familiar story, the ancient haunt of a monstrous serpent or dragon, the destruction of which, by William de Somerville, obtained for him the gift of the surrounding barony from William the Lion. The little knoll, consisting wholly of fine sand, on which the church of Linton is built, has seemed to the peasant to justify the tradition, that its elevation was the work of two sisters, who sifted the heap as a voluntary penance, to expiate in a brother the crime of murder. The traces of the foundations of the neighbouring fortalice, still lurking under their covering of green sward, recal the memory of more than one of the scarcely less stirring while more authentic scenes of border warfare; and closer to the loch, perched above its southern margin, we have the little possession of Wideopen, the inheritance of the poet Thomson, who is said to have gathered here, among the storms of the hills, many of the materials for the admirable descriptions in his poem of Winter.* Through the adjoining tract of the Cheviots, spreads that range of which it could be said, as in the ballad of the Battle of Otterbourne:—

> "The deer runs wild on hill and dale,
> The birds fly wild frae tree to tree."

Few places, therefore, could be more appropriate for the discovery of any remains which were to aid in giving body to our traditions, as in forming a link between remote and existing states of civilization.

The moss, which constitutes the body of the Linton morass, is variable in depth, and covers a very extensive deposit of marl, to obtain which, for agricultural purposes, operations on a considerable scale were undertaken by the tenant, Mr. Purves, by whom the relic of the interesting animal, found in

* History of the Berwickshire Naturalists' Club, vol. iii., p. 21: *Linton and its Legends.*

the course of these, was placed in my hands, and to whose intelligent observation I am chiefly indebted for the particulars of its discovery. In digging about twenty yards from the margin, and after penetrating a thickness of moss of about eight feet, the marl was reached, and upon its surface was found a skull, in excellent preservation,* easily recognised by me, on examining it, as that of a beaver. Either no other parts of the skeleton had remained preserved in its contiguity, or they had failed to attract the attention of the workmen; the probability being that, from the slighter texture of most of the other bones, they had been less able to resist entire disintegration, or had crumbled on exposure. The remains of deer and other animals were also discovered on the surface of the marl, at about the same distance from the margin; but, at other places, the horns and bones of deer, and among these a lower maxilla, were found fourteen feet beneath the marl itself, yet still within its layers, or at about an aggregate depth of twenty-two feet. Among the remains preserved and placed before me were horns of the red-deer, with metatarsal bones, evidently also of animals of the deer species, all betokening individuals of once stately dimension; while the left tibia of an ox, doubtless the *Bos primigenius*, which was found imbedded at a depth of seven feet within the marl, I computed must have belonged to an animal measuring at least six feet, or, with the hoof and soft parts entire, fully half a foot more to the summit of the shoulder. The moss, at the part covering these remains, might be viewed as divided into three layers. The upper of these, approaching to about three feet in thickness, consisted of the traces of comparatively fresh vegetation: the second layer, measuring about two feet, had a less firm consistence, and changed its colour of a greenish brown, when moist and newly exposed, to almost a white when dry: the third layer extended to about four feet, but in some places to a much greater thickness, and was almost black, holding imbedded, in various grades of preservation, many and not mean remains of the primeval forests, such as trunks of trees, for the most part hazel and birch, with an intermingling of oak, some measuring from two to even four feet in diameter; and, along with these, large quantities of hazel nuts, heaped into masses, as if gathered and swept from the upper woodlands by the mountain freshets. In some places gravel was found

* The skull is now placed in the Museum of the Tweedside Physical and Antiquarian Society at Kelso; a remarkable collection, considering its position in a small country town, but which would have fulfilled a better design, and one more worth adopting elsewhere, had it been restricted, as originally planned, to the illustration exclusively of the Natural History and Antiquities of the immediately surrounding district.

deposited above the moss, bearing testimony to the action of similar currents.

The stratum of marl varied from two, to almost eighteen feet in thickness, and consisted of the usual fresh-water shells, but mainly of *Planorbis* and *Limnæa;* the greater part being of almost microscopic dimensions, yet often in the most entire preservation. Where the relic of the beaver had been deposited, the marl, however, to judge from portions taken from within the skull, seems to have been largely, if not entirely, composed of infusoria. On the application of an acid, after a smart effervescence, with the disappearance of a considerable bulk of the material, there remained amorphous, ferruginous-like masses, and, abundantly interspersed with these, the silicious coverings of the animalcules, if they be really animal organisms. Among them I distinguished *Epithemia Argus*, *sorex*, *turgida*, and *longicornis; Cyclotella operculata; Gomphonema constrictum; Nitzschia sigmoidea; Surirella craticula; Cymbella helvetica; Navicula lanceolata;* and probably most abundant of all, *Himantidium arcus.* The remains of the mammals found in contact with the peat, including the skull of the beaver itself, were of the usual dark tint acquired from that substance: those deposited in the marl preserved more nearly their natural colour. Near the margin of the loch, and about seven feet deep in the moss, were found an arrow-head, and two or three iron horse-shoes; the latter of small dimensions. Could we regard these horse-shoes, and this individual beaver, thus found at nearly the same depth in the moss, as having reached their position there coëtaneously, as, perhaps, approximatively we may, the furthest limit to which our archæological experience would entitle us to go back for this would probably be the Anglo-Saxon period; but our surmise as to the era would still be a rude one, and within it, or even possibly long after it, though scarcely before, we must be prepared to allow a wide range.

To these proofs of the prior existence of the beaver in Scotland, derived from the actual discovery of its remains, it is easy to add others of a similar description from various countries, in which it has evidently also been once indigenous, but in which it has alike ceased to exist. An early instance, in England, is that in 1757, by Dr. Collet,* who mentions the heads of beavers as having been found, along with bones of other animals, in a peat-pit near Newbury, in Berkshire. Similar discoveries of remains, as quoted by Professor Owen,† have

* Philosophical Transactions for 1757, p. 112.

† History of British Fossil Mammals and Birds, pp. 184, 190.

been made at Hilgay, in Norfolk, where they were found associated with those of the great Irish deer. A lower jaw, found in 1818 near Chatteris, is recorded in the Proceedings of the Cambridge Philosophical Society. In at least three other instances, all referred to by Professor Owen, the remains of the beaver have been found in the peat-mosses of Berkshire, and in the Cambridge fens; while other discoveries, at Mundesley, Bacton, Southwold, and Happisburg in Norfolk, and at Thorpe in Suffolk, appear under relations which seem to carry the antiquity of the beaver in England farther back into the tertiary period, and ought probably to be referred to a different, yet closely allied species. In Denmark, we learn from a highly interesting communication by Professor Steenstrup,* that a lower jaw, with the greater part of the extremities of a beaver, evidently belonging to an individual animal, was discovered in the moss of Christiansholm; and that a tooth has also been found in Fyen, all the other traces hitherto of its former existence within the Danish territories having been limited to Sjælland. Specimens of stems, evidently gnawed by the beaver's teeth, were taken from Mariendals moss, the special locality being regarded by the Professor as probably occupying the former bed of a stream, which had been once its habitat. Similar stems from two to four inches thick, with beaver marks, were seen in Brönsholm moss, in great quantity, and laid with remarkable regularity; while a like deposit, at a depth of about three feet, occurred in a moss near Lyngsbye.† In these interesting facts, we appear to recognise distinctly the remains of the dams of the beaver, and the familiar evidences of its singular constructive faculties. Perhaps we may further refer to a period not remote from that of these relics in the mosses, the location of three beaver's teeth, in a greatly damaged condition, at the side of a human skeleton, which was found in a tomb of an ancient Lap, opened recently‡ at Mortensnæs, on the Varangerfjord, in the extreme north-east of Norway, a country, however, in which the beaver is still indigenous. A stone hammer, bearing marks of use, lay in the same grave.

When we turn from these sufficiently decisive indications of the ancient resorts of the beaver, and seek for other evidences of a historical, topographical, or documentary character in relation to its former existence in Britain, if these are

* Oversigt over det Kgl. danske Videnskabernes Selskabs Forhandlinger, 1855, p. 381.

† Ibid., pp. 2, 382.

‡ Forhandlinger af danske Videnskab. Selsk.: Illustreret Nyhedsblad, (Christiania, 1856), pp. 97, 104.

not presented to us in any marked abundance, neither are they wholly wanting, or devoid of curiosity and interest. We have no earlier, and can scarcely have any more authentic, notices of this description than such as are derivable from the names of places, which our ancestors often rendered commemorative of some leading feature or specialty of the site. Thus, in the nomenclature of the Anglo-Saxons, as exhibited in the "Codex Diplomaticus Ævi Saxonici," we find the names, *Beferburne*, *Beferige*, *Beferic*, *and Beferluc*.* In the Glossary of Ælfric, the Anglo-Saxon Archbishop of Canterbury near the close of the tenth century, appended to his "Grammatica Latino-Saxonica," we have the *Befer* rendered as the *Fiber* or *Castor Ponticus*. The annex in each name: *burne* (brook), *ige* and *ic*, or *icg* (island), and *luc* (inclosed space, fence), is entirely apposite, and suggests to us so perfectly the ordinary habitat of the animal, or the construction of its dam, as to establish at once the certainty of its having existed at the individual place in the Anglo-Saxon period. Again, in an ordinance of Edward I. for the government of Scotland, dated in 1305, we find William of *Bevercotes* named as chancellor of the kingdom; and here we are reminded of the huts (Anglo-Saxon *cote*), of the beaver, a cluster of which had evidently led to the territorial designation of this dignitary. There is a "Bevere Island," which lies about three miles north of the city of Worcester, which is popularly understood to have been so denominated from its having been frequented by beavers:† and doubtless it might be easy to glean elsewhere many similar local designations. Leland, for example, writing prior to the middle of the sixteenth century, mentions the town of Beverley, in Yorkshire, as having for its insignia, on its public seal, the animal "quod vocatur Bever;" and, in a subsequent passage, on what purports to be the authority of an uncertain writer of a life of St. John of Beverley, he introduces the name of the place as, "Deirewald, locus nemorosus, id est, sylva Deirorum, postea Beverlac, quasi locus, vel lacus castorum, dictus à castoribus quibus Hulla aqua vicina abundabat."‡ While we give due weight to this, as advanced unquestioningly by one of Leland's habits of investigation, writing at his time, yet while citing one of an age far anterior, it appears evident, nevertheless, that not only was the beaver then utterly extinct in the country, but that, at no long period after the

* Leo, Local Nomenclature of the Anglo-Saxons, p. 14.
† Allies, Antiquities of Worcestershire, pp. 151, 152.
‡ Leland, Collectanea de rebus Britannicis, tom. iv., pp. 34, 100.

Anglo-Saxon era, it had already ceased to be familiarly known in England.

We have proof of a more direct nature of the actual existence of the beaver in Wales, at this early period of the civil history of our country, but nearly expiring period of the history of the English beaver.* In the code of Hywel Dda, framed towards the commencement of the tenth century, and therefore considerably before the time of Ælfric, we find† the animal valued at 120 pence; and, as in the following section we find the skin (*croen Llosdlydan*) appreciated alone at precisely the same amount, we infer that the latter merely was regarded, and that neither the carcass as food, nor the castoreum as medicine, was then held in esteem by the Welsh. But to show how highly the skin was prized, and of course as a fur, we may contrast this valuation with that of the ox and deer, each of which is rated at eightpence; while that of the goat or sheep is rated at only a penny. An oak tree was as precious to the mountaineers; for, if sound, it was valued also at 120 pence. Among the tolls licensed to be levied at Newcastle-upon-Tyne, in the time of Henry I., we find the *tymbra beveriorum* fixed at fourpence; and this, it is important to note, appears to have been an export duty.‡ At least half-a-century after the period of Henry, and more than two centuries after that of Hywel Dda, we have the evidence of a witness of remarkable intelligence, that the beaver still survived as indigenous in Wales. Silvester Giraldus, travelling in that country in 1188 with Archbishop Baldwin of Canterbury, who preached there that crusade in which he afterwards followed Richard Cœur de Lion to the Holy Land, and perished at Acre, tells us, in speaking of the river Teivi, that it retained a special notability: "inter universos namque Cambriæ seu etiam Loegriæ fluvios, solus hic castores habet." He then proceeds to give an account of the habitat of the animal at some deep and still recess of the stream; describes its dams and huts, and its methods of construction, with considerable minuteness; and records the dangers to which it is liable on the score of its skin, which is coveted in the west, and the medicinal part of its body, which is coveted in the east: while he adds, though with evident scruple as to

* Of a more remote but wholly uncertain antiquity, yet worth mentioning, is the circumstance that the beaver seems to have occupied a prominent place in the old Druidical mythology of Wales, especially in relation to the tradition of a general deluge. It is said to have been even an object of worship in ancient Persia.

† Leges Wallicæ, curante Wotton, lib. iii., cap. v., sect. xi. 40; sect. xii., 10, De pretiis animalium ferorum et cicurium.

‡ Acts of Parliament of Scotland, vol. i.; preface, p. 34.

the orthodoxy of the practice, that in Germany, and the northern regions, great and religious persons "tempore jejuniorum," eat the tail of the fish-like creature, as having both the taste and colour of fish. Giraldus informs as further, that beavers were then reported to exist also in Scotland, but likewise only in a single river, and in scanty numbers.*

Dr. Neill, who refers to Giraldus, takes an opportunity of stating,† in allusion to this concluding observation, that no mention of beavers occurs in any of the public records of Scotland, now extant. To this, however, there is at least one exception. In the *Assisa Regis David de Tolloneis*, cap. ii., supposed to date towards the middle of the twelfth century, but evidently founded on the English Act of Henry I., the export duty is fixed, "of a tymmyr of skynnis of toddis quhytredys martrikis cattis *beveris* sable firrettis or swylk uthyr of ilk tymmyr at Pe outpassing iiij$^{d.}$ ‡" If we note here that the duty is one upon exportation, "ad exitum," or "outpassing," we can scarcely conclude otherwise than that the beaver was then met with in the country, and apparently even in considerable numbers, so that its fur was an ordinarily recognised article of commerce, of native produce. To judge, however, from the language of the Scottish rendering of the Latin original of the Assize of the first David, which we have here purposely adduced, we must regard its regulations as having remained in force till a much later era; and probably till that of the second king of the name, or till about the middle of the fourteenth century. But the animal which was already reported as rare in the time of Giraldus Cambrensis, yet which seems to have been held entitled to continue as furnishing an article of impost more than two centuries after, appears, in still another century, to have shrunk into such narrowly limited numbers, that it was at last no longer deemed necessary to retain for it a place in a fiscal enactment. In 1424, at the first parliament of the first James, the martin, polecat, fox, and other skins, are still named as articles bearing an export duty, but the beaver is omitted.§ Yet, at even a later period, when we find Hector

* Silvester Giraldus Cambrensis, Itinerarium Cambriæ, seu laboriosæ Baldvini Cantuarensis Archiepiscopi per Walliam legationis accurata descriptio, lib. ii., cap. 3.

† Mem. of Wern. Nat. Hist. Society, vol. iii., p. 211.

‡ Acts of Parliament of Scotland, vol. i., p. 303. The *timmer* still denotes in Sweden a bundle of forty skins. From a citation in Ducange (Gloss. Med. and Inf. Latin. V. Timbrium), the timber in France, in the year 1351, contained sixty skins. The term in this country appears to have usually denoted the number of forty.

§ Laws and Acts of Parliament of Scotland (1682), part i., p. 6.

Boethius reporting, after the lapse of almost another century, that the wild region of Loch Ness contained then, not only a great abundance of wild animals such as stags, horses, and roes, but "ad hæc Marterillæ, Fovinæ ut vulgo vocantur, Vulpes, Mustellæ, *Fibri*, Lutræque in incomparabili numero, quorum tergora exteræ gentes ad luxum immenso precio coemunt,"* it is with the inclination, led on by the Assize of David, and by the narrative of Giraldus, with both resting securely on the discoveries in our mosses, still to extend to him a more entire confidence than has been customarily conceded by others. Bellenden, in translating this passage, while he omits the stags, roe-deer, and otters, preserves the "mony martrikis, *bevers*, quhitredis, and toddis," with the intimation that "the furringis and skinnis of thaim are coft with gret price amang uncouth marchandis."† The very license which Bellenden appears to have allowed himself in his translation, seems to me here to lend weight to the authority of the original statement. He may have omitted the kinds of deer, and the otter, as animals too notoriously abundant everywhere to require remark; but, whatever was his motive, that he should have excluded the one, and retained the other, showed the probability of some grounds for a selection; and seems to give greater authenticity to that which he left thus, in a more marked manner, with the support of a conjunct testimony. As to the "incomparable number," this must be held to apply to the animals in the aggregate, and not to the beaver in particular; and the rarity of this was certainly not the less likely to enhance its price, that it had annulled its importance as a source of revenue.

Upon the whole, it seems thus fairly admissible, that the existence of the beaver in Scotland may be authentically traced as far down as to the beginning of the sixteenth century; though doubtless for long in extremely limited numbers, and, naturally, only in deeply secluded localities. Sibbald, writing towards the close of the century which follows,‡ adduces merely the statement of Boece, and, without rejecting it, professes his ignorance as to whether the animal was still indigenous. It may be noted incidentally here, that the Gaelic Dictionary of the Highland Society of Scotland contains the *dobhran-leasleathan* as the designation of the beaver; while we remark, at the same time, the close analogy of this term to the *llosdlydan* (the broad-tailed animal) of the code of Hywel Dda. Reverting to Wales, the celebrated Camden speaks

* Hector Boethius, Scotor. Hist.; Regni descrip. (1527), F. ix.
† Boece, translated by Bellenden (1536), cap. viii., F. xxxiii.
‡ Scotia Illustrata (1684), part ii., lib. iii., p. 10.

of the Teivi as "olim castoribus, nunc salmonibus abundans."* In the later edition by Gough, it is added,† that in the Conway there is a deep, wide, still water, called to this day by a name denoting the beaver's pool. Ray,‡ followed by Pennant,§ each referring to Giraldus, names also other places in Wales which are reputed to have been the former haunts of the animal, as we have shown that similar spots are recognisable in England.

Roman Altar found at Gloster Hill, in the Parish of Warkworth. Communicated by Wm. Dickson.

Gloster Hill is situated on the banks of the river Coquet, near its entrance into the sea, in the vicinity of Warkworth Harbour. The records of Northumberland are very silent as to its ancient history, which is accounted for by its having been for ages, part of the possessions of the church, and therefore not liable to do any military services. It is one of the townships of the parish of Warkworth, and parcel of the rectory of that parish.

The Bishoprick of Carlisle was founded by Henry I., and this township (which was the glebe of the rectory) and the great tithes of the parish, formed part of the endowment. The Bishop has always been accustomed to demise this glebe and the tithes to tenants for twenty-one years, renewable every seven years on payment of fines. The present tenant is Robert Dand, Esq. The township consists of 260 acres, and is worth about £290 yearly. In 1663 its annual rental was £38, and the lessee, Mr. John Palfrey.

It was never supposed that the Romans had any station in this quarter, but from the name of the place, and its situation near the mouth of the river, they probably had a stronghold here.

From Gloster Hill a short distance westward, is Temple Hill, which is supposed to contain Roman remains, and further west is Chester House, also a Roman name, (from *castrum*), and further on still is the Street Head, all in the parish. Probably a line of Roman road ran in this direction from the interior to the sea port of Coquet mouth.

As a corroboration of its Roman origin, a Roman altar was found at Gloster Hill in 1856. It was turned up after being struck by a plough.

* Britannia (Lond. 1600), p. 586.
† Gough's Camden, vol. ii., p. 560.
‡ Synopsis Methodica Animalium (1693), p. 213.
§ British Zoology (ed. 1812), vol. i., p. 122.

It is not perfect, it comprises the capital and a part of the stem ; the inscription is also imperfect, and probably the commencement of one of greater length.

The letters are,—

M ᶜESTRI
COH I

From a comparison with other like inscriptions, it may be thus read :—

M. CA | **MPESTRI** | *BUS*
COH*ORS.* **I**

Or,

MATRIBUS CAMPESTRIBUS
COHORS PRIMA:

An altar dedicated to the Sylvan Mothers by the Roman soldiers of the first cohort, who were at that time at the *castrum* or camp of that place. A wood cut representation of this fragment is placed at the end of this article.

There is at the rectory at Ryton, a slab found at Benwell, much ornamented on which there is the following inscription :—

Matribus campest[ribus]
et Genio alæ Pri[mæ] Hispano-
rum Asturum [ob virtutem]
[appellatæ] Gordianæ Titus
Agrippa Præ[fectus] templum a s[olo]
[res]tituit.

To the Camprestrial Mothers
and to the genius of the first wing of Spanish Astures, on account of their valour
styled Gordian, Titus
Agrippa, then prefect, this Temple from the ground,
rebuilt.

These altars set up to the mothers of the plains are not very clearly explained, but we find other altars dedicated to the

Matres transmarinæ,

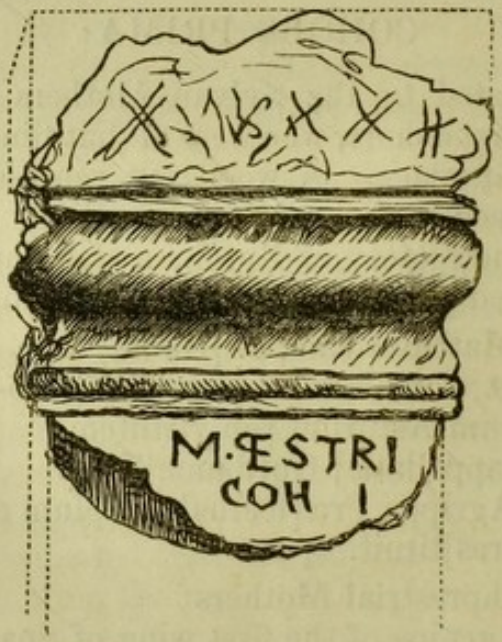
the transmarine mothers. Altars and slabs also were set up to all the Heathen Deities, to Deæ Matres, to nymphs, to the manes of Emperors, Generals, and many other persons. Those altars may have reference to the Roman mothers who gave birth to children in Britain, in contradistinction to those who added strength to the empire beyond the seas.

I leave, however, to those learned in Roman antiquities to explain the meaning of altars dedicated to "the Mothers of the Plains."

WM. DICKSON.

Alnwick, June, 1858.

Sketch of the altar found at *Gloster Hill*, referred to by the above article. Size 14 by 18 inches.



An account of the Spurs found near the foundations of Belford Castle. By the Rev. J. D. Clark.

About thirty-five years ago, when some workmen were employed in enlarging the mill pond, formerly part of one of the moats of Belford Castle, they discovered, close to the foundation on the south side, some human bones and a pair of bronze spurs which have been richly gilt, and are still in good preservation. The rowels are 2½ inches in diameter with 20 points, the clasps are in the form of Fleur-de-lys. They were submitted in 1823 to Dr. Meyrick of London, then the great authority in Antiquarian matters. He stated that they were of the period just succeeding King Henry VI. (A.D. 1461), and preceding the large rowel of King Edward the IV.

It is not unlikely that they may have adorned the boots of some French Knight who accompanied Margaret of Anjou from France, when she prevailed on Louis XI. to send over 2000 men at arms to assist her in an inroad upon England, and who landed on the coast of Northumberland. A part of these forces were defeated at the battle of Hedgley Moor, by Lord Montacute, Warden of the Eastern Marches.* The unfortunate owner of the spurs may have been wounded in the battle, and dying at this place on his way back to the coast, been buried on the outside of the walls of the castle.†

Obituary Notice of the late Rev. Joseph Watkins Barnes, Vicar of Kendal. By R. C. Embleton.

Since our last anniversary, we have to lament the death of one of our earliest members—the Rev. Joseph Barnes. He was son of the late Vicar of Berwick, and was born there in the year 1806. He received from his father the foundation of that education, which, by subsequent study and perseverance, enabled him to obtain those high honors he ultimately aspired to. From the care of his father, he proceeded to the University of Durham, where he obtained an exhibition, and in 1824 to Trinity College, Cambridge. He was very shortly elected scholar, and in 1828 he took his Bachelor's degree, his name appearing in the first class Classical Tripos, and also among the senior Optimes of the year. In the following year he was elected a Fellow, one of the highest honors which await on intellectual ability. In 1831 he took his Master's degree. He became a member of our Club in the

* 25th April, 1464, according to Hume.

† Castrum de Belfurth, held by Lord Darcy about 1460.

following year, and attended several of our meetings; but never contributed to our transactions. In 1840 he accepted the small living of Swineshead, near Boston, Lincolnshire, from which he was transferred in 1843 to the Vicarage of Kendal, on presentation by his college. His character which was marked by open heartedness and generosity to a great degree, soon gained him the good will of his parishoners, and he seemed to know no stronger bond of brotherhood than the opportunity of rendering a service, wherever it was in his power to do so. Possessing an enlarged and liberal mind of catholic sympathies, with a warm attachment to his church, he never forgot what was due to others, who conscientiously differed from him on matters of ecclesiastical discipline and doctrine, and by so doing he gained the respect and support of all denominations. In the restoration of the fine old church, he has raised to himself an enduring monument, and this was entirely effected by his untiring zeal. For a considerable time his health had been very precarious, and after much suffering, he died on the 15th of May last, in the 52nd year of his age, leaving a widow and two daughters to lament his early death.

Miscellanea Zoologica. By R. C. Embleton, Secretary.

On the habits of the *Cypræa Europæa*, or Common Cowry.

Although few shells are more plentiful in a dead state along our sandy shores than the common "Jenny Groat," its occurrence alive is, as far as my own observations go, of very rare occurrence; for during a residence of twenty-six years, I have never, until the last autumn, been successful in obtaining it. After a pretty sharp gale from the north-east, large quantities of the larger sea weeds were thrown on shore, and at the root of one, I found five beautiful living specimens of this shell. I immediately transferred them to a small aquarium, a common fish bowl; where they continued to live, and apparently to thrive, for three months; and had the water been changed, and attended to as usual, I have little doubt but that they would still have been in existence; but absence from home, for two or three weeks, had been enough for their destruction. Amongst the five specimens, two were marked with the three black spots on the shell, which my friend, Mr. Alder, had never seen here, and which coincides with the observations, of the deeply lamented Edward Forbes, that as you journey northwards, these markings become almost extinct. The animals shewed several variations in their colouring. In two specimens, the mantle lobes were yellow, edged with orange, and marked with broad dusky bands;

two, were of a nearly uniform pale yellow; and the other, a pale green, edged with orange. They appeared to be very lively in their habits; and I suppose, they found sufficient food for their carnivorous appetites, amongst the Fuci and Zoophytes which were in the bowl. It has been previously observed, that some of the Gasteropods have the power of forming a mucus thread, by which they are capable of suspending themselves in the water; but as far as I can learn from Mr. Alder, and my own researches into the subject, such has never been observed in regard to the Cypræa Europæa; to this point alone I wish to refer. Sometimes, I would find one or more, apparently enjoying themselves, floating upon the surface of the water, at another, one or more would be suspended two or three inches deep, the mucus thread being attached to the side of the vessel, and more than once, I have seen them dart with unerring certainty, from their point of adhesion, to one of the stones at the bottom of the bowl; and the rapidity with which this was effected, is only equalled, by the rapid suspension of a spider, when detached from the hand, or any other body it may be upon. The ladder thus formed, continued intact on one occasion, for two days, during which period, the animal ascended and descended, more than once, along its frail structure; this, I believe, has not been hitherto noticed. I trust I may be fortunate enough during the present year to obtain a sufficient number of specimens, to confirm these passing remarks, and make them more worthy of a place amongst our transactions.

Beadnel, May 27th, 1858.

Totanus Glottis. Cinereous Godwit.

Two specimens, male and female, in mature plumage, of this rather rare visitant were shot on the banks of the Aln, on the 27th of August last. They are now in the collection of Mr. Henry Gibb, jun., of Alnwick.

Acherontia Atropos—Death's Head Moth.

A beautiful female specimen of this moth was sent to me on the 15th of July last. It was captured about two miles from land, on the sail of one of our fishing cobles. Since then, five caterpillars of the same moth, have been sent; one of which has passed into the chrysalis state

Locusta Migratoria. From the number of specimens forwarded to me, and observed by myself this season, I am inclined to believe it is about to become a permanent resident with us.

Cataractes Skua, Cataractes Pomarinus, Cataractes Richardsonii. Specimens of each of these species have been

obtained by me here, during the autumn; *C. Richardsonii* for the first time. The specimen of *Cataractes Pomarinus* in its adult plumage, the others are immature.

Scolopax Major—Solitary Snipe. A specimen of this rare species was shot a few weeks ago at East Bolton, near Alnwick.

Beadnel, October, 1858.

Notice of the capture of Vanessa Antiopa, and Colias Edusa, in the northern part of Northumberland, in the Autumn of 1858. By P. J. SELBY.

In the first week of September I was informed by my Gardener that a butterfly, with wings of a dark uniform colour with a deep border of yellowish white, had made its appearance in the garden at Twizell, and was observed in company with numerous specimens of *Vanessa atalanta* to feed upon the decaying gooseberries which had fallen to the ground. From his description, I felt assured it must be the *Vanessa antiopa* (Camberwell beauty), making for the first time, so far as I can ascertain, its appearance in this northern locality. Watching the place where it was first seen, it soon returned and was secured with the net. On the following day another beautiful example was captured near the same spot, and I have also ascertained that two specimens of the same species were taken during the same week at Belford, about three miles north of Twizell. The fine condition of these individuals shewed that they had been very recently excluded from the chrysalis, and it seems to lead to the conclusion that they must have undergone their transformation from the egg to the Imago in this locality.

I have also to record the capture of another species equally rare, if not more so, in the north of England, viz: a fine fresh male example of the *Colias Edusa*, which was taken upon the moor between Belford and Chatton on the 20th of September, and presented to me on the following day by a lady, into whose hands it had fortunately fallen.

Query.—Are we to attribute this unwonted northern distribution of these rare and beautiful insects to some peculiar influence in connection with the hot southern summer of 1857?

List of Berwickshire Spiders. By JAMES HARDY.

The present communication contains the results of occasional attention paid to the Berwickshire Spiders. It is, doubtless, far from complete, from my having collected principally near the hybernating period, and from the ground examined being

restricted almost to this immediate neighbourhood. The specimens were transmitted from time to time, to Mr. Blackwall, the well-known British authority in this neglected branch, and none have been admitted that have not passed his careful scrutiny.

In marking the localities, I use the terms "moor" and "wood" to refer to the moor and wood adjacent to this place. Where no place is mentioned the species were found near to Penmanshiel. Ewelairs is a sandy sea-bank, at no great distance north-west from the mouth of the Pease burn. A number of species that in Wales frequent the woods, or shelter themselves among the rocks on the mountains, are here assembled on the sea-shore, dwelling in crevices amongst the sand, or about the roots of the sea-reeds and other grasses. This list does not comprise all the species I have seen in the district. I have lost several collections from not being able to preserve them in a good state. The arrangement is that of Mr. Blackwall's Catalogue in the Annals and Magazine of Natural History, second series.

1. Lycosa agretyca. This, one of the largest of our Lycosæ, is found beneath stones on the moor, and also at the roots of grass at the Ewelairs, almost close on the sea-beach. I found several hybernating in peat *hags*, between dry layers of peat, which separate like pieces of felt, and furnish a very snug retreat. It is very voracious. Happening to place one along with various other large spiders in a box, it exterminated the whole, and when I looked in, it was running about like a dog with one of them in its mouth. I have often been amused at seeing other spiders, even though their lives were in jeopardy, when shaken from a branch, seizing hold of the readiest prey, and making off with it, as if nothing was the matter.

2. Lycosa picta. This fine species is scarce with us. On the 21st of September, 1858, I met with three or four beneath stones on the sand at the Bents, near the mouth of Cockburnspath burn. Some years since I obtained one on the links below Oxwell-mains in East Lothian. It is not uncommon at South Shields, where it lurks in a hole in the sand, whence it sallies out occasionally to wander about on the smooth surface, which it imprints conspicuously with a devious track, like that of a weasel on snow.

3. Lycosa saccata. Common.

4. ——— obscura. Common.

5. ——— exigua. Common.

6. Hecaerge spinimana. By the borders of the rivulet in Sisterpath dean, beneath ferns and wood-rush. May the 3rd, 1849.

7. Salticus scenicus. Common.
8. ——— coronatus. Wood, September, 1858.
9. Thomisus cristatus. Common.
10. ——— cinereus of Koch. A single example determined by Mr. Blackwall to be this species, was found in September, 1858, crossing a road on the moor. I beat another from furze in 1849. It is unrecorded as British.
11. ——— pallidus. Under a stone in Penmanshiel wood, April the 28th, 1849.
12. ——— versutus. Adult and immature at the roots of grass; Ewelairs, October the 26th, 1858.
13. ——— trux. Beneath stones on the moor, and in moss at the roots of heath. September, 1858.
14. Philodromus cespiticolis. Common on furze and juniper.
15. Drassus ater. Scarce. Concealed among sand and soil at the roots of grass; Ewelairs, October the 26th, 1858.
16. ——— sylvestris. Moor and at Ewelairs.
17. ——— cupreus. Moor, and on the coast beneath large stones on the beach at Eastern hole, near Ewelairs. April--October.
18. ——— nitens. Ewelairs, September.
19. Clubiona holosericea. Under bark, wood, and among sand; Ewelairs. May--October.
20. ——— amarantha. Ewelairs, September.
21. ——— brevipes. Wood, September.
22. ——— comta. Wood, September.
23. ——— accentuata. Wood, September.
24. Ciniflo atrox. Under bark, stones on walls, occasionally in houses, and also among sand at the sea-coast. Common.
25. Ergatis benigna. Twigs of heath, Moor, September.
26. Agelena brunnea. September.
27. Tegenaria civilis. This is our common domestic spider.
28. Textrix lycosina. A littoral species with us; rocks at Ewelairs, Greenheugh, &c.
29. Theridion lineatum. Roots of grass, September.
30. ——— nervosum. In a young state on furze, December, 1848.
31. ——— variegatum. Ewelairs, September.
32. ——— filipes. September, 1858.
33. Linyphia montana. Moor, September.
34. ——— marginata. Furze, &c., Wood, May and September.

35. Linyphia pratensis. On furze, May, 1849, and again among grass, Ewelairs, September, 1858.
36. ——— rubea. Wood, December and September.
37. ——— minuta. Wood, September.
38. ——— socialis. Wood, December and September.
39. ——— alticeps. September.
40. ——— longidens. Under stones; Common; Wood and Moor.
41. ——— tenuis. September.
42. ——— terricola. September.
43. ——— insignis. September.
44. Neriene marginata. Ewelairs, October 26th.
45. ——— bicolor. September.
46. ——— livida. Stones in wood and on moor; May, September, and December.
47. ——— rubens. Moor and at Ewelairs, September.
48. ——— longipalpis. September. One of the producers of gossamer.
49. ——— agrestis. Ewelairs, September.
50. ——— trilineata. Ewelairs, September.
51. ——— rubella. Wood, September.
52. ——— rubripes. Beneath a stone, Penmanshiel wood, May, 1849.
53. Walckenaera acuminata. Under stones, wood, &c. May and September.
54. ——— cuspidata. Under moist stones, moor, &c., April and September.
55. ——— Hardii, Blackwall, Ann. and Mag. Nat. Hist., 2nd ser., vi. p. 340. I found this Dec. 14, 1848, beneath stones on the moor, in moist situations, and again in the same locality in September, 1858.
56. ——— obtusa. September.
57. ——— depressa. September.
58. ——— pumila. September.
59. Pachygnatha Clerckii. Ewelairs, one specimen, September the 21st, 1858.
60. ——— Degeerii. Not uncommon. Moor and at Ewelairs, April and September.
61. Epeira apoclisa. Furze, September.
62. ——— calophylla. Furze, &c., December and September.
63. ——— cucurbitina. Wood, September.
64. ——— antriada. Among ivy and shady bushes. Red Clues Cleugh and Kitchencleugh. September.

65. EPEIRA INCLINATA. Very common in woods on hazels, &c.; also on furze, &c.

66. ——— DIADEMA. Common.

67. TETRAGNATHA EXTENSA. On rushes, at Moss Maw, also near Swinton hill, May and September.

68. DYSDERA HOMBERGII. In crevices of sand and soil at the roots of Ammophila. Bents and Ewelairs, April and October.

69. SEGESTRIA SENOCULATA. Beneath stones on walls, and in fissures of rocks at the coast, December and September.

70. OONOPS PULCHER. This small scarlet spider is not rare among sand at Ewelairs. In Lancashire and Wales it occupies the crevices of walls and rocks, or hides under tree-lichens in woods, September and October.

The Geology and Archæology of Beadnell, in the County of Northumberland, with a description of some Annelids of the Carboniferous Formation. By GEORGE TATE, F.G.S.

When the Berwickshire Naturalists' Club met at Beadnell in May 1858, a party examined the rocks on the neighbouring coast, and the ruins of an ecclesiastical edifice on Ebbs Nook; and as both the ancient chapel, and yet more ancient rocks present many points of interest to the Antiquarian and the Geologist, I now lay some account of them before the Club.

GEOLOGY.

A section along the coast from Ebbs Nook to Annstead Bay, of nearly one and a half miles in length, exhibits a fine series of rocks belonging to the Mountain Limestone Formation. Thick sandstones and limestones, shales with ironstone, and coal seams are intercalated with each other; and these strata are traversed by a lead vein and a basaltic dike. As we wander along the shore, we meet with evidences of sea deposits in the limestones and calcareous shales, wherein are embedded many corals and mollusks; the sandstones and other shales, and the coal afford relics of the vegetation of the Carboniferous Era; some slaty sandstones give distinct indications of shallow seas and ancient coast lines, whereon the waves broke gently and over which worms crawled; and the basaltic dike tells of the play of internal forces, rending asunder the vast mass of stratified rocks, and pouring molten lava into the fissures.

Stratified Rocks.—The general dip of the strata is south-east about 15°, and as we proceed northward we pass over

the lower beds in succession. There are a few dislocations and faults, and in some parts the limestones are thrown into wave-like ridges and hollows; but the contortions are not so remarkable as at Howick, Holy Island, and Scremerston. As the greater proportion of the middle group of the mountain limestone rocks is seen here, the following section will be instructive, giving, as it does, the strata in detail from the highest at Ebbs Nook, down to the lowest which have been reached by pit sinkings in the neighbourhood. It has been made out by repeated examinations of the coast, collated with information derived from pit sinkings, which has been kindly supplied to me by my friend, Mr. William Wilson, the intelligent manager of the Shilbottle Colliery. The lower strata from number 68 downward are taken entirely from pit sections.

SECTION.

	ft.	in.
1. Ebbs Nook Magnesian limestone, containing *Productus giganteus, Spirifer lineatus, Chæletes septosus, Lithostrotion basaltiforme, Syringopora ramulosa, &c...*	30	0
2. Red flaggy sandstone, ripple-marked	4	0
3. Shale, reddish at top, darker and carbonaceous in lower beds	20	0
4. Coal	1	2
5. Fire clay and shale	7	0
6. Flaggy sandstones, micaceous along the laminæ, with borings of annelids	30	0
7. Shale	5	0
8. Sandstones with ripple marks, false bedding, and worm casts and trails	40	0
9. Shales	27	0
10. Limestones, generally blue, some beds dun and weathering buff; a calcareous shale 2 ft. 6 in. is interstratified—*Productus giganteus, Aulophyllum fungites, &c.....*	28	0
11. Coal mixed with shale	0	6
12. Arenaceous shale	1	0
Carried forward ..	193	8

	ft.	in.
Brought forward.....	193	8
13. Sandstones, some blotched and red, others flaggy; Stigmaria ficoides in upper beds, annelids in flaggy beds	24	0
14. Shale with ironstone nodules	15	0
15. Limestone, generally blue—the basaltic dike cuts through these beds near the shore..... ..	18	0
16. Coal.....	0	6
17. Grey shales with ironstone nodules	10	0
18. Blue shales.....	15	0
19. Grey slaty sandstone	5	0
20. Coal *(stony coal)*—this is very nearly in the same position in the series as the fine Shilbottle seam	1	0
21. Slaty sandstones	8	0
22. Blue slates	7	0
23. Slaty sandstones and shales—some beds are ripple marked, and the vein of Gulena is seen crossing the sandstone	37	0
24. Shales	10	0
25. Limestone, dark	6	0
Carried forward...	353	2

	ft.	in.
Brought forward...	350	2
26. Grey slaty sandstones and shales	27	0
27. Calcareous shale with many fossils	3	0
28. Limestones which are much contorted—the upper beds are impure, but the middle and lower make good lime. These beds were, until lately, worked here, and also at North Sunderland where they are brought in, through the undulations and faults of the strata. They are very fossiliferous	24	0
29. Coal	0	8
30. Fire clay and shales	10	0
31. Sandstone, upper beds slates	30	0
32. Carbonaceous shales with ironstone nodules	10	0
33. Limestone, dun and impure —*Productus giganteus*	4	0
34. Carbonaceous shales	12	0
35. Coal (Beadnel coal). Varies in thickness from 2 feet 6 inches to 6 feet—the average is about	3	0
36. Sandstones and slaty sandstones with *Sigillaria organa*	17	0
37. Coal	1	5
38. Grey slaty and flaggy sandstones	45	0
39. Shales	8	0
40. Grey slaty sandstone	6	0
41. Shales	10	0
42. Sandstones, some of the beds red	38	0
43. Grey shales	22	0
44. Limestone	2	6
45. Grey slaty sandstones	6	0
46. Fire clay and shales	30	0
47. Coal *(stone close coal)*	1	4
48. Grey slaty sandstone	10	0
49. Dark shale	5	0
50. Slaty sandstone	10	0
Carried forward...	686	1

	ft.	in.
Brought forward...	686	1
51. Dark shale	18	0
52. Limestone	14	0
53. Coal	0	4
54. Grey sandstones and slaty sandstones	9	0
55. Limestone	5	0
56. Coal (Swinhoe coal)	1	4
57. Sandstones	27	0
58. Grey shale	9	0
59. White sandstone	12	0
60. Blue shale	36	0
61. Limestone, impure	6	0
62. Coal	0	9
63. Fire clay and shales	24	0
64 Coal (Fleetham coal, of good quality)	1	6
65. Sandstones	132	0
66. Blue shales	33	0
67. Sandstone	21	0
68. Limestone	21	0
69. Coal	0	4
70. Slaty sandstones and shales	60	0
71. Coal	0	10
72. Fire clay	48	0
73. Limestone, light coloured	6	0
74. Coal mixed with sandstone	2	0
75. Shales and slaty sandstone	15	0
76. Limestone, impure	2	0
77. Coal	2	0
78. Sandstones	150	0
79. Slaty sandstone	30	0
80. Blue shale	6	0
81. Hard stone	4	0
82. Sandstone, coarse white	15	0
83. Blue shale	12	0
84. Coal, good	1	8
85. Slaty sandstones	27	0
86. Coal (main coal)	4	0
87. Fire clay	5	0
88. Blue shale	42	0
89. Limestone	4	0
Total...	1493	10

There are in this section fourteen different limestones, varying in thickness from 2 feet to 30 feet, and having an aggregate thickness of 171 feet. Most of them are of a bluish colour and yield good lime, and many fossils characteristic of the Mountain Limestone Formation occur, especially in the thicker sills and in the calcareous shales connected with them. The main limestone, number 38, is the most fossiliferous, and the following list, though far from being complete, will shew how rich it is in organic remains.

FISH.

A few remains of fish appear, viz., a portion of

Megalichthys Hibbberti (Ag.) consisting of scales of a quadrate form, one inch across—this was a sauroid fish allied to the Lepidosteus or Bony Pike.

Cladodus mirabilis (Ag.)

Cochliodus magnus (Ag.)

These are teeth of Ganoid fish of the order Pycnodonti, whose forms were short and compressed, the fins small, and the teeth adapted to crush marine animals with hard coverings.

CRUSTACEUS.

Griffithides Farnensis (Tate).

MOLLUSKS.

Orthoceras sulcatum (Flem.)
Orthoceras Goldfussianum (Kon.)
Naticopsis plicistriæ (Phil.)
Loxonema rugifera (Phil.)
Euomphalus carbonarius (Sow)
Pleurotomaria decipiens (McCoy)
Pleurotomaria atomaria (Phil.)
Platyschisma helicoides (Sow)
Bellerophon Urii (Flem.)
Orthis resupinata (Mart.)
Orthis Michelini (Kon.)
Strophomena crenistria (Phil.)
Productus Martini (Sow.)
Productus punctatus (Mart.)
Productus scrabiculus (Mart.)
Productus spinulosus (Sow.)
Productus fimbriatus (Sow.)
Productus latissimus (Sow.)
Productus Flemingii (Sow.)
Productus semireticulatus (Mart.)
Chonetes sordida (Sow.)
Chonetes Dalmaniana (Kon.)
Chonetes gibberula (McCoy)
Spirifer trigonalis (Mart.)
Spirifer glaber (Mart.)
Spirifer lineatus (Mart.)
Spirifer octoplicatus (Sow.)
Edmondia sulcata (Phil.)
Sanguinolites iridinoides (McCoy)
Sanguinolites transversa (Port.)
Sanguinolites variabilis (McCoy)
Aviculo-pecten docens (McCoy)

BRYOZOA.

Fenestella plebeia (McCoy)
Fenestella crassa (McCoy)
Fenestella undulata (Phil.)
Glauconome pluma (Phil.)
Sulcoretepora parallela (Phil.)

CORALS.

Aulophyllum fungites (Flem.)
Lithodendron irregulare (Phil.)
Stenopora tumida (Phil.)
Favosites parasitica (Phil.)
Favosites serialis (Port.)

The calcareous shale is remarkably full of fossils; it is indeed almost entirely formed of *Productus Flemingii* and *Spirifer trigonalis;* and being exposed to the weathering influence of the tide, which washes away the softer matrix, the fossils stand out in bold relief, and fine specimens of the Productus can be obtained, beautifully shewing the curious internal structure of the shell.

The limestone which forms the bold headland of Ebbs Nook is, however, the most interesting of the group, from its peculiar

organisms, its mineral composition and picturesque appearance. It is 30 feet in thickness, and being very hard, resists more effectively, than the other rocks, the destructive action of the sea. Resting, however, on a soft shale which is easily broken up and washed away by the tides, this superincumbent limestone is deprived of support, and time after time, large masses tumble down from the cliff into the sea. It now forms a narrow point running into the sea about one quarter of a mile; but the tides and high seas are still working away the lower and softer beds, which connect this promontory with the land, and in the course of a few centuries it will become an island on the flow of every tide. This limestone is of a buff colour and generally of a crystalline structure. It is a magnesian limestone, being composed of carbonate of magnesia and carbonate of lime. Besides containing *Productus giganteus* and other commoner mountain limestone fossils, there abound in it large masses of the corals *Lithostrotion basaltiforme* and *Chætetes septosus;* and occasionally we find *Syringopora ramulosu*, which is a rare coral in the Northumberland beds. These distinctive organisms are excellent guides in tracing the range of this sill; northward I have found it at Holy Island, and southward I have traced it to Spittleford, near to Embleton, and thence to Dunstan, Craster, and Shilbottle; and thence in a south-west direction to Whittle, Newton-on-the-Moor, Framlington, and across the Coquet to Ward's Hill and Rothley. It should be noticed, that the magnesian character of this limestone is a local phenomenon, and seems in some way to arise from its neighbourhood to basalt. In several parts of its range, as at Shilbottle and Framlington, it is a comparatively pure carbonate of lime.

There are eighteen different coal seams in the section; most of them are thin and of an inferior quality, none, excepting two, exceeding 2 feet in thickness, and their aggregate thickness is only 24 feet 4 inches. That which is called the Beadnell coal (number 35 of the section) has been worked both for domestic use and for burning lime. It is of variable thickness, seldom less than 2 feet 6 inches, and generally about 3 feet; but on Mrs. Taylor's estate, it has been found as much as 6 feet thick, and of a better quality than in other localities. It lies there, however, below the sea level; and as the sea sometime ago broke into a neighbouring colliery, due precautions would be necessary, to prevent a similar irruption, in the event of this more valuable portion of the coal seam being worked for the use of the district.

The sandstones and shales associated with the coal seams contain relics of the vegetation of the Carboniferous Era; a few *Sigillariæ* and many *Stigmaria ficoides* appear in these beds. One interesting specimen of a Sigillaria, which was laid bare, when quarrying the sandstone in 1853, deserves a more particular notice. Though but a fragment, it was 6 feet in height, and 2 feet 2 inches in diameter at the lower end, and 1 foot 9 inches at the higher; it stood perpendicular to the strata which dip south-east 15° and its inclination to the horizon was 75°. The lower extremity terminated abruptly on the surface of slaty sandstone beds, but the outcrop of the rock in which it was embedded prevented our knowing, how far upward it extended. Over the surface was a thin carbonaceous coating, being the bark converted into coal; but the interior was replaced with sandstone and retained no structure. It had, however, the rude flutings which distinguish the casts of Sigillariæ; and it appeared to belong to the species *Sigillaria organa*. The sandstone in which it stands consists of several beds; and the lines of stratification distinctly pass through the fossil, and curve more or less downward on all sides towards it. No roots could be observed attached to this tree; yet from its position at right angles to the strata, and the peculiarity of the stratification, I think it stands on the spot where it originally grew. Indeed, there seems to me little doubt that most of the coal seams, even in north Northumberland, have been formed of plants and trees which grew, during the Carboniferous Era, in the district now occupied by the coal beds. The under clay usually beneath each coal seam was the surface soil, on which the plants and trees grew; and it is now found more or less traversed by the *Stigmaria ficoides*, which was the root of the Sigillaria, the trunks of which have largely contributed to the formation of the coal. As this fossil tree is frequently to be seen in Northumberland, it may add to the interest of these notes to give the following description from my Fossil Flora of the Eastern Borders. "The structure of the Sigillariæ differs widely from that of any living plant; it is, however, essentially acrogenous; and the nearest analogue to these majestic trees of other times is the Lycopod or lowly creeping club moss; yet the radial arrangement of the woody tissue and the presence of medullary rays and a sheath, bring them into a distant relationship to exogenous vegetation. Brongniart considers them allied both to the Lycopod and to the Cycas; they form, therefore, a connecting link between orders, which stand far apart in existing nature. Composed

chiefly of cellular tissue, Sigillariæ were extremely succulent; they grew in swamps and marshes, their long and numerous Stigmaria roots and rootlets forming an entangled mass and permeating the mud in all directions, in a manner similar to that of the living water lily in shallow lakes and pools. The roots sometimes exhibited a crucial arrangement, uniting into four main portions, separated from each other by deep channels and forming a dome from the summit of which, the furrowed and scarred stems, clothed in the upper parts with a long, narrow and pendent foliage, rose to the height of nearly 100 feet."*

Other conditions of the Carboniferous Era are made known by several of the sandstones, which present ripple-marks, oblique lamination, and fossil worms and worm tracks, indicating ancient beaches and the action of waves and currents. When deposits are made in water comparatively tranquil, the planes of the several beds are pretty nearly parallel to each other; but some sandstones exhibiting in mass this ordinary stratification have also included in them, thin layers or stratula, which are inclined sometimes highly to the plane of the principal bed; this is oblique lamination, or as it is frequently called, *false-bedding*, of which there are many examples in the Beadnell sandstones. Both ripple-marks and false bedding result from the action of waves and currents—the former being produced by the gentle motion of waves, and the latter by stronger currents. After the recession of the tide furrows and ridges may be seen on sandy and muddy coasts; and these are similar in form and arrangement to those left impressed by ancient waves on the Beadnell sandstones; where they are there beautifully distinct; some of them are large, measuring 6 inches from one ridge to the other; and they usually trend from east by south to west by north. As the line in which a current moves is at right angles to the direction of such marks, the ancient currents which rolled over the Beadnell coast must have come either from the north or the south.

Mr. H. C. Sorby has attempted to determine the direction whence currents came, by observations on the dip of the stratula, as he considers the direction to be the opposite to this dip in relation to the plane of true bedding; and he concludes from a series of observations, that the drifting current which formed the coal sandstone beds on the southern part of the coast of Northumberland came from north 9° east.† The

* Tate's Fossil Flora of the Mountain Limestone Formation in Dr. Johnston's Botany of the Eastern Borders, p. 299.

† Proceedings of the Yorkshire Geological Society for 1852, p. 232.

Beadnell beds, however, do not lead to any such general conclusion; for I found in the same stratum, and within a distance of not many yards, that the Stratula in one place dipped from 40° to 70° to the north, and in another place at similar angles to the south-west by south. Probably this bed had been formed by the action of strong eddies and counter currents, which piled up the drifted sand with considerable irregularity.

FOSSIL ANNELIDS.

Most curious and instructive are the fossil worms and tracks which occur in several layers of flaggy and ripple-marked sandstones a little northward of Ebbs Nook. They are seen also in other sandstone beds of the section, and in other localities in Northumberland. Though similar annelids are not unfrequent in Palæozoic rocks, they have been but seldom noticed. Species from the Silurian Formation have been described by Sir Roderick Murchison in his great work on the Silurian System, by Professor McCoy in Sedgwick's Synopsis of the Classification of British Palæozoic Rocks, and by Mr. J. W. Salter in the Quarterly Journal of the Geological Society. Few distinct descriptions have been given of forms in the Carboniferous Formation; the only notices I know of are contained in a paper by Mr. E. W. Binney on some trails and holes formed in rocks of the carboniferous strata ;* and in an excellent popular "Account of a large fossil marine worm occurring in the mountain limestone district in Wensleydale, Yorkshire," by Mr. Edw. Wood, F.G.S.† Mr. W. Lee also refers to annelid borings, in a paper on what he calls Fossil Footprints in the carboniferous system.‡ Having carefully examined the annelids in the Mountain Limestone Formation of Northumberland, I am able to distinguish four distinct forms; two of them are referable to

CRASSOPODIA, (McCoy),

A Genus which has been found in Silurian beds and which may be thus defined:—Body long; of excessively short, numerous, wide segments, from which arise very long, delicate, crowded cirri forming a broad dense fringe on each side, completely concealing the feet. These annelids appear to belong to the order Dorsibranchiata of Cuvier, and are allied to the nereides, species of which inhabit our coast. They are

* Memoirs of the Manchester Philosophical Society, vol. x., p. 181.
† The Naturalist, Nos. I. and II., p. 14 and 41.
‡ Proceedings of the Yorkshire Geological Society, vol. ix., p. 409.

marine worms which creep in a serpentine manner, and even swim by successive undulations of their bodies or by agitating their appendages.

CRASSOPODIA EMBLETONIA,* (TATE.) Plate I., fig. 1. 2.

Length unknown (upwards of two feet); width one inch; thickness not exceeding four lines; width of body five lines; articulations three lines apart; cirri about four lines long, crowded, there being twenty-four in the space of one inch. There is no appearance of a head; the width and characters are the same throughout the entire length; it occurs in large rounded loops from half an inch to more than three inches apart.

Having found sections shewing the interior of this curious fossil, I have been able to determine the width of the body, and the distance of the articulations from each other.

This is the most widely distributed of the carboniferous annelids; it occurs in sandstones of the mountain limestone at Beadnell, Scremerston, Howick, Haltwhistle, on the Irthing near Combe Crag, and also in flaggy beds of the millstone grit at Berlin Carr, between Alnmouth and the Coquet.

Fig. 1.—Upper surface; the keel-like centre is that portion of the body not covered with cirri.

Fig. 2.—Section shewing the articulations of the body; *a*, intestinal canal; *b*, muscular layer and articulations; *c*, space occupied by cirri.

CROSSOPODIA MEDIA, (TATE.) Plate I., fig. 3. 4.

Length considerable (upwards of three feet nine inches), usual width about four lines, but some specimens are only three lines and others as much as six lines wide; thickness three lines; width of body two lines; length of cirri one line and a half, and twenty of them in the space of one inch; the width and thickness continue the same throughout the entire length. It occurs in irregular loops and long undulations which occasionally cross each other.

This is quite distinct from the *C. Embletonia*, being much smaller and much thicker in proportion to its size; the cirri are less crowded and the foldings are more tortuous and irregular.

It occurs in sandstone at Beadnell, abundantly at North Sunderland, at Newton-on-the-Moor, and at Howick.

Fig. 3.—Upper surface.

Fig. 4.—Section shewing the cirri and a cast of the body.

* I have named this after my esteemed friend Mr. R. C. Embleton, the accomplished Secretary of our Club.

NEMERTITES, (McLEAY,)

A Genus which has been described from the Silurian Formation; it is thus defined: Body very long, linear, slender, of nearly uniform thickness throughout, without distinct articulations.

NEMERTITES UNDULATA. (TATE.) Plate I., fig. 5.

Length unknown, (upwards of nine inches), body round, half a line in diameter, usually in loop folds from a quarter to half an inch apart; neither articulations nor cirri are observable.

This species is generally found where fossil worms appear; it occurs in sandstone at Beadnell, North Sunderland, Howick, and Haltwhistle.

Fig. 5. Nemertites undulata, accompanied with borings of other annelids; this species also is figured on Slab 6.

EIONE, (TATE,)

An annelid, very different from every other, occurs in considerable abundance at Howick, in a thick flaggy sandstone which holds a similar relative position in the mountain limestone series to some of the sandstone beds at Beadnell. This fossil too is associated with the same species of worms as are found at Beadnell. It has characters so remarkably distinct that I have provisionally given it a Generic, as well as a Specific name.

EIONE MONILIFORMIS, (TATE.) Plate I., fig. 6.

Length unknown (upwards of three feet); body rounded, lower surface and sides moderately convex, smooth, upper annulated, diameter six lines; articulations consisting of bead-shaped rings on the upper surface, distinctly separated from each other by a deep sulcation, the length of each articulation being five lines; it occurs in long undulations. Some individuals are a little larger and others a little smaller than the size stated; but each preserves the size and character throughout the entire length. I have been unable to detect any internal structure, or to observe setæ, cirri, or appendages.

This very peculiar fossil worm may be referred to Cuvier's order Abranchiata. Destitute of setæ and cirri, it resembles the *Hirundo* or leech, and the *Lumbricus* or earth-worm; it would progress by the contraction and extension of the subcutaneous muscular stratum.

It is found at Howick, Scremerston, and Haltwhistle in Northumberland; and I believe also in Yorkshire.

Besides the forms now described there are other casts and trails at Beadnell. Some seem to be the burrows or casts of annelids, passing either perpendicularly or obliquely through several layers of rock, the upper surface of the layers being pitted and the under projecting. These casts or burrows are about two lines in diameter, and are so crowded together in some rocks both at Beadnell and Kirkwhelpington as to give the stone a pock-marked appearance. Meandering furrows about one line in width with a ridge in the centre are probably the trails of an annelid: they occur also at Howick, North Sunderland, and Haltwhistle. It has been suggested that these were tracks made by small crustaceans, but the absence of all remains of the hard shell renders this opinion doubtful.

More extended observations on these borings and trails and on other markings associated with them, are required before their characters can be distinctly determined.

As confirmatory of the marine conditions of the rocks in which the ripple marks and annelids are found, I may add, that the flaggy sandstone containing annelids at Howick has in some of the layers *Bellerophon*, *Euomphalus*, *Murchisonia* and *Pleurotomaria*, shells undoubtedly of marine origin.

The group of facts now noticed gives us a partial glimpse of a far distant Era. The Beadnell flaggy beds expose to our view an ancient coast line; we hear the waves breaking on the shore; we perceive currents rolling along masses of sand; the tide recedes and ripple marks—long ridges and furrows sharp and distinct appear; and there too are seen worms, some of large size, crawling over the surface or burrowing in the sand. Marks left by the sea are often fugitive—the impressions made by one tide are obliterated by another; but here they are preserved; the sand and mud are hardened, it may be by a warm sun breaking forth and baking the surface before the return of the tide; other deposits cover over the markings and bury up and preserve the organic forms; and now, when these rocks are laid bare and examined, they reveal to us, that the same physical laws operated during the Carboniferous Era as at the present time, and that, though the aspects of vegetation might be wonderfully different, and organic life specifically distinct, yet the animals of the period were formed according to the same type and were subject to the same conditions as those now existing.

Before leaving the stratified rocks, allusion may be made to the illustration they afford of changes of condition and of oscillations of level. Taking the coal in connection with the limestone, there is evidence of not less than fourteen changes

of level; as many times, during the period when these rocks were deposited, was the district clothed with an abundant and marvellous vegetation—as many times were there alternations of swamps and lakes, of estuaries, of lagoons, and of seas sometimes profound, but generally of moderate depth.

LEAD VEIN.

A little northward of the basaltic dike, a narrow crack or fissure of the sandstone contains Galena or Sulphuret of Lead. It runs across the strata from south by east to north by west; and a branch from it forks off to the north-north-west. The vein seems too small to be worked with advantage. Its position gives probability to the theory that the igneous agency which forced upward the basalt, produced also, by sublimation, the ore which is found in the vein.

BASALTIC DIKE.

When viewed from the shore near to Dunstan Square, this basaltic dike, even to one unacquainted with geological principles, is a striking and interesting object. It rises perpendicularly through the stratified rocks, and runs in a direct line from west 85° south to east 85° north. Its width is 25 feet, but contracting seaward to 20 feet. It stands in some parts ten feet above the strata, and appears like a wall rudely piled up by Cyclopean builders; and though, in other parts, it is broken down by the waves, its course can be distinctly traced for a considerable distance into the sea. The basalt is of the usual composition, augite and felspar, but finer grained than the larger masses at Ratcheugh and the Farne Islands. The adjacent strata are very slightly altered in position; but their structural characters are changed. Coal for some distance from it is valueless; limestone near to it will not burn into lime; and shale and sandstone are indurated. Besides, at the point of contact, sandstones, shales, and limestones are much jointed and fissured, and assume the external form of basalt; and on the other hand, the basalt itself becomes calcareous and siliceous. This transference of qualities and the structural changes superinduced are the results of the igneous agency which, by its upward pressure, rent asunder the vast mass of stratified rocks, and then poured the molten basalt into the fissures.

ARCHÆOLOGY.

On the narrow rocky point of Ebbs Nook, overlooking the sea, stood a humble religious edifice; which, however, so long

ago became a ruin, that for many generations it was covered over with drifted sand. Mr. Hodgson Hinde, in 1853, discovered the spot where it stood, and by clearing away the sand from the interior, exposed the remains of this ancient chapel. The buildings thus brought to light consist of a chancel, nave, and another apartment on the west, opening into the nave. The chapel stands directly east and west. The sizes of the several apartments are internally--

The chancel 11 feet 5 inches by 11 feet 9 inches,
The nave 18 feet 9 inches by 11 feet 4 inches,
The western chamber, which is not regular, in shape averages 13 feet by 10 feet.

In some parts the walls are remaining to the height of 5 feet; they are usually 25 inches in thickness and built chiefly of yellow magnesian limestone, of which vast numbers of blocks are rolled by the sea to the bottom of the cliff; some few red sandstones are mingled with the limestone, and the door jambs, which are remaining, are also of sandstone. The masonry is coarse rubble work. Lime has been used to a considerable extent in the walls of the chancel and nave; but no particle of lime appears in the walls of the western apartment, which are cemented by clay only. Thick walls with wide central openings divide the western apartment from the nave, and the nave from the chancel. These walls are 2½ feet thick; the chancel opening is 5 feet, and that between the nave and the western apartment is 4 feet 8 inches in width. There had been no door between the nave and western chamber, for the end faces of the division walls are smooth; and it is probable from the great thickness, both of these and of the chancel division walls, that they had supported arches.

It is difficult to say, what purpose was served by the western chamber. It is undoubtedly of more rude construction than the other buildings, and appears like a subsequent addition, as the side walls are not bonded into the wall of the nave; but the wideness of the opening from the nave into it, and the absence of any indications of a door rather evidence, that it forms part of the original plan of the chapel. It may have been used as a vestment room; and probably there were other buildings near to the chapel, which furnished a residence for the priest, for there are other foundations on this promontory.

Near the west end of the nave, there had been two small doors opposite to each other in the south wall. The width externally was only 2 feet 1 inch, but being splayed, they widened internally to 3 feet. When this chapel was first laid

bare, a portion of the head of the north door was found resting on its impost; the height of the door was then ascertained to be only 4 feet 8 inches. A low stone seat ran along the north and south walls of the nave, and also along the west wall on the north side of the opening. The Piscina of a rude form still remains inserted in the south wall.

Other characteristic portions of a chapel were seen when the excavations were made, but which have since been destroyed or removed. Of these, however, a minute description has been given by Mr. Albert Way, in the proceedings of the Archæological Institute.* In the chancel, an altar formed of coarse rubble work was found nearly entire, and on its north side a shallow stone trough. A small basin, supposed to have been a holy-water vessel, was in the south-east angle, and adjoining to it was a portion of a stone bench. It is singular to notice, that though the chancel walls were for the most part built with lime, yet clay has been used and no lime in that part, against which the altar stood. No windows nor architectural ornaments were found, from which the age of the chapel might with certainty have been determined. Among the rubbish, however, I saw several sandstone slates with the nail-holes for fastening them remaining, indicating that these buildings had been covered with slate.

This ruined chapel is now only about ten yards southward from the cliff, which rises 30 feet above the sea; the chapel, however, must formerly have stood at a greater distance from it; for, as already explained, masses of limestone, time after time, have tumbled down from the cliff into the sea.

No sepulchral monuments or swelling hillocks are now around this chapel; but here there must have been a place of sepulture, for human bones are occasionally disinterred by the burrowing of rabbits; and when excavations were made lately, two human skeletons were found, lying parallel with each other, near to the south door of the chapel.

When, it may be inquired, was this chapel erected, and why placed on such an exposed situation? Mr. Albert Way thinks that "these remains encourage the supposition, that the building may have been raised at a very early period after christianity was introduced into Northumberland." The name of the promontory—Ebbs Nook—readily suggests that a chapel may have been erected here by St. Ebba, sister of Oswald and Oswi, kings of Northumberland, in the seventh century. It was not unusual in that early age to select lonely and exposed sites for chapels and cells. The sea-girt and

* Archæological Journal, No. 44, p. 498.

tempest-beaten Farne had its cell and chapel; and tradition says, that St. Ebba and St. Helen built churches on lofty headlands on the Berwickshire coast—the one on St. Abbs Head and the other near to Siccar Point; but of these early structures there are no remains. Indeed, with very rare exceptions, the Saxon erections have perished. Many of them were of wood, and consequently soon decayed; those, which were of stone, fell beneath the corroding power of time, or were swept away by the ruthless hand of war, which repeatedly ravaged Northumberland. The remains of the chapel on Ebbs Nook possess no distinctive mark of a Saxon building; doubtless it is small and rude in structure, but these characters belong to all periods. When I first visited it, I saw a portion of the head of the north door, which has however since then disappeared; and I considered, that the curve in it was a part not of a rounded but of a pointed arch. While therefore it is probable, that in Saxon times a chapel stood here, it may be, to attract especially the devotions, vows, and offerings of seamen, that first structure has entirely disappeared, and the remains now on Ebbs Nook belong to an edifice, which had been erected not earlier than the thirteenth century.

Catalogue of the Land and Fresh-water Mollusca found in the immediate neighbourhood of Alnwick, in Northumberland. By Geo. Ralph Tate, M.D., Royal Artillery.

The following catalogue of land and fresh-water mollusca is the result of observations made, in the neighbourhood of Alnwick, during the months of August, September, and October 1857. From the short space of time devoted to this interesting branch of natural history, many species have doubtless escaped observation, and especially those inhabiting our rivers, ponds, and ditches which have been but slightly examined. The genera zonites and helix have been more particularly studied, and have in consequence yielded proportionately a large number of species.

Of planorbis, limæa, and other fresh-water forms, there are fewer in the district than in most parts of England; this is partly owing to the comparative absence of slow running streams and low lying ponds.

From the varied character of the country, the district is, on the whole, favourable to the production of land shells. Large tracks of wood, watered by swift flowing streams, and presenting a beautiful alternation of hill and vale, afford a congenial habitat for the shelter loving species.

The richest localities are those where limestone occurs, as at Ratcheugh Crag and the Calish woods, this rock furnishing the lime of which the external covering of the mollusca is for the most part composed. Particular plants, moreover, afford a resting place to many species. Equisetums and grasses, which contain a large per centage of earthy salts, are much frequented by land shells. Many mollusca, in the same way as plants, are found in every situation and on every variety of soil, while others again affect particular habitats.

The geological peculiarity of a district influences the distribution of land shells much more, in England at least, than geographical position. All of the forms found near Alnwick are, with one exception, (*Helix lamellata*), observed in Hampshire, at the opposite extremity of the country. Those peculiar to this southern part of England, and which are not observed in the north, flourish on a cretaceous soil; among those may be enumerated, *Cyclostoma elegans*, *Bulimus acutus* and *Helix cantiana*.

The fact that mollusca pass a large portion of their time in winter in a state of hybernation, when the influence of climatal peculiarity is scarcely felt, accounts perhaps for the absence of any striking difference in the fauna of two opposite extremities of this country.

MOLLUSCA.

CLASS I.—GASTEROPODA.

ORD.—PNEUMONOBRANCHIATA.

FAM.—HELICIDÆ.

GENUS—VITRINA, Drap.

1. V. pellucida, Müll.

Common under stones, among moss and decaying leaves. Ratcheugh, Hulne, Rugley woods, &c. Live specimens are most frequently met with after a shower of rain and in damp weather.

GEN. ZONITES, Gray.

The species of this difficult genus are not easily distinguishable; but having carefully examined a considerable number of specimens, I venture to give specific descriptions from my own observations, in the hope of facilitating the determination of the species.

2. Z. cellarius, Müll.

One of our common shells. Beneath stones, about old walls, among grass in woods, fields, and occasionally in damp cellars. Ratcheugh, &c. Shell flattened with

the spire very little raised; colour dirty yellow or pale horn; glossy; upper surface rather opaque, under surface clouded with opaque white, especially about the umbilicus; smooth or slightly wrinkled; whorls 5 to 5½; umbilicus moderately large, scarcely exposing the second whorl; aperture obliquely crescent-shaped, rather broader than high; diameter 2-5ths to ½ an inch.

3. Z. alliarius, Müll.

A widely-diffused shell, but not so common as the last, and readily distinguished from it and the other species of this genus, by the odour of garlic which the animal emits when disturbed. It frequents the same habitats as the last. Ratcheugh, &c.

Shell flattened, with the spire very little raised; colour pale amber or horn; transparent; very shining; around the umbilicus there is a little opacity; upper surface smooth or but slightly wrinkled; whorls 3½ to 4; umbilicus moderately large, scarcely exposing the second whorl; aperture crescent-shaped, not very oblique, rather broader than high; diameter 1-5th to ¼ of an inch.

4. Z. nitidulus, Drap.

Not so frequent as either of the preceding, yet by no means an uncommon shell. Under stones, about old walls, among grass and moss in woods and hedgerows. Ratcheugh, Hulne woods, &c.

Shell flattened with the spire somewhat raised, (more so than either of the preceding); colour, that of horn, and a shade or two darker than that of Z. cellarius and alliarius; not shining, but dull and semi-transparent above; more transparent below, except about the umbilicus, where there is a feint band of opaque white; upper surface irregularly wrinkled or striated; the striæ interrupted by the sutures and not continued from whorl to whorl; whorls 4½ with the suture well defined; umbilicus large, exposing the second whorl; aperture crescent-shaped, a little oblique; rather broader than high; diameter 3-8ths to 3-10ths of an inch.

5. Z. radiatulus, Alder.

There are several localities for this minute and well-marked species around Alnwick. Its favourite habitat is among the moss and grass in damp pastures, under stones and among moss and grass in woods. Rat-

cheugh, Hulne woods, &c.

Shell flattened, spire scarcely raised; colour, deep horn or amber; shining, transparent; under surface without any white opacity; upper surface regularly and distinctly striated, the striæ continued from whorl to whorl and not interrupted by the sutures; under surface smooth; whorls 3½ to 4, flattened, particularly above; body whorl much larger than that preceding it; sutures shallow and broad from the arching upwards of one whorl to join that next to it; umbilicus moderately large; aperture oblique, crescent-shaped, broader than high; diameter from 1-12th to 1-6th of an inch.

6. Z. purus, Alder.

Not uncommon among moss, decaying leaves, stumps of trees and under stones in woods and pastures. Ratcheugh, Hulne, and Rugley woods, &c.

Shell flattened, with the spire very slightly raised; colour, white, rarely very pale amber; transparent, not very shining; under surface without opacity; upper surface smooth or slightly wrinkled; whorls 3½ to 4, rather flattened above; body whorl much larger than that preceding it; sutures well defined, deep and narrow; umbilicus moderately large; aperture oblique, crescent-shaped, broader than high; diameter 1-10th to 1-6th of an inch.

7. Z. crystallinus, Müll.

Common among moss, herbage, decaying leaves, and under stones in woods, pastures and hedge-rows. Ratcheugh, Hulne woods, &c.

Shell flattened, with the spire very slightly raised; colour white or with a slight greenish tinge; very shining and transparent; under surface without opacity; upper surface smooth or slightly wrinkled; whorls 4½ to 5, of gradual increase, the body whorl being but little larger than that preceding it; whorls flattened above; sutures well defined; umbilicus very small; aperture not very oblique, crescent-shaped, about as broad as high; diameter from 1-12th to 1-8th of an inch.

8. Z. excavatus, Bean.

Very rare. Hulne woods about the decaying stumps of trees.

Shell depressed, subglobular; colour that of darkish horn; shining and transparent; under surface not obscured

by any white opacity; upper surface strongly and regularly striated, the striæ being continued over the base but not so well defined on this aspect; whorls 5 to 5½, well rounded, especially on the inferior surface; umbilicus very large and capacious, disclosing all the whorls; aperture rather small, orbiculo-lunate, as broad as high; diameter ¾ of an inch.

GEN. HELIX, Drap.

9. H. aspersa, Müll.

This is one of our commonest and most generally known snails. It is a pest in gardens, devouring vegetables, particularly cabbage, with the greatest avidity. This species, as well as the common slug, is still used by some, in this part of the country, in their domestic pharmacopœia, and is put great trust in for the cure of pulmonary complaints. So far as my own experience goes, and from what I have been able to learn from others, it does not appear to be a remedy of any efficacy. Like many other articles of a peculiar and out-of-the-way character, a dose of snail may be productive of good, provided the patient indulging in its use is firmly convinced of its salutary powers.

10. H. arbustorum, Linn.

A handsome shell, but rare near Alnwick. Hulne woods and at Alnmouth, where it is found upon reeds by the side of a ditch.

11. H. nemoralis, Linn.

Common. Very plentiful on the Links by the sea shore at Alnmouth. In gardens, fields, hedge-rows, and woods.

12. H. nemoralis, var. hortensis.

Found with us only in the immediate neighbourhood of the sea. Very abundant at Alnmouth. This species is very fond of the stem and leaves of Senecio Jacobæa (the common Ragwort), from a single plant of which, I have collected more than twenty specimens. It varies much in colour and external markings. A pretty variety has two narrow brown bands on the under surface, between which is a row of brown spots, each connected by a thin brown line. In the aperture of this shell and at a distance of 2 lines from its external margin, a narrow but well-marked ridge appears; the colour of this varies, and usually corresponds to that of the mouth.

13. H. caperata. Mont.

In limestone quarries and on the links by the sea coast. Ratcheugh, Alnmouth, Denwick, &c. This species, like the

last, presents within its aperture a well-marked ridge of a white colour.

14. H. ericetorum, Müll.

In the neighbourhood of limestone. Plentiful at Denwick, Alnwick Moor, Newton, Ratcheugh.

15. H. hispida, Linn.

Common under stones in woods and pastures, and about old walls and hedge-rows. Ratcheugh, Hulne woods.

H. hispida, var. concinna, at Ratcheugh.

16. H. sericea, Drap.

Rare. Hulne and Calish woods, where it feeds principally upon Equisetum Telmateia in damp places.

17. H. aculeata, Müll.

Rare. Occurs sparingly at Ratcheugh and Calish woods on decaying leaves. This minute and remarkable species is detected with difficulty, as its colour exactly resembles that of the leaves upon which it is found.

18. H. lamellata, Jeff.

In September 1857, I detected this rare and characteristic northern shell in the Calish woods, and subsequently in Rugley wood, in both situations on decaying leaves about rocks near running water. In certain lights it exhibits a satiny appearance, the result of the action of the rays of light on the fine and sharply cut striæ which cover its surface.

19. H. fulva, Müll.

Beneath stones in quarries and old walls, and among moss and herbage in woods, hedge-rows, and pastures; not unfrequent, though seldom met with in abundance in any one locality. Ratcheugh, Denwick, Hulne woods.

20. H. fusca, Mont.

Rare. On Equisetum Telmateia, in damp places in Hulne and Calish woods, associated with H. sericea.

21. H. pulchella, Müll.

Rather rare. On the limestone at Alnwick moor, Ratcheugh, Calish woods, and Dunstanburgh.

H. pulchella, var. costata. On the old walls at Hulne Abbey.

22. H. rotundata, Müll.

Common under stones in woods, hedge-rows, and about old walls. Ratcheugh, Hulne woods, &c.

23. H. pygmaea, Drap.

Rare. Among moss in a damp situation, on Shortridge links, near Alnmouth.

GEN. BULIMUS, Scop.

24. B. obscurus, Müll.

Not uncommon. Under stones, especially on a limestone soil and about old walls. Ratcheugh, Hulne Abbey, Embleton, Newton. Seldom met with in abundance in one place.

GEN. PUPA, Lamark.

25. P. umbilicata, Drap.

Common under stones, among moss, herbage, and about rocks and old walls. Ratcheugh, &c.

26. P. muscorum, Linn.

Among grass and the roots of Psamma arenaria, the common bent of our links, near the sea. Not uncommon at Alnmouth and Dunstanburgh.

27. P. edentula, Drap.

Rare. On dead leaves at Ratcheugh and Rugley wood.

28. P. pygmæa, Drap.

Rather rare. On limestone rocks and stones at Ratcheugh, Alnwick moor, and Dunstanburgh.

GEN. CLAUSILIA, Drap.

29. C. laminata, Mont.

Very rare. This elegant southern species reaches the limit of its distribution to the north in Hulne woods, where it is found very sparingly. In Hampshire this shell is frequent in the hedge-rows and woods, where it is often associated with Helix lapicida, H. cantiana and Cyclostoma elegans, forms almost peculiar to the southern portion of our island, and none of which extends so far north as Alnwick.

30. C. nigricans, Mat. and Rack.

Not common. About old walls, rocks, and under stones. Calish woods, Hulne Abbey, and very abundant on the limestone rocks near Dunstanburgh Castle.

C. nigricans, Vardubia.

Rare. About an old wall in Rugley wood.

GEN. ZUA, Leach.

31. Z. lubrica, Müll.

Common under stones, about old walls, and among leaves and moss. Ratcheugh, Hulne Abbey, &c.

GEN. SUCCINEA, Drap.

32. S. putris, Linn.

On herbage in wet situations, common. This species attains considerable size on Equisetum Talmateia, a plant which ap-

pears to be peculiarly favourable to the development of land shells, probably from the amount of inorganic salts it contains. Besides the present mollusc, the following also live upon it: Helix fusca, H. sericea, H. rotundata, Zonites alliarius and nitidulus, Zua lubrica and Pupa umbilicata.

S. putris, var. gracilis.

In wet situations on a poor soil in exposed situations. Alnwick moor, Dunstanburgh, and Alnmouth.

FAM. LIMNÆADÆ.

GEN. PHYSA, Drap.

33. P. fontinalis, Linn.

On aquatic plants in ponds and rivers, Howick pond, river Aln. I kept several specimens of this shell in an aquarium for some months. They can raise themselves in water and sink at pleasure, as I have often observed, without having recourse to plants or other aids to assist their progress. They have, moreover, the power of walking along immediately beneath the surface of the water. Their usual mode of progression is by a series of jerks. In ascending or descending through water, the movement is a gradual and uninterrupted one.

GEN. PLANORBIS, Müll.

34. P. albus, Müll.

Howick pond on aquatic plants.

35. P. glaber, Jeff.

Fosse at Dunstanburgh Castle, on aquatic plants.

36. P. spinorbis, Linn.

Fosse at Dunstanburgh castle and in the Kimmere lough, on aquatic plants.

GEN. LYMNÆUS, Drap.

37. L. pereger, Müll.

Common in ponds, ditches, and bogs. Alnwick moor, Hulne woods, &c.

L. pereger, var. ovatus.

In a small pond near Dunstanburgh Castle.

38. L. truncatulus, Müll.

Frequent in ditches and bogs. Alnwick moor, &c.

GEN. ANCYLUS, Geoff.

39. A. fluviatilis, Müll.

Common on stones in running water. River Aln, Rugley burn, &c.

40. A. lacustris, Müll.

Rare. In the Kimmere lough upon the leaves of Nuphar latea.

FAM. AURICULIDÆ.
GEN. CONOVULUS, Lamark.

41. C. denticulatus, Mont.

Rare. A single recent specimen found below the Churchill at Alnmouth, near high water mark.

GEN. CARYCHIUM, Müll.

42. C. minimum, Müll.

This very minute species is common among moss, herbage, and decaying leaves. Ratcheugh, &c.

CLASS II.—ACEPHALA.
ORD.—LAMELLIBRANCHIATA.
FAM.—CYCLADIDÆ.
GENUS—CYCLAS, Brugiere.

43. C. cornea, Linn.

Common in rivers, ponds, and ditches. River Aln, Alnwick moor.

GEN. PISIDIUM, Pfeiffer.

44. P. obtusale, Pfeiff.

Frequent in ditches. Alnwick moor.

45. P. pusillum, Turt.

In ponds and ditches. Dunstanburgh, Alnmouth.

46. P. pulchellum, Jenyns.

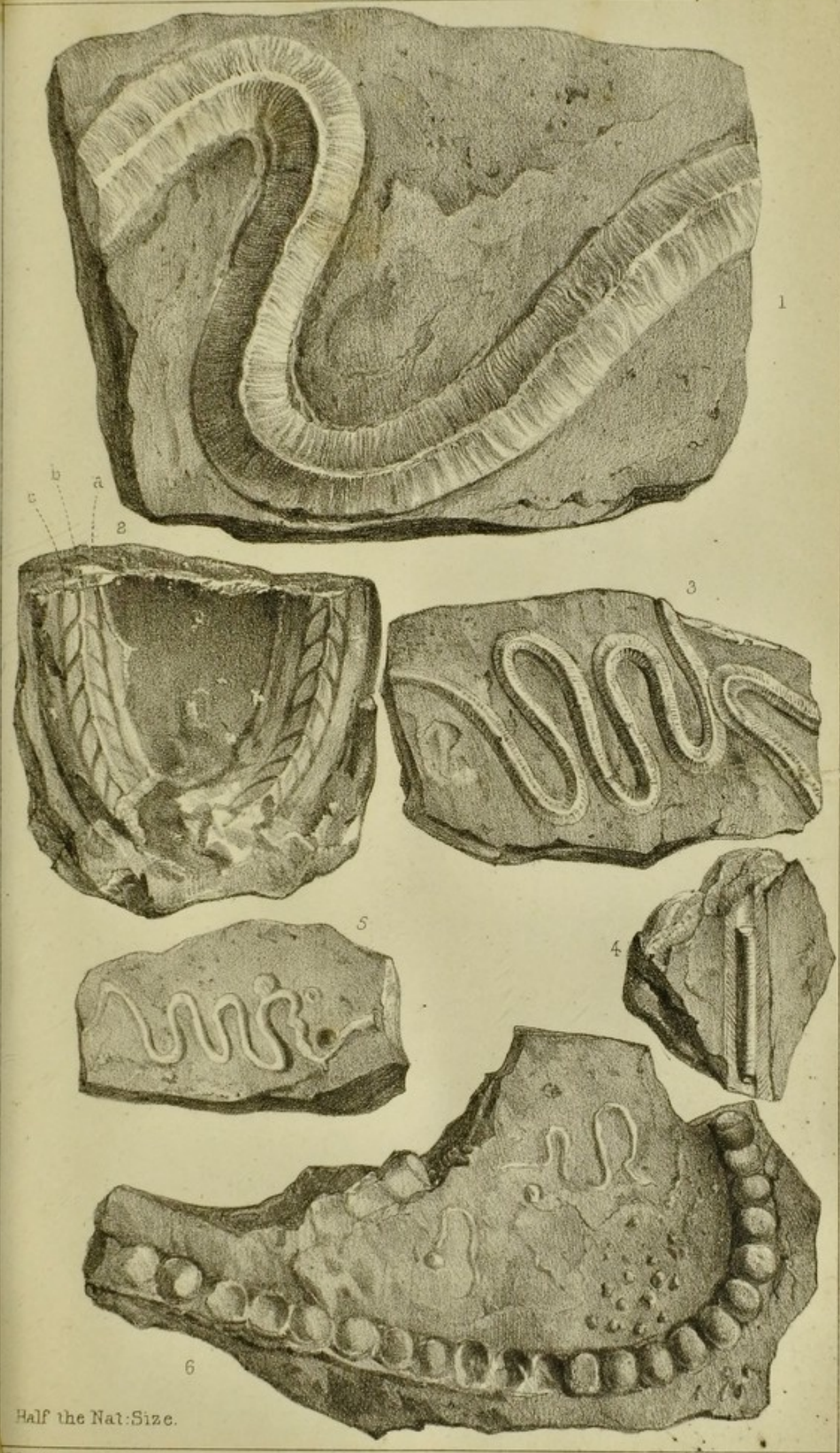
Ponds and ditches. Dunstanburgh, Kimmere lough.

FAM. UNIONIDÆ.
GEN. ANODONTA, Brugiere.

47. A. cygnea, Linn.

Common in running water and occasionally in ponds. River Aln, Howick pond.

Dead shells of the following species are occasionally met with at Alnmouth, where they have been introduced with ballast:—Paludina vivipara, Bithinia tentaculata, Neritina fluviatilis and Unio pictorum.



Half the Nat:Size.

John Storey, lith. York.

M & N. Hanhart, Imp.

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