THE TRANSACTIONS

AND

JOURNAL OF THE PROCEEDINGS

OF THE

DUMFRIESSHIRE AND GALLOWAY

SCIENTIFIC, ANTIQUARIAN,

AND

NATURAL HISTORY SOCIETY.

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OFFICE-BEARERS AND COMMITTEE.

SESSION 1878-79.

President—

J. Gibson Starke, Esq., F.S.A. Scot., F.R.C.I., Troqueer Holm.

Vice-President—

Will. M'Ilwraith, Esq., *Dumfries Courier.*

Secretary—

Robert Service, Corberry Hill.

Assistant Secretary—

James Lennox, Eden Bank.

Treasurer—

D. B. Hart, Friars' Vennel.

Members of Committee—

Dr Gilchrist, Crichton Royal Institution.
George Robb, Rhynie House.
William Lennon, Brooke Street.
James Thomson, High Street.
James Hutton, Charter House.
John Maxwell, Maxwelltown.
J. Glover Anderson, Corberry Place.
Peter Stobbie, Nith Street.

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JOURNAL OF THE PROCEEDINGS

OF THE

DUMFRIESSHIRE AND GALLOWAY SCIENTIFIC, NATURAL HISTORY, AND ANTIQUARIAN SOCIETY,

FOR SESSIONS 1876-77 AND 1877-78.

THE Society was instituted on November 3d, 1876, at a meeting held at No. 1, Union Street, Dumfries, by those interested in Natural History and Antiquarian pursuits. At that meeting there was a large attendance, and Dr Gilchrist was called to the chair. After a large number of specimens of Natural History and Antiquities had been examined, the Chairman stated the object of the meeting, and it was at once agreed that the Society be organised. The following gentlemen then gave in their names as members :—

John Adair, watchmaker, High Street.
William Adamson, 46, High Street.
James Aitken, The Hill.
William Allan, chemist.
J. Glover Anderson, 138, High Street.
Jas. Bell, commission agent, Bank St.
Wm. Biggar, jr., Laurieknowe.
Thomas Costin, jr., Roseland.
Dr Coupland, Dumfries.
Dr Cranstoun, The Academy.
Dr John Cunningham, Castle Street.
James Davidson, jr. of Summerville.
R. A. Dickson, Bank Street.
W. A. Dinwiddie, Greenbrae House.
Rev. W. N. Dodds, chaplain, Crichton Royal Institution.
Robert French, Bank Street.
W. G. Gibson, clerk, Crichton Royal Institution.
Dr Gilchrist, medical superintendent, Crichton Royal Institution.
J. J. Glover, Castle Street.
F. W. Grierson, Chapelmount.
J. D. Grierson, Wallacehall, Closeburn.
Dr Grierson, Thornhill.
D. Baird Hart, Friars' Vennel.
Wm. Hastings, English Street.
W. S. Hogg, Victoria Terrace.
Alex. Hogg, ditto.
James Jardine, *Courier* Office.
Dr Kerr, Buccleuch Street.
Adam Lambert, Dumfries.
William Lennon, C.R. Institution.
John Lennox, Edenbank.
James Lennox, do.
Alex. Loudon, High Street.
Dr Macdonald, Castle Street.
R. W. Macfadzean, Buccleuch Street.
John M'Lean, jeweller, High Street.
Louis M'Naught, chemist, High St.
Capt. Moriarty, Terregles Street.
Alex. Maxwell, Saughtree.
John Maxwell, King Street.
James Moodie, Geddes Place.
Dr Murray, Buccleuch Street.
James Murdoch, Rosemount Terrace.
T. K. Newbigging, Kirkbank.
J. H. Nicholson, Church Crescent.
William Pool, chemist.
Dr Russell, Crichton Royal Institution.
J. Rutherford of Jardineton.
J. Reid, Greystone Cottage.
R. Service, Galloway Street.
J. G. Scott, chemist.
Dr Sharpe, Eccles House, Thornhill.
James Shaw, Tynron Schoolhouse, Thornhill.
Peter Stobbie, 46, High Street.
Joseph Thomson, Gatelaw Bridge, Thornhill
Jas. Thomson, watchmaker, High St.
D. Welsh, Octavio House.
R. Wilson, 12, High Street.
John Ziegler, Dumfries.

From that number the following were chosen as office-bearers and committee of management, and were instructed to meet on November 10th to draw up a constitution and rules, choose a name for the Society, &c., and report to a subsequent meeting :—

President—
Dr Gilchrist, Crichton Royal Institution.

Vice-President—
J. Rutherford, Esq. of Jardineton.

Secretary—
R. Service, Maxwelltown.

Treasurer—
J. Moodie, Geddes Place, Maxwelltown.

Members of Committee—
J. Glover Anderson, 133, High St., Dumfries.
Dr Grierson, Thornhill.
W. G. Gibson, C.R. Institution.
J. Reid, Irish Street, Dumfries.
R. W. Macfadzean, Buccleuch Street, Dumfries.
F. W. Grierson, Chaplemount, Maxwelltown.
D. B. Hart, merchant, Dumfries.
J. G. Scott, chemist, Dumfries.

November 17th, 1876.

DR GILCHRIST in the Chair.

AT this meeting, held in the Town Hall, the Chairman submitted the following Rules, prepared by the Committee, and Revised by a Sub-Committee, which were unanimously approved of.

1st. The Society shall be called the DUMFRIESSHIRE AND GALLOWAY SCIENTIFIC, ANTIQUARIAN, AND NATURAL HISTORY SOCIETY.

2d. The aims of the Society shall be to secure a more frequent interchange of thought and opinion among those who devote themselves to Scientific, Archæological, and Natural History studies ; to elicit and diffuse a taste for such studies where it is yet unformed ; and to afford increased facilities for its extension where it already exists.

3d. The Society shall consist of Ordinary, Honorary, and Corresponding Members. The Ordinary Members shall be persons resident in Dumfriesshire and Galloway, present and admitted at a Public Meeting called for the purpose on 3rd November, 1876, and those who shall afterwards be proposed by two Members (to one of whom the candidate shall be personally known) and admitted at an Ordinary Meeting of the Society by a vote of the majority present. The Honorary and Corresponding Members shall consist of persons distinguished for attainments connected with the objects of the Society, who cannot attend as Ordinary Members, and who shall be proposed and admitted at an Ordinary Meeting in the same way as Ordinary Members.

4th. The Ordinary Members shall contribute annually the sum of Two Shillings, in advance, to the funds of the Society, or such other sums as shall be fixed at each Annual Meeting.

5th. The Office-bearers of the Society, who shall be Ordinary Members, shall consist of a President, Vice-President, Secretary, and Treasurer, and a Committee consisting of eight Members, three to form a quorum, holding office for one year only, but being eligible for re-election at the Annual Meeting of the Society.

6th. The Ordinary Meetings of the Society shall be held on the first Friday of each month, and shall continue during winter, beginning in October and ending with April, and at which the ordinary business of the Society will be transacted, papers read and discussed, and objects of interest examined.

7th. Field Meetings shall be held during the summer, beginning with May and ending with September, to visit and examine places and objects of interest, to give field demonstrations, to collect specimens, and otherwise carry out the aims of the Society, arrangements for which shall be made at the last meeting of each Winter Session.

8th. The Annual Meeting of the Society shall be held on the first Friday of October, being the first meeting of the Winter Session, at which office-bearers and members of the committee shall be elected for the ensuing year, reports, general and financial, for the past year will be received, and proposals for the extension and improvement of the Society will be heard and discussed.

9th. Each Member may introduce a friend to any Ordinary or Field Meeting of the Society—such friend not to be admitted more than twice during the same year.

10th. The Secretary shall keep a minute book of the proceedings of the Society, and a register of the members, ordinary, honorary, and corresponding, and shall give in a report of the Society's proceedings at the Annual Meeting.

11th. The Treasurer shall collect and take charge of the annual subscriptions and funds of the Society, and make payments therefrom, under the direction of the Committee, to whom he shall annually submit an account of his intromissions, to be audited and prepared for submission to the Society at its Annual Meeting.

12th. Alterations and Repeals of the foregoing Rules and new or additional ones, shall only be made by three-

fourths of the Ordinary Members present at any meeting of the Society, of which notice shall have been given at the previous monthly meeting.

13th. The Secretary shall at any time call a meeting of the Society, on receiving the instructions of the Committee, or the requisition in writing of any six Ordinary Members.

14th. All papers read before the Society shall become its property.

December 1st, 1876.

Being now duly constituted, the first regular meeting was held in the Town Hall—Dr GILCHRIST in the chair.

Mr Dudgeon of Cargen; Mr M'Ilwraith, Editor of *Courier;* Mr Fairley, Maxwelltown; Mr Robertson, *Herald* Office; Mr Thomas Jackson, Nith Place; Dr Thompson, Castle Street; and Major Bowden, Lochfield, were elected Ordinary Members. Mr Dunsmore, Castlehead, Paisley, was elected a Corresponding Member.

Mr Gibson exhibited a fine specimen of the Rusty Hoof Fungus, *Polyporus ignarius*, a species which grows on decaying willow trees, and in this locality has been found only at Dalscone and Nethertown of Troqueer. Also seeds of the Ivory Nut Palm, *Phytelephias macrocarpa*, a native of the low valleys of the Peruvian Andes, of which large quantities are imported to be used as a substitute for ivory in the manufacture of various small articles. Mr Gibson also showed some Samian Ware, recently dug up at Carlisle from a depth of twelve feet.

Mr Lennon exhibited a remarkable collection of British Water Beetles, containing 120 of the total number of 135 species recorded as occurring in Britain. Some of them are very rare, notably *Haliplus striatus, Hydroporus obsoletus,* and *H. incognitus,* only discovered in Britain within the last few years; and *Hyphydrus ovatus,* found in Auchencrieff Loch, and not known to inhabit any other part of Scotland.

The Chairman delivered a most interesting lecture on "My First Lesson in Geology and its Results," in which, after detailing the circumstances which had led him to take

up the study of Geology, he proceeded to give a general view of the different strata forming the earth's crust. Other Geological phenomena, such as the Upheaval and Subsidence of the Land, Volcanic Action, Disintegration of Rocks from Rain and other causes, and Formation of Deltas were explained, and illustrated by reference to a number of Maps and Diagrams. A large collection of specimens of Rocks and Fossils, most of them procured in the district, was also shown in illustration of the subject. Special attention was directed to several Stones bearing the peculiar striated marks of the Ice Age, and also to others, which had been rounded and worn by the action of water, the points of difference being particularly pointed out.

Mr Davidson read a paper on "Two of the Platanoid Metals," *Palladium* and *Rhodium*, giving an account of their properties and uses. Several specimens of these metals were exhibited, prepared by Mr Davidson, and stated to be perfectly pure.

January 5th, 1877.

The second meeting of the Session was held in the Town Hall—Dr GILCHRIST in the Chair.

Mr Gilchrist Clark of Speddoch; Dr W. A. F. Browne Crindau House; Mr Simpson, Crichton Institution; Mr Greig, Terreglestown; Mr Beattie, Buccleuch Street; Mr Ludwig, "Scottish Borderers"; and Mr Halliday, Stakeford, were elected Ordinary Members. Dr Battershell Gill, Regent's Park, London, was elected a Corresponding Member.

There was exhibited, on behalf of Dr W. A. F. Browne, a magnificent series of Micro-Photographs of the Brain, and much regret was expressed that owing to the unfavourable weather Dr Browne was unable to be present to explain them.

The Chairman exhibited specimens of the old Red Sandstone, with beautifully marked worm tracks from Cumberland and Orkney.

Mr Rutherford gave an interesting lecture on the "Electric Battery and Induction Coil," illustrated by a number of beautiful experiments.

February 2nd, 1877.

The Third Meeting of the Session was held in the Town Hall—Mr RUTHERFORD in the Chair.

The Chairman exhibited a specimen of the Great Northern Diver, *Colymbus Glacialis*, which he had that day shot on the Cairn.

There were also shown three fine Salmon Smolts and an Eel, which it had disgorged when captured.

Mr Thomson, Gatelawbridge, read a paper on "The Origin of the Permian Basin of Thornhill." *(See Transactions.)*

Mr Simpson read an account of "The Recent Discoveries at Mycenæ," in which full details of Dr Schliemann's researches were given.

March 2nd, 1877.

The Fourth Meeting of the Session was held in the Town Hall—Dr GILCHRIST in the Chair.

Mr Welsh, Waterloo Place; Mr Gooden, Corberry Place; Mr J. Gibson Starke, Troqueer Holm; Mr Johnston, Castlemilk; Mr Smith and Mr Landells of the *Courier* Office, were elected Ordinary Members.

The Chairman exhibited a number of Minerals collected by himself in Switzerland, Oxide of Tetanium, a set of Ornaments made of Derbyshire Spar, and a curious piece of Chinese Carved Work.

Mr LENNON showed a specimen of the Death's Head Moth, *Acherontia atropos*, found at Albany Bank last September.

Mr Jackson exhibited the Commissary Seal of Dumfries, of the time of Charles I., which is now in his possession.

The Secretary showed a box of Lepidoptera forced in artificial heat, most of which had emerged from the Pupa

state four or five months earlier than their normal time of appearance.

The Secretary intimated that he had received the following publications as a donation from the Royal Society of Christiania:—*Catalogues of the Coleoptera,* and of *the Lepidoptera of Norway, Der Pflanzenwelt Norwegens, Researches on a New Genus of Starfishes,* and a *Map of Norway.*

Mr Shaw gave a most interesting address on the "Fertilization of Flowers by Insects," illustrating his remarks by reference to a large number of diagrams of the various ways in which flowers are fertilized by insect agency.

Mr Lennon read a notice of the capture by himself of *Melitæa dilyma,* a Butterfly hitherto unrecorded as British, and a specimen of which he had secured a few years ago at Dalscairth. (*See Transactions.*)

The Chairman made some remarks on "An unrecognised cause of Floods," which, he stated, was the gradual silting up of river beds with stones, sand, and mud, brought down from the higher grounds, until the bed of a river was nearly of the same level as the surrounding lands.

April 6th, 1877.

The Fifth and last Ordinary Meeting of the Session was held in the Town Hall—Dr GILCHRIST in the Chair.

Mr Halliday, Maxwelltown, and the Rev. J. A. Campbell, Troqueer Manse, were elected Ordinary Members.

The Chairman exhibited a fine specimen of Graphic Granite; Mr Davidson, a Stone Celt found in Mabie Moss; Dr Grierson, a skin of the Common Eel, *Anguila acutirostris,* upwards of four feet long.

Mr Simpson read a most elaborate paper on the "Great Pyramid of Ghizeh," giving a full description of that wonderful structure, and stating the views held in relation to its purposes and uses by Professor Piazzi Smith and other eminent authorities.

Mr Starke read a paper on "The Sugar-Cane," in which

he described its manner of growth, the various sorts in cultivation, and the process of manufacture into sugar and rum.

Dr Grierson read a "Tribute to the Memory of Racky." *(See Transactions.)*

This concluded the business of the evening and the first Winter Session of the Society.

SESSION 1877-78.

October 5th, 1877.

The Annual General Meeting commencing a new Session was held in the Town Hall—Dr GILCHRIST in the Chair.

The Rev. J. Fraser, Colvend, and Mr Brown, Geddes Place, were elected Ordinary Members.

Mr F. W. Grierson exhibited a beautiful Serpent Skin from India, measuring almost nine feet in length; the species was unknown.

The Chairman exhibited a few fine pieces of Rock Salt from the Cheshire Mines, also some Marl from Carlingwark Loch.

In the unavoidable absence of Mr Moodie, Treasurer, the Secretary read that gentleman's Annual Report, which showed that the funds were in a satisfactory condition, as there was a balance of £1 8s 9d in favour of the Society.

The Chairman read an interesting account of the principal Geological features of the places where the Field Meetings of the past summer were held.

The Secretary read the First Annual Report, from which it appeared that the progress of the Society was satisfactory.

The following Office-Bearers and Committee were appointed for another Session:—President, Dr Gilchrist; Vice-President, Mr Rutherford; Secretary, Mr R. Service; Treasurer, Mr D. B. Hart; Committee, Messrs Anderson, Gibson, Macfadzean, Grierson, Scott, Adamson, Maxwell, and Beattie.

It was agreed that the Society should be formed into Sections, each to be under the charge of competent Members, who would promote the interest of their particular branch of study as far as possible, and at the end of the Session give in a Report of their department. The following arrangement was agreed to :—Antiquities, Mr J. Glover Anderson ; Botany, Messrs Gooden and Grierson ; Chemistry, Mr Davidson ; Entomology, Mr Lennon ; Geology, Dr Gilchrist ; Microscopy, Mr Rutherford ; Ornithology, Mr Hastings ; and Zoology (general), Dr Grierson.

November 2nd, 1877.

The Second Meeting of the Session was held in the Town Hall—Dr GILCHRIST in the Chair.

Messrs Joseph Scott, High Street, and James Houston, Greyfriars' Street, were elected Ordinary Members.

The Chairman exhibited some pieces of Calcareous Spar from Cuban Caves, Clay Nodules, a Californian Lichen, and a beautiful Chinese Silk Reel ; Mr Glover Anderson—a plan of the Sedilia of Lincluden Abbey ; Mr Service—a specimen of *Sphinx Convolvuli* caught in a Vinery at Edenbank, and a specimen of *Aromia Moschata,* caught at Moniaive on 3rd September last, being the first known Scottish specimen. Mr Hogg sent a Mollusc that he had found alive among Barcelona nuts on the preceding day. The species was unknown to those present.

Mr Rutherford read a paper on "The Telephone," giving a description, with the aid of diagrams, of the construction, principles, and mode of working of this remarkable instrument.

Mr Service, Secretary, read a paper on "The Appearance of *Colias Edusa* in the South of Scotland in 1877." and showed a series of 19 specimens of the butterfly captured in the district. *(See Transactions.)*

December 7th, 1877.

The Third Meeting of the Session was held in the Town Hall—Dr GILCHRIST in the Chair.

The Chairman exhibited a number of rare and valuable Crystals and some Isle of Wight Peebles ; Mr F. W. Grierson, a series of Incrustations of Lime, and a Coin of Ptolemy I. of Egypt ; Mr Lennon, one of the boxes distributed last summer by the German Government for the use of their officials, containing the ova, larvæ, pupæ, and imagines of the Colorada Potato Beetle. The insect itself was also shown.

It was stated that the Mollusc sent to the previous meeting by Mr Hogg had been ascertained from inquiry at the British Museum to be the *Helix Macularia* of Müller, a native of the Canary Islands, Spain, and the North of Africa.

Messrs Paterson, clothier ; Hutton, Charter House ; Sinclair, chemist ; Gibson, Bank of Scotland ; and Moir, chemist, were elected Ordinary Members. Mr Hastie, Curator of Royal Institution, Edinburgh, and Mr J. W. Lancaster, Birmingham, were elected Corresponding Members.

Mr Shaw read a paper entitled "Lessons from the English Names of Animals and Plants," showing how most of the names of our domestic animals had been preserved almost unchanged in many languages since they had their origin with the Aryan people, who at a remote period inhabited the Highlands of Western Asia. The names of a great number of Plants and Animals were also explained and their history given.

Mr Glover Anderson read "Notes on Lincluden Abbey." In concluding, Mr Anderson condemned in strong terms the present state of the ruins, and urged the desirability of having something done at once to arrest the progress of destruction. *(See Transactions.)* A long and animated discussion followed, but eventually it was agreed that the following Committee be appointed to ascertain the feelings of the proprietor—Captain Maxwell—in the matter, and report to next meeting : — Dr Gilchrist, Messrs Starke, M'Dowall, Glover Anderson, Service, Gibson, Thomson, and Rutherford.

January 4th, 1878.

The Fourth Meeting of the Session was held in the Town Hall—Dr GILCHRIST in the Chair.

Messrs Robb, English Master of the Academy; Callander, High Street; Thomson, Irish Street; Geddes, Hannahfield; Matthewson, Dalbeattie; Malcolm M'L. Harper, Castle-Douglas; and Charles Black, Arbigland, were elected Ordinary Members.

Mr Gibson exhibited the Pictograph, a new instrument for copying pictures; Dr Grierson, a specimen of the Short-tailed Vole and the Water Rail, *Rallus acquaticus*; the Chairman some false Cat's Eye Gems from India, with which Mr Starke contrasted the real article; Mr Rutherford, a pair of Telephones; Mr Service, twenty-four species of Plants in bloom in the open air, a result of the remarkably mild winter, as follows:—*Primula veris, Reseda odorata, Garrya elliptica, Myosotis arvensis, Arbutus unedo, Polyanthus, Hepatica, Berberis Darwini, Mahonia aquifolium, Lamium maculatum, L. amplexicaule, Erysimum sp., Cheiranthus cheiri, Alsine media, Senecio vulgaris, Bellis perennis, Alopecurus pratensis, Laurustinus, Charlock, Lilac Primrose, Cowslip, Viola tricolor maxima, V. odorata,* and *Aubrietia purpurea.*

The Committee appointed at last Meeting reported that they had addressed a letter to Captain Maxwell, "drawing his attention to the present unsatisfactory condition of the ruins of Lincluden Abbey, and stating that a general wish had been expressed by the Society that some steps should be taken to protect it from further decay, and preserve it as an interesting and instructive monument of the past," and that no answer had yet been received. After some conversation it was agreed to request Mr M'Dowall and Mr J. Gibson Starke to wait on Captain Maxwell, a course which it was thought would sooner lead to a good result.

In the absence of Mr Thomson, Gatelawbridge, Mr Hart read that gentleman's communication on "A new Glacial Deposit near Thornhill." *(See Transactions.)*

Mr Service read a short paper giving an account of the history and habits of "A Hothouse Pest" which had appeared in the district a few years ago, and had since spread from one glass-house to another with great rapidity. The insect —the mealy winged Aleurodes—was also shown.

The Chairman then gave an address on "Clouds," illustrated by a number of beautiful diagrams.

February 1*st*, 1878.

The Fifth Meeting of the Session was held in the Town Hall—Dr GILCHRIST in the chair.

Rev. W. Graham, Maxwelltown; Mr George Armstrong, Corberry Cottage; and Mr James Hogg, Saughtree, were elected Ordinary Members.

The Chairman exhibited a number of rare minerals, including Bituminous Shales from Brazil, Carbonate of Nickel, Carbonate of Cobalt, and others, and some Lichens from the north of Scotland; Mr J. G. Anderson, a number of measured drawings of the windows of Lincluden Abbey as they appeared when perfect.

Mr Service brought under the notice of the Society the appearance of large numbers of Bullfinches in the district during the last two years, which were proving most destructive to the fruit trees.—Dr Sharpe remarked that the same thing had happened in Eccles; these birds had been very scarce for many years, but were now met with commonly.

Mr W. G. Gibson stated that a number of Bullfinches' Nests had been seen in the grounds of the Crichton Institution, in the summer of 1877, for the first time.

A letter was read from Mr Thomson, Gatelawbridge, in reply to objections which had been stated to his paper, read at last meeting. The glacial origin of the deposit in question was re-affirmed. and further proofs and arguments advanced in support of that statement.

The Deputation appointed at last meeting reported that "they had held an interview with Capt. Maxwell of Terregles on the 16th ultimo, regarding the present condition of Lincluden Abbey. Capt. Maxwell explained that he had delayed answering the letter addressed to him by the Society on the

subject, because he found that to do all he considered necessary for the protection of the ruins would, in addition to excavations for the purpose of opening up the old foundations of the edifice, entail a great amount of money, and he did not feel certain, from the terms of the letter, how far the Society expected him to proceed in this expenditure. Mr Starke expressed his opinion that the more urgent remedy required was one to prevent further desecration and destruction of the Ruins by daily wanton mischief on the part of roughs, and also means to prevent cattle from entering the Chancel. To meet these it was suggested that a gate should be placed at the entrance of the Chancel, and a notice put up requesting visitors to report to him, as proprietor, all such wanton mischief as might come under their observation. Captain Maxwell mentioned that he has at present no cottage on the ground where the key of a locked gate might be kept; but it was stated that in the opinion of the Deputation a gate, although not locked but simply fastened with a notice to visitors to close it after them, would go a great way to remedy the evil in question, and the Deputation were glad to be able to report that Capt. Maxwell agreed to carry out these suggestions."

The meeting received the report with much pleasure and satisfaction, and it was ordered to be engrossed in the minutes. The thanks of the meeting was unanimously awarded to Messrs Starke and M'Dowall for the trouble they had taken in the matter.

After some discussion, it was then unanimously agreed that the Society petition the House of Commons in favour of Sir John Lubbock's Ancient Monuments Protection Bill.

Mr Lennon, being unable to attend the meeting, the Secretary read that gentleman's paper on "The Rarer Coleoptera of the District." *(See Transactions.)*

Dr Sharp made some remarks on the Geographical Distribution of Animals, with special reference to Mr Lennon's paper, and which were so much appreciated that Dr Sharp was requested to continue the subject on a future occasion.

March 1*st*, 1878.

The Sixth Meeting of the Session was held in the Town Hall—Dr GILCHRIST in the Chair.

Messrs Stewart and Hal. Gordon, Moatbrae; J. H. Maxwell, editor of *Kirkcudbrightshire Advertiser*; and William Copland, Nithsdale Mills, were elected Ordinary Members. Mr Starforth, architect, Edinburgh, was elected a Corresponding Member.

Mr Lennon exhibited a curious Jewel Case made of African Mahogany, and said to be nearly 300 years old; Mr Adamson—a small Stone Celt found in James Street when making excavations for new buildings; Mr Jackson—2 large Hungarian Silver Coins of the 16th century; Mr J. G. Anderson—the first volume of the *Dumfries Weekly Magazine* of date 1773, of interest as being the first newspaper published in Dumfries.

Dr Grierson delivered a long and interesting lecture on "What and How to send from Distant Lands," in which he explained the different modes of collecting, preserving, packing, and forwarding specimens of Natural History, and in concluding he urged all who might have it in their power to send such to the Thornhill or other local museums, in preference to sending them to any of the large National Museums, where they already had enough, and, moreover, could buy what they needed. The lecture was illustrated by a number of specimens from various parts of the world, of which one of the edible nests of a species of Swallow from Sumatra, a Humming Bird and nest from Demerara, and a Wasp's nest—*Polistes morio of Reaumur*—also from Demerara were the most remarkable.

April 5th, 1878.

The Seventh and last Ordinary Meeting of the Session was held in the Town Hall—Dr GILCHRIST in the chair.

Messrs Low, chemist; Thomson, ironmonger; Sir W. Broun, Bart.; and Mr Culton, Dildawn, were elected Ordinary Members. Mr M'Fadzean, Co. Galway, was transferred to the list of Corresponding Members.

Mr Moodie exhibited an Egg of the Common Fowl, to which a corrugated coil of calcareous matter was attached at the small end; also a number of pieces of Bottle Glass which had been completely rounded and smoothed by the action of the gizzard of a common fowl. Mr G. Armstrong, Corberry Terrace, showed a Silver Boddle of Charles I., found in the Corberry Nursery.

Considerable discussion took place on a proposal that a selection of the Society's proceedings and transactions be prepared during the Summer for publication.

Mr Service moved, and Mr J. G. Anderson seconded, that the proposal be adopted. Mr Beattie moved an amendment, and Mr Maxwell seconded, that the matter be held over till next Annual Meeting. On a division being taken, 15 voted for the amendment, and 8 for the motion, the former being thus carried by a majority of 7.

Mr Shaw read a paper on "Modern Theories of Colour in regard to Animals," in which he showed, with the aid of coloured illustrations, how in many cases the colours of Insects, Animals, and Birds had assumed a protective resemblance (apparently) to the objects amongst which they lived.

Mr M'Ilwraith made some remarks on "Some Flint Chips" taken from an arrow maker's shop amongst the sandhills, near the farm of Torrs, in Wigtownshire.

Dr Gilchrist gave an address on "Zoophytes," in which he showed and explained their structure and economy by means of a large and beautiful series of specimens and some excellent coloured drawings.

September 4th, 1878.

A Special Meeting was held in the Mechanics' Institute —Dr GILCHRIST in the chair.

The Chairman stated that the purpose of the Meeting was to take into consideration an offer made to himself, as representing the Society, by Mr Corrie, Ashbank, to hand over to this Society the property belonging to the former Natural History and Antiquarian Society.

It was moved by Mr Rutherford, and seconded by Mr W. G. Gibson, that Mr Corrie's offer be accepted, and Mr Starke moved that the thanks of the Society be conveyed to Mr Corrie, both of which motions were unanimously agreed to. The Secretary was then instructed to receive the property referred to from Mr Corrie, and take charge of it in the meantime.

October 4th, 1878.

The Annual Meeting beginning the Session of 1878-79 was held in the Mechanics' Institute—Mr RUTHERFORD in the chair.

Rev. W. Lytteil, M.A., Kirkmahoe Manse, and Mr Murdoch, Rosemount Terrace, were elected Ordinary Members. Mr P. Cameron, jr., Glasgow, and Mr J. Thomson, Gatelawbridge, were elected Corresponding Members, the latter being transferred from the list of Ordinary Members until his return from Africa, whither he is about to proceed with an Exploring Expedition.

Mr F. W. Grierson exhibited a large Herbarium of Phanerogamic and Cryptogamic Plants collected during the past season, and also an Instrument to explain the changes of the seasons, which he named the *Horaphraziter*.

The Secretary read his Annual Report, which showed that the Society had a very successful session. The Membership was now 100, and the average attendance at the Ordinary Meetings had been 27, and at the Field Meetings 16.

The Treasurer read his annual statement, showing a balance of £3 17s 5½d in favour of the Society.

Mr Grierson read the report from the Botanical Section, enumerating the plants and their habitats, which had been met with when at the Field Meetings and elsewhere.

Mr Glover Anderson read the report of the Archæological Section, briefly going over the objects of Antiquarian interest that had been visited by the Society.

The Chairman made some remarks explanatory of two beautiful Micro-photographs executed by himself of a fly's tongue, and a specimen of *Pediculus vestimenti*

Mr Hastings read some "Ornithological Notes," in which, after stating that although he had few opportunities of seeing for himself what is to be seen in wild nature, still many interesting birds that had been collected in the district were sent to him for preservation, he said that last August a young Crossbill had been sent to him from Palgowan, a sheep farm in Penpont, and which no doubt had been bred in that part of

the country. They had now entirely disappeared from the Dalswinton woods, where their nests were at one time frequently met with. In the neighbourhood of Palgowan there is a shepherd's house known as the Lorg, situated at the head of the Water of Ken, and here there is a famous breeding-place of the Raven, Buzzard, and Mountain Ouzel. A little further down the Glen, on the hillside, there is a larch plantation, the trees in which are of no great height but are thickly studded with Heron's nests. Mr Hastings said that during the past year he had received more of the Terns or Sea Swallows than ever before. He had received the Lesser Tern, the smallest species of the genus, from Carsethorn; the Common Tern, which, although common on some parts of the coast, was not so with us; from the Solway Frith, very many of the Arctic Tern; and three specimens of the Caspian Tern from the Scaur, near Dalbeattie, where they had been shot last October.

It was then agreed that a selection of the Society's Proceedings and Transactions be printed for the use of the Members.

Office-bearers, Committee, and Conveners of Sections were then appointed for the ensuing Session.

FIELD MEETINGS OF 1877.

The place chosen for the First Meeting was the farm of Killochan, and accordingly, on the 5th of May, a party of sixteen drove in a waggonette out to near the head of The Glen. Thence, under the guidance of Mr Rutherford, they were conducted down the right bank to the Glen Mills, where Mr Rutherford pointed out a rock which salmon were unable to surmount when ascending the stream, and stated as a fact that might throw some light on the vexed question whether parrs were the young of the salmon, that no parrs were ever found above that rock. Proceeding up the left bank, the ruins of an old castle (or chapel, or possibly

neither) known as Killochan Castle, were next inspected. It is situated on a position of great natural strength ; the remains of what appears to have been a ditch are quite visible on three sides, and the fourth is formed by the almost precipitous sides of the Glen. A field below Killochan farm house, where drainage operations were being carried on, was next examined. At a depth of a few feet below the surface there appeared to be an extensive deposit of boulder clay, and large quantities of this had been thrown out in forming the drains. The peculiar striæ, denoting the grinding action of the ice during the "Glacial Period," were very clearly seen on almost all the stones that had been exposed. A short walk further, and the Gull Loch was reached—one of the great breeding places of the Blackheaded Gulls *(Larus ridibundus)* which at once resented the intrusion on their parental cares by loud screaming and a copious use, no doubt, of very bad (bird) language. It was certainly a pretty sight, so many thousands of these beautiful birds all on the wing together, while their incessant cries harmonised well with the rugged nature of the surroundings. In walking round the loch the nests were seen in great abundance, built of coarse grasses, and placed a few inches above the surface of the water. Dozens of nests containing eggs were seen within the space of a few yards square. Dr Gilchrist, in a few remarks, stated that the loch was, without doubt, formed by a glacier which had descended from the surrounding hills till, filling up the hollow of which the loch was the centre, it had flowed off in the direction of the Glen Mills. Turning homewards, on coming over the hill a magnificent prospect broke on the view. The whole valley of Lower Nithsdale, with the town of Dumfries in the centre, the Wamphray hills, with their snowclad summits gleaming in the rays of the afternoon sun, and away to the south, part of the Solway Firth, the whole seen through an atmosphere of singular clearness and purity, formed a picture of surpassing beauty, and one which will not fade easily from the memory of those who were present. Leaving the brow of the hill with some reluctance, the old quarry

above Cluny was next visited, and there the direction of the Silurian strata was well seen, and on some parts the action of the waves of ancient seas was very clearly marked. A number of Geological specimens were here secured, but during this meeting the Botanists and Entomologists of the party were unsuccessful in getting any but common species. The long-continued cold and drought of Spring had retarded the growth of even the common wild flowers—the common yellow Primrose, some Violets, and a few other common Plants, were almost the only ones yet in bloom, and, as a natural sequence, insects were also scarce. A large number of that pretty little fern, the Moonwort *(Botrychium lunaria)* was, however, secured in its general habitat, an old pasture field.

The Second Meeting was held at Amisfield on 2d June. There was an attendance of 21, the party leaving Dumfries by the 1.45 p.m. train for Amisfield Station, where they were met by Mr Jackson and conducted to the Mansion-House. On reaching the entrance gate a splendid Weeping Elm attracted much attention ; its long trailing branches would have effectually barred the way, but they had been trained to stout poles, thus forming a beautiful green arch. The lower side of the avenue was very gay with the wild flowers of Spring—the blue wood Hyacinth, the yellow Primrose, and the crimson Lychnis forming bright masses of colour. Passing round the Mansion-House, Mr Jackson pointed out some remains of arches, traces of an older building, with which the present one has been incorporated. The old Tower was then inspected, Mr Jackson pointing out the more interesting features of this ancient building. Several of the lower floors are still in use, and seem fitted to stand for many years to come, but the upper ones, with the exception of the great oaken rafters, are all gone. A narrow spiral stair of stone leads up to the highest part of the Tower, an oblong apartment, loopholed on all sides, and in which a watchman was constantly kept in the brave days of old to give notice of approaching danger, or of signals from the beacon fires on distant hills. Several of the more adventurous and least

corpulent members of the party ascended to this apartment and enjoyed the grand outlook. A few pieces of furniture still remain ; part of a table, at which James the V., the "Gudeman o' Ballangeich," is said to have dined, and some other remnants were pointed out. A murderous-looking steel crossbow, which had probably done some execution in its day, was also examined. A visit was next made to the Camp, which is situated about a hundred yards from the Tower. It is believed to be the work of the Romans. It is nearly square, and a wide ditch still environs it on three sides, and what seems to have been a gate or entrance is visible on the North-East and West sides, while the fourth or South side is occupied by a range of farm buildings. These have apparently been built of materials from some ancient building, as parts of armorial bearings, figures, and inscriptions were visible in the walls. The party were next conducted through the well-kept garden and hothouses. Attention was directed to the nesting boxes for small birds placed at intervals along the garden walls. Most of these boxes were occupied by young families of Tits, of several species. Boxes for the Starlings are also placed on tall poles and on all the windows of the old Tower. As a result of the accommodation and protection afforded them the birds do a great amount of good, and the gardener stated that no caterpillars or other insect enemies ever troubled him. It would be well were Mr Jackson's example more generally followed ; we would then hear less of the failure of so many garden crops through the attacks of insects. Entering the Mansion-House, Mr Jackson showed his visitors some very valuable relics of Robert Burns. The first was the original MS. of "Wat ye wha's in yon toun," written in his exciseman's notebook, of the same pattern as is still used. There were also some entries of grocer's stock-in-trade which the poet had taken down on the same day in which this song was written. The next was the poet's own copy of the Edinburgh Edition, and this was examined with a reverential interest. Almost every page was occupied with notes and corrections in his own

handwriting, the names of persons mentioned in the poems, which had been left blank, being all filled in. Mr Jackson also exhibited a fine mahogany model of the Sarcophagus in the Great Pyramid of Ghizeh, and stated that, according to the measurement of the model, which was guaranteed to be correct, Professor Piazzi Smith's theory, that the Sarcophagus was a measure of capacity, was found to be disproved.

A visit to the large Camp on the summit of Barshell Hill still remained to complete the programme for the day, so, under the guidance of Mr Jackson's gardener, the party set off and reached the hill top to find the rain descending in drenching showers. Under these circumstances the examination of the Camp was made as brief as possible. Some doubt was expressed as to its makers, and it may perhaps have been occupied successively by Britons, Romans, and Norsemen. However, it is in a very complete state of preservation, is of very large extent, quite circular, encompassed with two deep and wide trenches, and at one period must have been a place of no small strength and importance. Much regret was expressed at the state of the weather, as the greater part of Dumfriesshire and Galloway can be seen from the Camp on a clear day.

The Third Meeting was held at Colvend on the 7th of July, when a party numbering 17 left Dumfries by the 8.32 a.m. train to Dalbeattie, whence a 'bus conveyed them to Colvend Manse. Here they were met by the Rev. Mr Fraser and some other members, thus augmenting the party to the number of 20. A visit was first made to Mr Fraser's Garden, which was then in full beauty. For hardy plants the Manse Garden is probably unequalled in Galloway; a numerous assemblage of the choicest and rarest Alpine and herbaceous plants have been gathered together, and are as luxuriantly healthy as if still in their native habitats. The party next proceeded to Douglas Hall, where, leaving the 'bus, a general scramble along the shore and the rocks began. The Samphire, *Crithmum maritimum*, was noticed high up on the cliffs, but no one cared to risk life and limb for its possession,

and the botanists had to be content with a few small pieces, knocked down with stones. The most of the party entered the Piper's Cove, and traversed it for about an hundred yards, but lights having gone out they had to desist from further exploration, without having noticed anything worthy of mention except *an unmistakeable odour of whiskey—perhaps* a relic of the old days of the smuggling fraternity. Passing onwards, the Rock Rose, the Sea Pink, Sea Campion, Ragged Robin, Rock Saxifrage, and Cranesbill were noticed growing in boundless profusion, and adorning the rocks with gorgeous masses of colour. Many ferns were also noted, the Sea Spleenwort being of course plentiful, but although careful search was made, the Royal Fern was not found, and it is now supposed to be extinct in Colvend. At Port-o'-Warren, that peculiar plant the Sea Radish *(Raphanus maritima)* was found, and further on the rare *Astragalus glyciphyllus.* On the top of Castlehill some fine specimens of the stately Mullein *(Verbascum thapsus)* were secured by Mr Shaw; and near to Rockcliffe no less than four species of roses were gathered—*Rosa canina, R. rubiginosa, R. spinossissima,* and *R. pimpernelifolia.* Several of the less common birds were noticed during the walk—among them, however, the Peregrine Falcon was conspicuously absent. This noble bird had an eyrie near Port-o'-Warren, but of late years it is supposed to have been destroyed. The preservation of game has led to a serious disturbance of the balance of Nature by the almost total destruction of so-called enemies, thus allowing others to increase to an extent prejudicial to many interests. We may instance the enormous flocks of wood pigeons, which now make a living on the farmers' crops, and the vast swarms of field mice, which have appeared in many parts of the country, and which are so destructive to young plantations and upland pastures. From an agricultural point of view, birds of prey are not only quite harmless, but absolutely necessary for keeping other birds from increasing out of all proportion to their place in Nature. A breeding-place of the Herring Gull was very interest-

ing, but a nearer acquaintance with their nests and eggs was impossible, as these were placed high on precipitous rocks, quite out of reach of ordinary nest-hunters. Several pairs of the lesser black-backed Gull were also seen nesting with their white-winged congeners. Wheatears, Whinchats, and Stonechats, together with a few Mountain Linnets, were also numerous, and a pair of the Ring Ouzel were seen. The day being so bright and hot, insects were abundant. A specimen of the Clouded Yellow Butterfly *(C. Edusa,)* was secured after a prolonged chase ; other two were seen, but owing to their proximity to dangerous precipices, their capture was not attempted. Among other Lepidoptera, the Artaxerxes Butterfly, the Blues, and the Little Heath were gambolling about in merry groups ; and dancing hither and thither like a winged jewel was the Burnet Hawk Moth *(Zygeana filipendulæ)* clad in a vest of brilliant green and crimson. Mr Lennon captured the following Beetles along the shore :— *Elater halteatus, Altrous rhombiros, Dashillus cervinus, Cistela murina, Otiorhynchus sulcatus, O. ovatus, Ernobius abritus, Trachyplocus scabriculus,* and *Lerna puncticollis.* After a short halt at Rockcliffe, the return journey was commenced, and not a few members of the party were glad to find themselves seated, the rough scramble among the rocks, and up to the more accessible ledges, having resulted in a plentiful crop of abraded and contused wounds. A visit was made, in passing, to see the granite quarries of Oldlands, but as the workmen had left, a vein of Kaolin, which it was reported had been recently discovered, could not be seen. However, Dr Gilchrist very kindly pointed out the chief features of the rocks, which have been all rounded and curved from glacial action. Arrived at Dalbeattie, there was just time, before the 6.30 p.m. train was due, to see through the Granite Polishing Works of Messrs Shearer, Smith, & Co., where the appliances for polishing and cutting the huge blocks were matters of great interest.

The Fourth Meeting was fixed for Newabbey and

Criffel, and took place on August 4th, when the party, which included Mr Adam White, so well-known for his long connection with the British Museum, started at 9 o'clock a.m. in a waggonette from Dumfries. The ascent of Criffel was made from the farm of Ardwall up a short but steep side. After an hour and a-half of arduous climbing, the summit was reached by the foremost of the party, followed at short intervals by the remainder, as their strength permitted. A thorough search for insects and plants was made on the top, and for the former was very successful, upwards of thirty species of beetles being found under the stones—many of them very rare. Butterflies and Moths were, however, very scarce, owing to the cold wind blowing across the summit. Further down, a few specimens of the Mountain Carpet Moth were got, and numerous *Crambidæ*, a genus of little moths very common in wet summers. Before descending, a short rest was taken, and the party had now time to look on the vast expanse of sea and land spread out before them. Looking like a mere speck, the town of Dumfries was seen away to the north, and a long line of silvery white showed where the Nith flowed for many a mile. To the eastward, the town of Annan was distinguished by its canopy of smoke hanging above it, and down the English coast were many a town and hamlet similarly crowned. The Solway Firth lay without a ruffle on its broad bosom, dotted here and there with large fleets of fishing-boats. Towards the west the view was still more striking, the more picturesque points being well known to most of those present. The coast of Colvend was of especial interest from having been the scene of last meeting, and several of the points were distinctly recognised. Nearly the whole of the Galloway coast and all the higher mountains of the range known as the Southern Highlands, were in the prospect; on the southern horizon the outlines of the Isle of Man could be made out, but the day was not bright enough for a clear view of it. A descent was made on the western side of Criffel into the deep glen formed by

the Glen Burn. Several deep ravines were passed on the way, apparently formed by the little streams which were then harmless enough, but in winter must be raging torrents. In some places the streams sink into the hillside, to reappear again a few hundred yards further down. In this way a subterranean passage is made, which gradually widens, until, after some heavy rainfall, or when the snow melts, the whole of the mass of rocks and soil is burst open altogether, and a ravine formed. Such geological changes do not require a period of vast antiquity, but may be witnessed almost every year on such a mountain as Criffel. On arrival at New-abbey, the beautiful old ruins of Sweetheart Abbey were inspected, and some fine plants gathered within the old walls. Mr Gooden gathered the following plants on Criffel: —*Narthecium ossifragum, Drosera anglica, Rhyncospora alba, Erica cinerea, E. tetralix, Galium saxatile, Thymus serpyllum, Tormentil officinalis, Polygala vulgaris, Pinguicula vulgaris, Juncus articulatus, Euphrasia officinalis, Hydrocotyle vulgaris, Pimpinella saxifraga, Narduus stricta, Eleocharis pauciflora, Pedicularis palustris, Eriophorum vaginatum, Vaccinium myrtillis, Orchis maculata, Gentiana campestris, Myrica gale.* In Sweetheart Abbey he collected—*Polygonum aviculare, Ethusa cynapium, Jasione montanum, Stachys betonica, S. sylvatica, Teucrium scorodonia, Geranium molle, Conium maculata, Polygonum bistorta.* The beetles collected by Mr Lennon were as follows: —*Notiophilus palustris, N. susbstriatus, N. rufipes, Carabus violaceus, Leistus rufescens, Calathus piceus, Pterostichus lepidus, P. vitreus, Harpalus ruficornis, Patrobus assimilis, Trechus socialis, Hydroporus tristus, H. neglectus, H. umbrosus, Colymbetes bistriatus, Agabus paludosus A. nitidis, Philhydrus nigricans, Helophorus dorsalis, Quedius lævigatus, Leptacinus batychurus, Malthodes marginatus, Colymbetes cupreus,* and *Donacia comari,* besides a number of commoner species.

The Fifth and last Meeting of the Summer was held at Thornhill on 1st September. Proceeding to the Museum

the party was welcomed by Dr Grierson, and shown over the grounds, where are gathered together a vast number of rare and curious plants, some of which are quite unique. "Mount Ararat" stands in the west portion of the garden, and a winding pathway leads to the regions of perpetual snow—an effect produced by layers of white quartz rocks. At various heights are growing the special groups of plants peculiar to a mountain region, the whole giving a very good idea of Alpine Botany. Various old Urns, Crosses, and Querns are placed here and there throughout the grounds, and have a very peculiar effect. An old Elm stump was pointed out as having a curious history. For more than four hundred years the tree grew in the bed of the Marr Burn ; the stream had gradually undermined and hollowed out the stem, till, after a night of storm and flood, the tree was uprooted and overturned. It was taken to a woodyard, where it was cut up, and the stump lay there for upwards of a year. It was ultimately taken to the Museum, and now, from the base of the old stump, a number of young branches have grown and apparently mean to flourish. Within the Museum itself a whole day might have been profitably spent, but a hurried glance was all that could be spared. After a few hours' examination of the wonderful collection of subjects in every branch of Natural History and Art which are here contained, the party proceeded to Eccles House, the residence of Dr Sharp, who very kindly showed the visitors his famous collection of beetles. It numbers more than 100,000 specimens of nearly 30,000 species or distinct kinds. They are contained in boxes of a pattern known as book-boxes, and are arranged round the sides of a large room, much in the same way as the books and shelves of a library. A small ivory label on each shows the name of the family or genus to which the contained insects belong, and reference is thus easily made to any particular species which may be under study. The collection of British Beetles is almost complete, very few of our native species remaining to be added. Compared with the brilliant green, golden, purple, or crimson

armour of the foreign ones, they are an insignificant-looking lot; but what they want in size and colour is amply compensated for by the beautiful anatomical structure of the small species. Many of the exotic varieties are of great value, and in the beetle market would fetch almost as much as jewellery, to which in beauty, colouring, and delicacy of form and structure they are no mean rivals. The strange uncouth forms, sharp, hornlike, offensive, and defensive appendages, hooked and spiny limbs, were a matter of wonder to all. The party, after looking over numerous boxes and their interesting contents, getting a pretty fair idea of the great assemblage of insects known as Coleoptera, went to see some of the grand old trees which are so profusely scattered around the Mansion-House of Eccles. Prominent among them stands a noble Beech which might shelter a regiment under its wide-spreading branches. Its circumference round the extremity of the lowest branches is 110 yards. Its trunk at three feet from the ground measures 21½ feet in girth. A circle of branches, each of the size of ordinary trees, springs from the main stem at from 4 to 7 feet from the ground, with an average girth of 7 feet. The number of cubic feet of timber must be enormous; but owing to the want of time no calculation was made. Another tree that at once commands attention is a Walnut,* now sadly riven by many a winter's storms, but enough of it remains in health and vigour to make it one of the largest of its kind. Dr Sharpe stated that he had seen very few to equal this one in size, even in Spain, its native country. On the right of the avenue a very fine Roman Camp was visited. It is of the usual square form, and the ditch or fosse is in a very good state of preservation. It is worthy of remark that, contrary to the case in regard to other Roman Camps in the district, no relics of its founders have been found near this one. A short walk further brought the party to Nith Bridge, where Dr Grierson told the story of its erection. It appears that

* It is to be regretted that this noble tree fell a victim to the great storm of 14th October, 1877.

about one hundred years ago the Nith was here crossed by a ferry boat, and it seems the ford was a dangerous one, from there being a cross erected a short distance off, which still remains, protected by an iron railing. These crosses were in olden times always erected at places of danger and difficulty, such as mountain passes and fords. Well, at that time, a party returning from Dalgarnock Fair, then one of the most important in the district, found the Nith in full flood, but determined to cross at all hazards. The party numbered six, and just as they were about to move off a tall man in black clothes stepped into the boat, which was shortly swamped and all its occupants drowned. The bodies were all recovered except that of the unknown personage, who was supposed to have been the Evil One. This sad accident roused the district to the necessity of having a bridge built, and a subscription being set on foot the present structure was soon erected. This story was of peculiar interest, from one of our members who was present being nephew of one of the drowned persons.

FIELD MEETINGS OF 1878.

The First Meeting was held at Lincluden and Holywood on Saturday, May 4th, when, although the weather was most unpromising, fourteen members attended. The party left Maxwelltown about eleven o'clock, and the first place visited was Lincluden Abbey. Mr J. Glover Anderson conducted the party round the ruins, pointing out the sites of the various buildings and pertinents which composed the ancient structure. He also directed attention to the peculiarities of the architecture which distinguish Lincluden, and also the uses and signification of several parts of the chancel. Some regret was expressed that nothing had been done to protect the ruins from mischievous youths and others, who apparently look on the ruins as a playground specially erected for their benefit. After a vote of thanks had been

passed to Mr Anderson for his instructive remarks, the party proceeded to Holywood Kirk, where a few hours were spent in looking up the old epitaphs and inscriptions on the tombstones. A good many of the tombstones are dated from the early part of the 17th century. The intelligent sexton pointed out some places where in digging graves he had come upon traces of the Abbey of Darcongal, which in ancient times stood on the ground now occupied by the churchyard. This Abbey was at one time a place of some celebrity. It is said to have been founded between 1121 and 1154. No trace of it now exists above ground, but the sexton remembers having been in the vaults belonging to it which are situated below the present stable of the Abbey Farm, close to the churchyard walls. In 1860, while digging a grave, he came upon the fireplace of the Abbey kitchen. Some of the ashes were given to local antiquaries, but the grate crumbled to dust on being handled. A short distance off, and at about a depth of three feet lower, a very beautiful piece of ornamented flooring was exposed. A memorial of the Abbey, however, still exists in two excellently-toned bells, which do duty in the belfry of the kirk. They do not seem to have suffered much from the tear and wear and ding-dong of centuries. One of them bears the following inscription, which is quite legible :—IWFTEN ABBAS SACR ME FIERI FECIT AGOVICE,—and which was translated into "The Holy Abbot Iften caused me to be made." The party were here joined by the Rev. W. Lytteil, M.A., the well-known philologist, whose work on place-names entitled. "Landmarks," is a standard one on the subject, and from whom a large amount of information was derived regarding the names of places in the surrounding district. The Druid's Circle on the farm of Kilness was next visited. It consists of eleven large boulders (tradition says there were twelve at one time) arranged in the form of a Druidical temple, enclosing a space of ground about eighty yards in diameter. Mr Lytteil was strongly of opinion that the Druids had never had any connection with it. However, the generally received

opinion is that the circle was connected with a grove of oak trees which seems anciently to have stretched away from the spot six or eight miles north-westward into the parish of Glencairn, and this sacred grove, this "holy wood," is said to have given its name to the parish. The botanists present, although remarking a very noteworthy difference in the appearance of vegetation from what it had at the meeting held at same time last year, attributable to the genial weather of this spring, did not find any rare plants. Some insects were secured, amongst them being the scarce *Incurvaria muscalella*, and a remarkably small example of *Pieris Napi*, less than an inch broad across the expanded wings.

The Second Meeting was held on June 1st, when the places visited were the classic "Braes of Dalwinton" and their charming surroundings. To her votaries Nature extended her warmest welcome in sunny smiles, rendered all the more conspicuous and enjoyable by aching recollections of wintry weather lingering in the lap of May. Early summer had just commenced to unfold her treasures, and there was not that detracting profusion so characteristic of the later months, but nevertheless a fair number of specimens, both entomological and botanical, were obtained in the intervals during which the more enthusiastic of the collectors were able to withdraw their attention from the delightful scenery with which they were environed. Mr Lennon was especially fortunate in securing specimens of the rare *Corymbites holosiriens, Harpalus tardus, Phyllobius verdicollis, Haltica longicollis, Crepidodera helxines, Sharederma testacea,* and *Podogrica fucipes,* while Mr Goodon either collected or observed in flower the following species:—*Anagallis arvensis, Anchusa sempervirens, Euphrasia officinalis Geum rivale, Lysimachia nemorum, Polygala vulgaris Pinguicala palustris, Ranunculus acquaticus, Sherardia arvensis, Valeriana dioica, Veronica becabunga, Allosorus crispus, Gallium montanum, Gnaphalium dioicum,* and *Menyanthes trefoliata.* The party, on arriving at Auldgirth per the 12.30 train, immediately commenced the ascent of

the Moloch Hill, and for the earlier portion of their climb had to wade through a luxuriant growth of the parsley fern, which spread around them for acres. From the summit one of the most magnificent scenes which Nithsdale or the South can boast of lay at their feet. The frequent but foolish wish that "they could be there and look at it for ever" was felt and uttered, but the party descended nevertheless, and proceeded up the burn towards Dalswinton, Dr Gilchrist securing some remarkably fine geological specimens on the way. Dalswinton Castle, to the site of which the present mansion stands in close proximity, belonged to the family of the Comyns, and must have been a fortress of considerable importance as early as the time of Wallace, who is reported to have reduced its English garrison by a strategy similar to that by which Sanquhar was captured, and tradition also mentions it as his resting place on the night following the memorable engagement in which he totally routed the English near by. Caerlaverock has better claims to this honour, however, and the story is probably only another example of that hero-worship accorded to the patriot by the Scottish peasantry, and which is manifested by the existence of a similar legend regarding every place he was ever within a reasonable or unreasonable distance of. But the Castle is possessed of considerable historical interest, from the fact that within its walls were concocted the famous letters which, falling into the hands of Bruce, revealed to him the treachery of Comyn, and which contributed so much to the cause of Scottish liberty, for had Bruce not become possessed of them the dark scene in Greyfriars' Monastery would never have taken place, and the battle of Bannockburn never have been fought. The Loch was next visited. Apart from the beauty of its features, natural and artificial, much interest centres in it as the cradle of the steam-boat, the first vessel propelled by steam having been launched here by Mr Patrick Miller, the then proprietor, and Mr James Taylor, his collaborateur in the invention, on the 4th of October, 1788, the experiment causing such general interest that the shores of

the beautiful little lake were crowded with spectators, whose surprise at its complete success can be easier imagined than described. A feature of great interest at the loch is the heronry, where several couples of these birds are preserved by the proprietor, Mr Leny, whose sedulous care in the preservation of the various wild birds frequenting the district is most commendable. On their return to the station the party found that two hours would elapse before the arrival of the next train, and split into two parties, one waiting upon it, the other proceeding by road to Dumfries, where all arrived about half-past eight.

The Third Meeting took place on Saturday, the 6th July, in the neighbourhood of Bridge of Dee. The morning was showery, and fears of a wet day no doubt prevented some members being present, but the day turned out one of the most pleasant description, the hot sunshine being tempered with intervals of shade and a cooling breeze. The party proceeded by the 8.32 a.m. train to Bridge of Dee Station, where they were met by Mr Grierson, of Keltonhill School, under whose experienced guidance they explored a large part of the district. The Botanical section of the Society mustered in strong force, but of the other sections the only representatives present were an entomologist and an antiquary, and these gentlemen, to avoid "isolation," wisely determined to co-operate with the botanists. The first plant of interest met with was growing in the hedgeside, not far from a dismantled cottage. It was a single white Rose, of a species not indigenous to Britain, and quite unknown to those present. Near the same place a hedge of Privet—a true British Olive, as Dr Gilchrist stated—in full bloom was scenting the air with its delicious fragrance. In the sluggish waters of a shallow stream were found some large patches of *Ranunculus aquatilis,* studded with pretty white flowers. Mr Shaw stated that the plant was scarcely known as a native of the Tynron district, and that more of it grew in this burn than he had seen all his life. Numerous species of Grasses were gathered on the farm of Threave

Mains, but nothing of special note. Near Threave Castle, a large extent of marshy ground, from which, as the party approached, rose flocks of Wild Ducks, and Herons, Snipes, Sandpipers, and other aquatic birds, was next explored, and a number of plants found. The wetter portion was covered with a strong growth of the Bottle Carex, amidst which a white variety of the *Cardamine pratensis* was not uncommon. A great floral treat awaited the party at a small, black, deep pool, on whose waters floated a quantity of the *Nymphæa alba*, the exquisitely beautiful white flowers presenting a most charming contrast to the black water. At considerable risk of a "ducking," as many flowers were gathered as formed bouquets for all present. Near the edge of a muddy bay formed by the Dee the graceful little *Lobelia dortmanna* and the queer-looking *Alisma ranunculoides* were noticed, and a number of specimens secured by Dr Gilchrist and Mr Grierson, who waded in for them. A thicket of *Scirpus lacustris*, over six feet in height, was growing near the same place. On dry banks near at hand was a plentiful growth of the Lilac Devil's-bit Scabious *(Scabiosa succisa)* intermingled with which was the Sea Plantain *(Plantago maritima)* in flower. It was explained that the plant grew away from the neighbourhood of the sea only where the soil contained potash. The party next proceeded across the well-known stepping stones to the island on which Threave Castle is situated. At the edge of the Dee a bed of a pretty little plant *(Helosciadeum inundatum)* was seen, the flowers of which are remarkably tiny and white. The party were not disposed to examine Threave Castle from an antiquarian point of view, so a brief stay only was made. A large plant of the Hemlock *(Conium maculatum)* almost fills up the hole in the west wall made by the shot from Mons Meg. Ferns were very abundant in the crevices, the whole of the eastern wall being covered as high as the eye could distinguish it by a dense growth of the *Asplenium ruta-muraria*, *A. adiantum nigrum*, *A. trichomanes*, and two or three others were also found. The north

wall of the castle is of a dirty greenish yellow caused by the growth of a Lichen *(Lichenora parietina)* on the stones. This plant only grows on a northern aspect, consequently none of it was found on the other walls. On returning across the Dee a great number of fresh water sponges were noticed on the stones—a curious little species about the size of a shilling, and a quarter of an inch thick, of precisely similar texture to the sponge of commerce. The next place visited was Kelton Hill, the scene of the famous fairs of the olden time, and from the top of it a splendid view of the surrounding country was obtained. After a short rest in Mr Grierson's residence, where they were shown some antiquarian relics—amongst which were a broadsword, which last saw service on Culloden Moor, and some granite balls, measuring from 5 to 8 inches in diameter, numbers of which were found round the walls of Threave a few years since—the party went on by the Kirkcudbright road to the Billie's Glen. A fine patch of *Geranium pratense* was found on the wayside, and a nice white variety of *Valeriana dioica.* A small burnside was covered with the poisonous Water-hemlock, and further up grew plentifully the common Butter Burr, which is very local in the district. The Glen would have repaid a much more minute search than could be made. However, some good things were secured. The common Dog's Mercury covered almost the whole of the interior of the Glen, and on the ledges of the rocks were numerous patches of the pink-flowered grass, *Melica uniflora.* Mr Grierson pointed out a place where earlier in the season that curious little fern, the Moonwort, grows in thousands, but it was then, of course, too late for it. A mine once sunk in expectation of finding lead was pointed out. It is sunk about 30 yards deep into the east side of the Glen, and the entrance is through a very fine natural arch, which one of the party sketched at the request of Dr Gilchrist. In the field above the Glen some bare rocky knowes were covered with masses of the little white *Sedum anglicanum.* On others were found the Rock Rose the blue *Jasione montana,* and the Wood

Moneywort *(Lysimachia nemorum).* In a boggy place at the foot of the Glen a number of the rare Butterfly Orchis were secured, thus worthily finishing the gathering of the day. Altogether nearly a hundred species of flowering plants and grasses were found, leaving out of consideration such species as are of general distribution in the district.

For the Fourth Meeting, on August 3rd, so few members turned out that it was decided not to keep a record of what was done.

The last meeting, on Saturday, 7th September, was well attended. The party proceeded to Lochanhead by the 12.20 train for Hills Tower and neighbourhood. At the quarry on the north side of the station Dr Gilchrist pointed out the chief features of the Silurian strata, which dip westwards at an angle of about 70 deg., as elsewhere throughout the district. Above the quarry the Reindeer Moss was found, and further on the Grass of Parnassus was growing in the bog in great abundance. *Euphrasia officinalis,* the Eyebright, and *Pedicularis sylvatica,* the Red Rattle, were also found in company with other plants of less note. A deep ditch in process of excavation was examined by the geologists, but nothing but the usual features of the glacial drift was noticed. A short distance further brought the party to the Castle of Hills (or Loch Roiton, as it is termed by Grose), which is of little historical importance, but is of some interest to the archæologist, from the fact that it forms a connecting link between the old Scottish baronial peel or tower and the modern mansion. It combines the external features of the former with the more prominent characteristics of the latter; for although the walls are crested with frowning battlements, and the ground floor devoid of any nearer approach to windows than two or three small loopholes, the upper rooms are large, well-lighted, and airy, with many of the conveniences of modern life. The comparatively low and flat nature of the site of the tower precludes its forming a prominent object in the landscape, but, nevertheless, when viewed from a "vantage point" on the brae between it and the kirk, it forms a

striking and picturesque accessory, the upper portion standing out boldly against the blue waters of the loch, the piquancy of the roof and battlements rescuing from tameness and contrasting finely with the bare and less interesting portion below, while the gate-house, a perfect *bonne bouche* to the artist, nestles closely to its side, leading us irresistibly to think of the days when in it,

> Above the gloomy portal arch,
> Timing his footsteps to a march,
> The warder kept his guard.

Nearing the castle, the visitor perceives that the building now forms one side of the farm-yard of the adjoining steading, a portion of one other side of the square being occupied by the remains of the old castle wall and the gate-house, the latter being the principal entrance to it, as it was to the court-yard of the castle. The lower portion is wholly occupied by the portal arch, which is surrounded by bold and effective mouldings, the beauty of which is sadly marred, however, by a tame and insipid label. The upper portion consists of the watchroom, from which the warder surveyed all visitors through two extremely small loopholes, with a view to ascertain whether their intentions were peaceful or otherwise, and presents an unbroken exterior with the exception of a small panel containing what has been called the Royal Arms of Scotland, although the bearings are somewhat different to those generally used, the middle chief, fess, and honour points being occupied by a hirsute individual crowned with a turban, and brandishing in one hand a dagger and in the other a sword. On this panel, Grose (according to his own statement) perceived the date 1598, but the visitors on this occasion, in common with all others who have visited it from the time of the redoubtable Captain to this, have utterly failed in their endeavours to make the discovery. The Castle proper bears upon its front, panels for openings for five coats of arms, but three only remain, and whether the other two bearings were ever fixed or not it is impossible to tell. Those still in existence are in good preservation; one, however, is

so obscured by an ash sapling that it is impossible to get a good view of it. The arms are (1) Maxwell of Hills; (2) Sir John Maxwell (Lord Herries); and (3) Edward and Agnes Maxwell. Entering the building we find ourselves in a small hall, flanked on one side by the door leading to the dungeon or ground floor, and on the other by a circular staircase, 3ft. 6in. wide, by which we reach the second floor, in which the joisting, &c., is still nearly perfect, but of the next floor only a few timbers remain. The storey consists of two rooms, and what has apparently served the purpose of our modern w.c., the larger rooms being well lighted with large ingoing windows, while the stone jambs, which are handsome in character, still remain. They are, however, comparatively modern. The next floor it is impossible to examine, so passing upwards the battlements are reached. These are 2ft. 6in. wide, and rest wholly on the wall, the parapet only being corbelled out, and are well secured from any accumulation of surface water by openings to large gargoyles of cannon shape, which, projecting from the walls, add much to its picturesque appearance. We may mention that the parapet is above the average height, the embrasures being three and the merlons four feet. A new roof has just been added by the proprietor, Mr M'Culloch of Ardwall, and much praise is due to him for his zealous care of the ruins, exemplified in this and in many other instances.

As we have indicated, the history of the Hills is extremely scanty. It is noteworthy, however, that Edward I. spent a night at the Castle or in its immediate neighbourhood, the note of his expenses connected therewith being in the Wardrobe Accounts. At that time, and until the fall of their House, the Tower was one of the numerous possessions of the Douglas family. It then passed into the hands of the Maxwell family, one of whom, Herbert, said to be an illegitimate son of John, third Lord, founded the now extinct house of Maxwell of Hills.

After the old Tower had thus been minutely inspected, the party next proceeded to Lochrutton, where one portion

went along the shore searching for plants, &c., and the others went to see the Water-Works. On the south shore of the Loch a number of interesting plants were picked up, but they were of the species usually found in such situations. The two parties again joined at Lochaber, whither they had gone by different routes across the fields. Some boggy places, quite covered with the lovely blue flowers of the *Scabiosa succisa*, were well searched for varieties of that plant, and white and rose-coloured ones were found. The rare Sundew, *Drosera anglica*, one of the family of flesh-eaters which has attracted so much attention from men of science during the past few years, was found close to the water edge, with the remains of half-digested insects still sticking to the viscid glands with which the leaves are covered. A bed of Lignite of great depth is situated at the north end of the Loch, and was examined very carefully. A number of the painted Lady Butterflies were flying about the hedge sides at Woodhead, and it is somewhat strange that this butterfly, so abundant this year, has not been seen in the district for the last eleven years. Nothing further specially interesting, with the exception of the Quarry in the Longwood, was met with, and the party reached Dumfries again shortly after six o'clock.

TRANSACTIONS.

The authors of the following papers are alone responsible for the opinions expressed:—

THE ORIGIN OF THE PERMIAN BASIN OF THORNHILL.

By JOSEPH THOMSON, Gatelawbridge.

Read 2d February, 1877.

(1.) SUPERFICIAL POSITION AND AREA OF THE PERMIAN ROCKS OF THORNHILL.

Those of you who have travelled through the middle ward of Nithsdale, in the centre of which Thornhill stands, will have observed that it is a small valley in itself formed by hills of Silurian rock, which surround it on all sides, and from which in a former era of the world's history it has been worn out by some denuding agent. At the bottom of this small valley lie the rocks which are to form the subject of our inquiry to-night. They extend a distance of 12 miles from the low-lying hills which bound the valley on the south to the mouth of the Pass of Dalveen—in fact the extreme length of the valley. A line running from east to west through Thornhill will lie along its greatest breadth, which is about 4 miles. That these rocks are referable to the Permian system is inferred from the following facts:—1st, They overlie the Carboniferous system unconformably; 2d, they are to a large extent identical with strata which unconformably overlie the Coal measures in Ayrshire; 3d, they are the same as those which, in the Dumfriesshire basin, pass southward under the Trias of Cumberland.

(2.) CHARACTERISTICS OF THE SYSTEM.

Perhaps few places in Great Britain present a more interesting development of the features which so peculiarly characterise the Permian strata as the little basin of Thorn-

hill, and when I say so I simply express the opinion of Professor Geikie, than whom there is no man more qualified to speak on the question. Confined as the rocks are in a small isolated place, we have everything so condensed, as it were, that nothing but the great characters which distinguish these rocks are brought out in bold relief. The Lake origin of the strata, the great volcanic outbursts of the period, the complete absence of any organic remains, and the red colour of the rocks, are all here seen or expressed in the very clearest of geological language. But as it will be utterly impossible to give anything like a comprehensive idea of the development of all these distinguishing characters in Upper Nithsdale in any paper of moderate length, I propose to draw your attention to-night simply to the origin of the rock basin in which those strata have been deposited.

(3.) Geological Position and Relations of these Rocks.

In pursuing our inquiry, then, it will be necessary, in the first place, to consider the geological position and relations of the Permian rocks of Thornhill to those underlying and surrounding them. The valley, as I have already said, is a great hollow cut out from the Silurian strata which rise up in the form of hills all round it. Lying along the whole western and southern sides is a stripe of rocks belonging to the Carboniferous Limestone Series. On the eastern side this stripe is more imperfectly developed; while here and there amongst the Permian rocks these strata also appear. On taking a section of these formations across the valley we find that they occupy the following relative position:—(*a*) We have the Silurian rocks with beds tilted vertically from east to west, across which the valley runs. They rise up on each side as low ranges of hills; (*b*) forming the basement beds of this hollow we have the Carboniferous rocks much in the form of a shell, having the central mass of the sandstone cut out, leaving unconnected parts on each side of the valley; (*c*) in the hollow thus cut out from the Carboniferous rocks we find the Permian sandstones situated. A section from

north to south would present the same geological features, being only a little more elongated.

A moment's consideration of the geological position of these rocks, as I have thus described it, cannot fail to show that they have been deposited in a completely isolated inland lake. This is, of course—independent of the direct evidence bearing on the case—what we might have expected, as geological theory generally tends towards a lacustrine origin for most of the red Permian sandstones.

(4.) Theories which may Account for the Origin of this Lake.

The question which we have now to consider is—What has produced this hollow or rock basin? There are only three agents which could possibly originate a lake basin, and these are (*a*) internal movement, (*b*) water, or (*c*) ice.

It could not have been the first of these, as there is not the slightest evidence, in this case, of either the upheaval or subsidence of the surrounding or underlying rock, and if either had taken place, signs of such movements must have become apparent.

Against water as the agent there are many objections of even a more decided nature than those against internal movement. We have, for instance, no recent example of water forming hollows at all; in fact, how could it? Water has only an excavating power when it is in motion. To move, it must have an inclination downward, or a force such as wind, to impel it. Consequently, the moment that a surface which is being denuded becomes horizontal, the motion must cease, and along with it of course the denuding power. Hence the impossibility of water forming a hollow. Motion in water produced by wind pre-supposes the existence of a lake or sea, so that the movements of water in that case could only extend the boundaries of, not produce, a lake. We are thus, so far as I can see, bound down to the last alternative, viz., an ice origin. Doubtless in the present state of geological knowledge, this ice theory is rather a

daring one, and if it rested merely on the grounds that we cannot understand how this hollow could be produced in any other way, it would indeed have rather a precarious foundation. Fortunately, however, there is evidence of a more positive nature, which goes far to substantiate it. Allow me, shortly, to draw your attention to this evidence, which we will consider under three heads—(*a*) ice as a lake-forming agent, (*b*) proofs of glacial conditions about the commencement of the Permian Era, (*c*) the favourable contour of the ground for the formation of a mass of ice.

(5.) Evidence in Favour of a Glacial Origin.

(*a*) Ice as a Lake-forming Agent.

By the great majority of our most eminent living geologists, amongst whom I need only mention Ramsay and Geikie, the theory is held that most existing lake basins were first formed during the Glacial Epoch, and were due not to elevation or subsidence, but to actual erosion by glaciers, in proof of which it is shown that lakes are exceedingly numerous in those countries where erratic and other signs of glacial action exist; and that they are comparatively rare in tropical and subtropical where no signs of ice action exist. That is to say that beyond glaciated countries lakes almost abruptly cease. This is a coincidence which could hardly be accidental, and the well-known erosive action of glaciers makes it all the more probable that they were the principal if not the sole agents in producing our present lake basins. Without, however, going so far as to suppose that even most existing lake basins have originated in this manner, it is sufficient for our purpose to understand that ice is a great lake-forming agent.

(*b*) Proofs of Glacial Conditions during Permian Times.

Passing now to the direct evidence bearing on the subject, let us consider, in the second place, the proofs of glacial conditions existing during the time when this basin was scooped out.

Of late years the necessity of assuming the action of ice to explain the anomalous characters exhibited by many strata in more than one geological system has become more and more apparent, until it is now held by most of our most eminent men of science that there have been various ice ages at different periods of the world's history. Among these ice ages there is one to which facts point very strongly as existing at the commencement of the Permian Era, the very time when this lake basin must have been formed.

On this question let us quote from two of our modern leaders in geology—Professors Geikie and Ramsay.

The former describes a singularly detached area of Permian breccia, between the villages of Leadhills and Crawfordjohn, in the following terms :—"This breccia," he says, "has been entirely derived from the waste of Lower Silurian rocks. The stones are angular and subangular, often of a somewhat flat form, and vary in size up to a foot or more in length. They strongly resemble the form of stones in boulder-clay or morraine rubbish ; indeed, when the usual stratification fails to appear, and the stones have been thrown together irregularly, the resemblance to a glacial deposit is most striking. A careful search was made among them for striated stones, but without success."

These facts evidently indicate very conclusively the existence of glacial action on the Lowthers.

In the *Geological Journal* Professor Ramsay speaks still more emphatically in favour of an ice age, to account for the origin of similar breccias found in the southern counties of England.

He founds his belief on the following formidable array of evidence :—"1st, The great size of the stones—the largest observed weighing three-fourths of a ton. 2nd, Their forms —rounded pebbles are exceedingly rare. They are angular or subangular, and have those flattened sides so peculiarly characteristic of many glacier fragments in existing morraines, and also of many of the stones of the pleistocene drift, and the morraine matter of the Welsh, Highland, Irish, and

Vosges glaciers. 3d, Many of them are highly polished, and others are grooved and finely striated like the stones of existing Alpine glaciers, and, like those of a more ancient date, scattered over various parts of the world. 4th, A hardened cementing mass of red marl, in which the stones are very thickly scattered, and which in some respects may be compared to a Red Boulder Clay, in so far that both contain angular, flattened, and striated stones, such as form the breccias wherever they occur. The contained fragments are all derived from the district, although some of them can be shown to have travelled a distance of 30 miles. Here, then, we have evidence of the most positive nature, taken from our own district as well as the south of England, which points most conclusively to the existence of glacial conditions at the very time when this Permian Basin must have been produced.

(c) Configuration of the Land Favourable.

The next question to be considered is whether the configuration of the land was favourable for the accumulation and descent of a mass of ice by the erosive action of which the Permian Rock Basin we are considering might have been produced. To trace out this question satisfactorily we must transfer ourselves in thought away back to the Devonian Epoch. It is very easily demonstrable that during the earlier parts of this era the great stretch of Silurian strata, which extends over most of the southern counties of Scotland, sank deep into the bowels of the earth, from which it was re-elevated in a vastly altered condition. Its half shaly beds had been subjected to metamorphosing agents by which they were changed into greywacke ; and its former horizontal lines of stratification had been bent and contorted by pressure, and were now generally standing vertically. Immediately after its re-elevation it must have been subjected to an enormous amount of denudation, which resulted in the formation of all the great valleys that now exist in the surrounding counties ; in fact, all the great natural features of the South

of Scotland were moulded previous to the Carboniferous Era, a statement sufficiently substantiated by the fact that many of the hollows cut out from the Silurian rocks are occupied by strata of Carboniferous Age, a circumstance which could not have occurred in any other way. Among the valleys thus produced was the one which now forms the Middle Ward of Nithsdale, in which Thornhill is situated. During the earlier parts of this era (the Carboniferous) this valley, with the rest of the country, was submerged under a sea in which strata belonging to the Carboniferous Limestone Series were deposited. In the latter part of the same era the country was re-elevated, and presented the principal surface outlines which we now behold, and these outlines so far as they relate to Middle Nithsdale, I have already described. There is, however, a very important factor which must not be lost sight of in the consideration of this subject. I allude to the vast amount of denudation which must have taken place since Permian times, and which must have materially contributed in lowering the height of hills which surround the valley. It would be altogether out of the question to attempt to form any conception of the amount of this erosion, but if during one era whole valleys can be excavated on a large scale, surely during many eras greater results must have been produced. This is all the more probable when we consider that, since the Carboniferous Epoch, Scotland has been oftener above than below water, and consequently made all the more liable to be denuded by the usual agents—water and ice. We will not attempt to guess at the amount taken off the hills ; but I think we cannot go far wrong if we merely use indefinite terms and say a few thousand feet. Now, adding this unknown but undoubtedly large amount to the present very great height of the Lowthers and the smaller ranges which diverge from them to form the valley of the Nith, we would then have most favourable surface condition for the accumulation and descent of a mass of ice ; because, as you are aware, glaciers are an accumulation of snow (formed on mountains, if in the temperate region, or

even at the level of the sea, if in an Arctic climate) which has gradually assumed the form of ice. Like water, this accumulation has a tendency to pass from higher to lower grounds, its natural courses being the valleys which diverge from the mountains.

(*d*) Conclusions Drawn.

Summarising, then, these various facts which I have brought before you to-night, we find—First, that we have a rock basin which must have been produced about the commencement of the Permian Era, the origin of which cannot be satisfactorily explained by reference to either igneous or aqueous agents. Second, that the following evidences point to the probability of a glacial origin:—(1) Ice is the most important lake-producing agent. (2) A very considerable mass of evidence collected by the most eminent geologists of the day supports the belief that there were glacial conditions at the commencement of the Permian Era, some of the evidence having been collected in our immediate neighbourhood. (3) During the existence of these glacial conditions the Lowthers formed a very considerable range of mountains from which minor ranges ran, forming the valley of Middle Nithsdale, in which the rock basin was situated, thus presenting favourable surface outlines for the accumulation and descent of a mass of ice.

With these facts before you I leave you to consider whether there is not great probability of a glacier having really been formed on these mountains during the time referred to, and of its having descended down through the valley, scooping out a rock basin in its passage, which became the lake in which the Permian sandstones of that district were deposited.

THE OCCURRENCE OF MELITÆA DIDYMA NEAR DUMFRIES. By William Lennon.

Read March 2d, 1877.

It is with feelings of much pleasure that I take the liberty of bringing under your notice this evening the capture of a species of Butterfly, never before known, as an inhabitant of any portion of the British Isles.

To those of you who know something of Entomology, I need only state that this new species is one of the Genus *Melitœa*, and which has hitherto been found principally on hilly and wild uncultivated tracts of country. All the species of this Genus are distinguished by their chequered appearance, and have been named *Frittilaries* from their close resemblance to those out-of-date flowers, the Frittillary Lilies.

It is some years since I captured the specimen now brought under your consideration. It was about the end of the month of June, the day was very bright and hot, and this is distinctly brought to my remembrance from the unusually large swarms of *Argynnis Euphrosyne* and *A. Selene* which were floating around me, and of which I captured at the time a large number, most of which are still in my possession.

This new Butterfly has a great resemblance (outwardly) to those two species, viz., *Argynnis Euphrosyne* and *A Selene*, amongst which it was caught. Indeed, its similarity in general appearance thereto is so great the probability is that, from this cause, it has hitherto escaped detection. For this same reason I was myself under the impression at the time that it was merely a well-marked variety of the common type, and, therefore, after casual observation, laid it aside together with my gatherings for the day.

Having at that date turned my sole attention to the study of *Coleoptera*, I did not return to the examination of these gathered specimens until a few months ago (November last), when on re-opening them this insect again commanded my earnest attention. On communicating thereon with our

Secretary (Mr Service), we together made minute examination of it, but after careful research could find no trace whatever of such an insect in any books within our reach treating of British Butterflies. We therefore determined on sending it for identification to the Entomological authorities in London. In due course we were favoured with a reply from the editors of "The Entomologist," desiring every detail in connection with its capture, and thereafter urging me to assure them of its being a *bona-fide* specimen caught in Britain. Having fully satisfied them in every particular connected therewith, the result of our correspondence has just been embodied in an article on the species in question from the pen of Dr Jenner Weir in last month's publication (February) of "The Entomologist," and it affords me pleasure in laying this journal now before you. And in conclusion, I have only to specify the exact locality of its capture, which was at Dalscairth, to the left of the Dalbeattie Road, at the bottom of the plantation below the meadow. And let me further inform any of our friends now present who purpose devoting some of their time and attention to the study of Entomology in any of its numerous branches, that their researches at this particular spot are certain to meet with success.

A TRIBUTE TO THE MEMORY OF "RACKY."

By Dr Grierson.

Read April 6th, 1877.

More than six years have passed since there was brought to Thornhill Museum a little animal said to be a Raccoon, and it received the name of "Racky," but it was evident that it was not a Raccoon; its general aspect was not that with which I was in any way familiar. After consulting various authorities in Natural History, at length I was able to identify it with the Brown Coatimondi *(Nasua naurica)* of South America, an animal belonging to the family Viverridæ, of the order Carnivoræ. It was the Rev. Alex. Donaldson of

Strathaven who was the donor, and he stated that it had been brought from Para in the Brazils, and he had had it in his possession for about two months.

The size of the animal was somewhat that of a little dog, measuring from the tip of the nose to the root of the tail 19 inches, and the tail measuring 13 inches. The prevailing colour was chestnut brown, lightest on the breast and abdomen ; the tail ringed, with lighter and darker shades ; its legs were short, and the toes were provided with strong claws ; it used its fore paws to lift its food. When it walked it set the sole of its feet upon the ground after the manner of a bear. Its ears were short and rounded ; the eyes were placed unusually forward, and were nearly black ; its prominent feature was its long nose ; its teeth were small, but it could give a good bite, as at first I frequently experienced in my hands ; its strength was in its arms. Almost every kind of food offered it was acceptable—bread and milk, potatoes, now and then a bird, slugs and worms, fruits in their season, was its bill of fare ; of sweets it was passionately fond, and in the time for strawberries and cream it was highly delighted. It was not very susceptible of cold. In very cold weather it kept its den, which was in a box filled with fine hay ; its power of generating heat was great, and it was always warm in its den. Its voice was confined to a chirp, loudest when excited. No great sagacity was at any time manifested. With myself it was familiar, but it was only with myself. Of late years it gave up the bad practice of biting me. Strange dogs did not much alarm it, and dogs generally were very shy of it, and never made an attack. With my own dogs it was quite indifferent; its mentalism seemed almost wholly directed to its food. Uneventful was its life, only now and then escaping from the place where it was kept, and occasionally getting hold of a chicken. It was always healthy and always had a good appetite. Even when its end came, it came without indications of sickness or disease. In the evening it had taken its food as usual, but on the morning of the 24th ultimo, when food was taken to it, it did not

appear. On examining its den there it lay dead, its body bent, and its little feet drawn together as it used to lie when asleep. Sleep on, though there was no kindred to mourn! Nature, from whom thou hadst thy birth, kindly again received thee, and has wrapped thee in her pall of oblivion!

COLIAS EDUSA IN 1877. By Robert Service.

Read November 2d, 1877.

There is nothing in the whole range of Natural History of more interest than the study of the incessant changes which are going on from year to year among the plants, animals, and insects around us. Some species suddenly or gradually disappear, others appear to take their place, or those that are already present increase in an alarming manner, spreading their devastating hosts with startling rapidity over wide tracts of country. The Grasshopper Plague and Colorado Beetle of America are familiar recent instances of this most destructive increase.

But it is not of a change fraught with desolation and ruin of which I am about to tell you. Certainly the larvæ of *Colias Edusa* cause, I understand, an appreciable amount of damage on the Continent among clover and other Leguminous crops, but we may safely say this Butterfly will never become a noxious insect in our uncertain climate. I am sure most of you noted this golden beauty on the wing during the past season, and the thought no doubt occurred to those who do not make a special study of the insect tribes that it was surely a Butterfly they had not before seen. And, so far as this district is concerned, this supposition would be correct, in the case of our younger members at least.

This Butterfly has always been a favourite subject of speculation among Entomologists, from its peculiar characteristic of appearing only at intervals of many years in most parts of England. In Scotland it has hitherto been of excessive rarity. In some few districts of the extreme south of England

it is met with almost every year in less or more abundance. Further north it is found every few years, and in the other parts of the country it is only seen at rare intervals. In Scotland the first recorded capture was made in Arran in 1848, by Professor Sir Wyville Thomson. Four years later, one was captured near Largs, in Ayrshire, on 12th September, by Mr Birchall. The next, or third Scotch specimen, was secured at Kirkmahoe on August 17th, 1857, by our own Mr Gibson. I find that information in the volume of the *Naturalist* for 1857, and on the same page there is a particularly interesting extract from the *Dumfries Herald* of date September 4th of the same year, which I now read as follows :—

"The present season is very prolific in insect life. Seldom have we seen the Peacock Eye and Red Admiral in such abundance in this district. (It might be mentioned in passing that the former has not been seen here for about twelve years, and the latter, although unusually plentiful in Autumn, 1876, was represented this Autumn by a few stragglers only.) A specimen of the Clouded Yellow was captured a few days ago at Kirkmahoe, and on Tuesday seven more were taken, and a good many more seen near Glencaple. As there is only one recorded capture of this "Favourite of Entomos" in Scotland, we hope some of them may escape the ruthless net of the collector ; and we may soon be able to look on it as one of our local species."

A wish which was not gratified, however. In 1859 some were seen near Newbie, and in 1862 Mr Lennon took it in considerable numbers near Caerlaverock.

Since then no one has seen it in Scotland (so far as I am aware), but in Southern England it has been seen occasionally in fair numbers. It was in these circumstances, then, with feelings of no ordinary surprise and pleasure, that Entomologists greeted its great outburst this year. From even so far north as Orkney, where a solitary specimen was seen, to the southernmost point in England, it has appeared in almost every locality in more or less abundance. The Entomolo-

gical journals are crowded with notices of its unexpected occurrence, mostly accompanied with the remark "not seen here for five, ten, or twenty years," as the case might be. In our own district the first one was seen by Mr Gibson on 3rd June. Two or three days afterwards I was told that some yellow Butterflies had been seen at Priestlands and Mabie. Following that, Mr Lennon came with the startling intelligence that he had captured *Colias Edusa*. Then, on the 9th June, I was near the Newabbey road, early in the afternoon, when a Butterfly flew over the hedge and settled on a Dandelion flower. One glance was sufficient, there was *Edusa* glittering in its golden raiment, the first I had ever seen alive. There was an unwonted trembling in my limbs, and a thumping in my chest, as I advanced on the unconscious insect with the stealthy creep of a cat, hat in hand, for I had no other weapon. The aim was correct, *Edusa* was underneath, and quicker than ever it was done before, my coat was cast off and thrown over the hat to make all secure.

I need not tell you how head and shoulders were cautiously inserted beneath the coat tails, or how the passers by stared at the strange proceedings, and how one man turned away, as I bore off my prize in triumph, muttering with an expression of most intense disgust, "It's only a butterflee!"

However, I had soon an opportunity of seeing and capturing more of this beautiful creature, and had ample facilities of verifying the observation that "he who would capture Edusa in its lively flight has need of the seven league boots, with the hand of Mercury to ensure his success."

During June a number were seen, and a few captured, and over the whole of Galloway, excepting the higher portions, it was seen in fair numbers. At Arbigland it was almost equally plentiful with the Common Whites, and seems to have been plentiful along the coast fields as far as Auchencairn. Those who were at the Colvend Field Meeting will remember the three or four we saw then. During June it was seen also throughout Dumfriesshire. I believe

the flight continued from its first appearance on June 3, almost without interruption, until October 9th, when the severe frost probably destroyed them. For about a fortnight in August I did not hear of, or see any, but this was likely to be for want of observation. The undoubted Autumn brood commenced to fly about September 10th, and continued in remarkable abundance almost everywhere except on the high moors, till the frost destroyed them, as already remarked. Those places which came under my own observation were more especially a field to the east of Goldielea, another at Burnside of Mabie, and one near the Rifle Range at Conhuith. At these places they outnumbered any other Butterfly, and it is perhaps worthy of remark that in settling for food or rest they invariably preferred a flower of a yellow colour. My success in capturing was not in proportion to the numbers I chased. They are exceedingly difficult to catch, and had it not been that the Autumn brood were, as compared with the Summer ones, a peculiarly weak and enervated race, my show of specimens would have been small indeed. Even with this very noticeable weakness they were much more difficult to secure than other members of the Butterfly race.

A peculiarity of this appearance of Edusa is the remarkably early date on which it was first seen, viz., June 3d. It seems to have been generally understood hitherto that the species hibernated, appearing again in Spring, but I can find no record or notice of its having been then seen. I am at a loss to know how this idea can have originated ; however, I think the experience of the past season will have dissipated the notion, for it is admitted on all hands that those individuals captured in June had only recently emerged from the pupa state. Another point which may be noticed is the greater size of the June specimens when compared with the Autumn brood. This peculiarity was accompanied by a stronger flight and a playful vivacity, which was altogether wanting in those that were on the wing during September. I find the average breadth of the Summer specimens is 2in.

4 lines, and the Autumn ones 2in. 1 line, thus showing a difference of 3 lines or $\frac{1}{4}$ inch. These measurements are from my own specimens, and might be somewhat modified if a more extensive series was examined.

Let us now briefly consider the various theories that have been put forth to account for the appearance of *Colias Edusa* after long years of absence. The first one is the famous "Blown over theory" of the late Edward Newman, which was that females were blown over by the wind from France, and that these females deposited the eggs which produced the next year's flight of Butterflies, thus establishing a colony that died out in a few years, again to be renewed in a similar manner. However applicable this theory may be to the extreme south of England, it will not account for the appearance of the insect in more northern localities. Another theory is, that eggs or pupæ lie dormant until forced into active life by influences of which we are yet ignorant. It may be mentioned here that apparently the weather has had no influence, for while in Scotland the season has been almost unexampled for cold and wet, the pasture fields in the extreme south of England have been quite scorched up with drought, still Edusa has been everywhere abundant.

On the Continent also, Edusa has been seen in much scantier numbers than usual, thus showing that the cause which has led to this abundance in our own country was in operation in Britain only. The "Clover Seed theory" is one which I think is entitled to more consideration than it has hitherto received. To understand this one it may be as well to explain that as the larvæ of Edusa feed on various clovers, the eggs are deposited on these plants, and that when the clover seed is harvested—which happens in August—the eggs become detached and mix with the seed, and are thus conveyed to this country if we require it, and ultimately sown in our fields. My reasons for viewing this theory (until another one is propounded) with favour are as follows:—During the Spring of 1876 clover seed of home growth was not to be had, owing to a failure of the

crops the previous Autumn. To make up the deficiency large quantities of Continental seed were imported principally from the countries bordering on the Rhine. This foreign seed was very inferior and badly cleaned, just such as the eggs of Edusa might have been conveyed in. Following up the chain of evidence, it seems very remarkable that the three places where I saw Edusa most abundantly were clover fields that had been sown out in the same Spring. I do not think I saw a single specimen in a field of older clover. Of course, in accepting this theory, we have an interval of 22 months to account for, during which *C. Edusa*, if brought among clover seed in the egg state, must have been going through its further transformations. It is possible a few imagos may have emerged in Autumn, 1876, but the Butterfly is so conspicuous that some one must have seen it. Failing that, it might be suggested that the eggs hatched in May or June, 1876, then, owing to the change to a colder climate affecting the development of the larvæ, they fed slowly all the summer, turning to pupæ in Autumn, and continuing in that state till last June. In this suggestion I do not see anything improbable, but really the question hinges on whether the eggs are tough enough to withstand knocking about in the clover seed without impairing their vitality. If that is so, then we may safely conclude that Edusa is always imported when there is a dearth of home-grown clover seed.

NOTES ON LINCLUDEN AND COLLEGIATE CHURCH. By J. Glover Anderson.

Read 7th December, 1877.

The Abbey of Lincluden, one of the three Scotch houses belonging to the Benedectine Nuns, was founded about the year 1165 by Ethred De Macdowell, one of the earliest of the Lords of Galloway of whose career history has given us any trace. Succeeding to one-half of the dominions of his father, the munificent Fergus, upon the death of the latter in 1160, he married Gunild, daughter of Waldeof, Lord of Allerdale, and grand-daughter of the celebrated Gospatrick, Earl of Dunbar, the issue of the union being Ronald, fourth Lord of Galloway, whose son, Alan, the fifth Lord, was father of the pious lady Devorgilla, to whose munificence Dumfries owes her "Auld Brig," and by whom the local Abbeys of Wigtown* and Dulce Cor or Sweetheart, as well as the Franciscan Monastery at Dumfries, were founded. Attended by his younger brother, Gilbert (with whom he had shared his father's lands), Ethred was present at the battle of Alnwick, and taking advantage of the capture of William the Lion at that disastrous engagement upon his return to Galloway he threw off his allegiance to the Scottish Throne and drove from his dominions the agents of the Scottish Monarch. Notwithstanding this rebellious course he fought on the Scottish side in the internecine wars which attended the captivity of King William. Gilbert attached himself to the English forces, however, and obtaining the assistance of his southern friends ravaged the lands of Ethred, and making him prisoner put him cruelly to death in Lochfergus Castle, from whence his mangled remains are said to have been conveyed to the Abbey of Lincluden, where—in the lonely pile which he had helped to rear—he was stealthily laid in his "narrow home."

The Abbey of which this romantic tale is told has long disappeared, and it is thus a matter of some difficulty to

* The Abbey of Holywood is given in Mackenzie's list as having also been founded by Devorgilla.

determine the style of its architecture, whether the rude Saxon? the manly Norman? or the pure and lordly early English? To the former of these it has hitherto been invariably assigned. The date of its foundation, however, renders this extremely improbable, and even making a due allowance for a possibly backward state of Scottish art, in comparison with that of England, I find it hard to believe that it was not at least a Norman building, and if (as is stated by some of the highest authorities on the subject) the architecture of the two countries during the 12th and 13th centuries was precisely similar, the period at which the Abbey was built would be that transitional epoch at which the features of the sombre Romanesque had well nigh glided into the noble sublimity of Gothic art.

The history of the house down to the 14th century seems —as befitted its character—to have been uneventful in the extreme; but during the reign of Robert III. of Scotland the quiet dreams of the inmates were rudely shattered, and "fair Lincluden's holy cells" rendered desolate by the violence of Archibald the Grim. Acting under a desire—real or pretended?—to uphold the purity of the Church, the doughty Earl, with an impecunious zeal which has only been equalled by that of the Scottish noblemen of Reformation times, contrived to oust the Nuns from their sacred residence and to appropriate the major part of their revenue. This transaction has been the theme of a good deal of discussion; but the question may now be said to have been definitely settled by the discovery at Dundrennan of what is in all probability the tomb of the last Abess of Lincluden. In the south transept of that Abbey there is a memorial slab measuring 5ft. 6in. by 2ft. 10in., having on it an incised figure, full size, or nearly so, in the garb of a Nun, with portions of an inscription in old English characters, and the date 1440. Scottish Nuns were bound never to leave their convent after having taken their vows, and the circumstance of a Nun's grave being found in a monastery many miles from a Nunnery is therefore unique, and but for this

the sadly mutilated condition of the stone would probably have deterred any one from making an attempt towards its elucidation. The subject, however, attracted the attention of Mr Starke, F.S.A., Scot., one of the presidents of the last society, and he devoted a long paper to the subject with the result that the characters were found to be—

HIC JACET	Here lies
DOMINA BLANCHEA	The Lady Blanche.
V. SIT	She was a Nun.
DOMINA PR QUONDAM.	At one time a lady prioress.
OBIT ANNO. D. 1440.	She died in the year of our Lord, 1440.

Mr Starke, from the fact that there was no religious house for Nuns in the district except Lincluden, and from the similarity of the dates of the Abbey and the death of the Lady Blanche, argued that this, in all probability, was the tomb of the last Abbess of Lincluden, a conclusion which, if verified, would go far to clear away the slur cast upon the Nuns by the action of Archibald the Grim. Mr Starke does not seem to have been aware, however, of the similarity and close connection of the two Orders of Benedectines and Cistercians, for he remarks that the two orders differed entirely.* This being the only weak point in his argument, with the light of this additional information it may be safely assumed that the Lady Blanche was the last ruler of the Benedectine House of Lincluden, her tomb being placed in the unusual position which it occupies, as a vindication of the character of the Nunnery, and a testimony against the rapacity of the house of Douglas.

However reprehensible may have been the action of the Grim Earl in this matter, to him must be assigned the credit of founding the Collegiate Church, with the

*The Benedectines followed the rule of St. Benedict, whose order grew so large, that in the year 1098 Robert Abbot of Molesme, with a few of his Monks who were desirous of observing the Benedictine rules in their original severity, founded the Order of the Cistercians. The two bodies sprang thus from a common source, and followed a common code of laws. A high degree of friendship therefore existed between them, a friendship which grew all the stronger as the two bodies grew older, and the latter renounced the authority of their original rule.

ruins of which every Dumfriesian is familiar. When in good preservation the buildings must have formed a magnificent group; even yet they occupy the first place among the religious buildings of Eastern Galloway, a district which possesses a galaxy of monastic ruins such as few portions of Scotland can boast of. Standing, isolated from men's busy haunts, out on the narrow nook where Cluden's wimpling waters meet Nith's hurrying stream, the noble chancel, nestling closely by the side of the guardian Tower, which, even in decay, bears itself proudly aloft as if in full consciousness of the supreme beauty of its charge; the transept worn and dismantled; the nave now well nigh disappeared; the smooth parterre and the pine-tipped calvary form a group well worthy of its classic associations with Scotland's greatest bard, and of the muses of a Macdowall, of a Walter, and of a Sharpe.

The Benedectine House of Lincluden ceased to exist in the latter part of the reign of Robert III., and shortly afterwards the Collegiate Church was founded. To what extent the original Abbey was allowed to remain at its erection it is impossible to tell. It is highly probable, however, that such portions as were serviceable were converted into a residence for the Provost and Canons, the portion of the building known as the Provost's residence being erected at some subsequent date, for apparently the Church and Sacristy or Vestry were all that were erected by Archibald the Grim, the other portions being in a totally different style. The Church, as originally constituted, is said to have been composed of Chancel, Nave, and Transepts; but of these the Chancel, South Transept, and a portion of the south wall of the Nave only remain, the North Transept, if it ever existed, being totally lost. From a careful examination of the indications of the present building, however, I have come to the conclusion that the Nave proper (and North Transept probably) never existed, and I may briefly state a few of the principal reasons which induced that belief. 1st, Total absence of groining on the north side, what has manifestly

been the termination of the Nave Arcade. 2nd, The Chancel as it stands is a totally independent building; and 3rd, In the event of a Nave having existed and a congregation assembled, not one-twentieth of those present could see anything in the interior of the Chancel. 4th, No necessity for the existence of a Nave under the foundation.

Regarding the first of these reasons, little need be said. The terminating pier of the Arcade abuts against the east wall of the Transept, and stands about 11ft. out from the line of that of the Nave. On the side next the Transept there may still be seen in good preservation groining corbel, shaft, and the lower courses of the ribs, while on the north side there is a total absence of such features. The second reason is perhaps a still stronger one, an open Chancel arch being of invariable occurrence, and if my theory of the non-existence of the Nave proper be not accepted, it would be difficult, nay impossible, to account for the existence of the west wall, which encloses and renders the Chancel a totally independent building. The third reason will commend itself to every one who has visited the actual building; and with regard to the fourth it is only necessary to mention that Collegiate Churches were institutions founded solely to enable the patrons to get Masses said for the souls of their deceased friends, and were not for the accommodation of congregations.

The Church, so far as it was finished, was undoubtedly the richest work of architecture ever erected in the district; for lofty solemn grandeur it may not have been able to compete with Sweetheart, but for pure, yet lavish decoration, there must have been few buildings in the South of Scotland worthy of comparison. The Chancel, as may be supposed, was the most elaborate portion of the building, containing as it did, the magnificent features of the Tomb, the Sedilia, the Piscina, and the Altar, not to speak of the doorway to the Sacristy, which, though of less moment, is still worthy of a place beside the others. The west, or entrance front, is, as mentioned before, a most peculiar feature, and exhibits

more than one object worthy of notice, even within the limits of this short paper. The first of these is the doorway, the straight arch of which is, so far as I know, unique in an English building of this style and date, although French examples are not unfrequently met with.* Above the doorway, on either side of the wall, is a carved corbel course, evidently built for the purpose of giving width for a rood screen. The figures are now so much mutilated that it is impossible to make out what they are intended to represent. They are, however (according to Pennant) designed to express the preparations for the burial of our Lord. Above the doorway as I have just indicated, was placed the rood screen, and by means of the hoodmould to the arch over we are enabled to perceive a curious twist in the wall above the level of the caps. The face of the hoodmould is flush with the wall on the south side. On the north it stands out 8 or 9 inches.

In the interior of the Chancel the greatest object of attraction would of course be the Altar, of which it is to be regretted there is now no trace other than three corbels from the east wall, which evidently supported the horizontal slab. They are 7ft. 6in. apart from outside to outside, so that the Altar would be something like 8ft. 6in. long. Above it stood an image, the bracket for which may still be seen on the cell of the eastern window ; and on the outside was placed a buttress with pinnacle for its protection. Like most other statues in such positions it would most probably be painted to imitate life, and the costume brilliantly coloured and gilded.

On the left of the site of the High Altar may still be seen, though in a sadly mutilated condition, the tomb of Lady Margaret Douglas. The fragments that are still left, however, are fortunately enough to give us an idea of its surpassing beauty and richness of detail. Like most examples of 15th and 16th century date it consists of a deeply recessed

* It is worthy of mention that the Architect or "Master Builder" of the edifice must have been a foreigner—probably a Frenchman—for French features are numerous, and the contour of the mouldings precisely similar to many in Rouen Cathedral.

arch, forming a canopy above the base or actual tomb which was itself surmounted by a life size recumbent effigy. The base in this case was of such an elaborate character that it is entitled to rank with the altar tombs of the previous century. It stands about 4ft. high from the original floor level, but as the Chancel floor is covered with rubbish to a depth of 16 or 18 inches it is not seen to proper advantage. The intermediate portion between the cornice and plinth is divided into nine panels by a long arcade of as many trefoliated arches. Each panel encloses a shield ; of these seven are enriched with various emblems of the house of Douglas, two remaining blank. The base, as I mentioned before, contained the actual remains of the Princess. These were enclosed by a plain slab, overlapping the front, and supported on the other three sides by a broad fillet, which still remains. On this slab lay the effigy. The outer mouldings of the main arch are boldly crocketted and terminated by a finial, and were originally stopped by rampant lions couched on the outer of the small shafts on each side. The inner mouldings run on to the impost, and the interior was originally partly filled with cusped tracery.

The tomb in general form was nearly square, and is enclosed on each side by buttresses with crocketted and finialed terminations, and on the top by a deeply undercut hoodmould, the hollow of which is filled in with carved foliage. The spandrils are filled in with panelled tracery. The Sedilia and Piscina are so similar to the tomb in general style and ornamentation that the description of the former applies in a great measure to them also. Mention may be made of the groined soffit of the sedilia, which is triple but not graded, and of the two minute niches in the interior of the Piscina. The base of the Sedilia is extremely plain, but that of the Piscina is ornamented by conventional representations of Acorns. In the north side of the Chancel, a few feet from the tomb, is a highly ornamented doorway which opened into the Sacristy* or Revestry, a chamber about 12ft.

* Archibald the Grim is said to have been buried in this vestry. See Transactions of Antiquarian Society of England.

wide, and groined in two divisions. The arched portion of the doorway is filled in with a tympanium, which, as well as the jambs and arch mould, is profusely decorated, the former with heraldic bearings, the latter with foliage.

The roof of the Chancel was well worthy of the magnificent objects beneath. The groining corbels, eight in number, were richly ornamented with shields bearing the arms of the house of Douglas, but it is to be regretted that they are now all undecipherable, with the exception of that on the north side next the doorway, on which can still be traced the arms of the Earl of Athol, and the motto—"Firth Fortune fill the fetters." In the whole of the groining appendages the filleted roll is the prevalent moulding, and more particularly in the shaft and ribs. Several of the highest courses of the latter are in an uncompleted state, for in many instances the mouldings are simply roughed out, showing clearly that the groining was never entirely completed. Above the groining there has evidently been a wooden floor, for there still remain six corbels on each side with corresponding voids behind which have apparently served as rests for the wooden girders of a double floor. Above this again was an ogee-shaped vault of stone, the lower portion of which still exists, and which was complete when Grosce visited the Abbey in 1789. Surmounting this second vaulting was the roof proper, composed of wood covered with lead or zinc. Access to the apartment thus formed above the Church was got by a circular staircase, the casing to which may still be seen between the Chancel and Transept, and from which there are doorways to the Nave and to the rood screen. The excessive care shown by the double vaulting suggests the use of the upper as a store for valuables or library. There is, however, no instance of a similar use for such rooms, and it is thus impossible to do anything more than hazard a conjecture in this instance.

The staircase is filled up with debris to a much higher level than the Transept or the surrounding ground, the door to the former being nearly covered up inside,

It is therefore impossible to tell whether or not the stair was continued down to the vaults. In any case there must have been another opening, probably before the High Altar, and on this means of access must be based any hope of exploration of the supposed subterranean passage between the Abbey vaults and the Castle of Dumfries. Instances of such secret passages are by no means unfrequent in mediæval buildings, but in many cases they have been lost sight of or forgotten. From their nature there is of course never any documentary evidence regarding them; but tradition, as in this instance, often speaks remarkably strong on the subject. Such being the case, it would be worth while to make a trial at least to open the vaults, and, if possible, set the question at rest.

The only portion of the building remaining to be noticed are the Transept and Nave, neither of which call for any lengthened description. It may be mentioned, however, that the former has been used as a side chapel, the remains of a Piscina being still in existence in the south wall, and what has probably been a credence bracket on the north side. The Collegiate Church of Lincluden, although it may not be associated like Dundrennan with any great historical event, has still a history at once interesting and locally important, and can boast of having received within its walls not a few royal visitors, and to have been once at least the meeting place of the lawgivers of the Western Border. Founded, as has been already mentioned, about the year 1400, the Church was the seat of the local Parliament which met in Dec., 1448, under the presidency of William, Earl of Douglas, to draw up a code of laws for the regulation of Border affairs, and twenty years later it formed a refuge for one of the ablest of England's Queens, Margaret of Anjou, who with her husband, King Henry VI., their infant son, and the Dukes of Somerset and Exeter visited Lincluden after the defeat of their forces at Towton on March 28th, 1461, being probably attracted by the fact that the then Provost (Lindsay) had been Scottish Ambassador to their court in the halcyon days when all England acknowledged their sway.

Eighty years after the visit of Queen Margaret, Lincluden was again visited by one of England's rulers, King James the First. Attended by the dazzling Duke "Steenie" and a large retinue, the King spent the night of the 2d August, 1617, within the walls of the "Auld College," the occasion having been evidently improved upon by some of his impecunious courtiers, for although the duties of the Provostry had been abolished for many years (mass being last said in the building in 1585) the office was continued until the date of His Majesty's arrival in the district, when the lands were conveyed to Mr Robert Gordon of Lochinvar and Mr John Murray of Lochmaben, two of the lords of the Bedchamber, the then Provost receiving the grant of a life-rent.

From the before-mentioned dates it will be perceived that Lincluden was not involved during the period of the Reformation in the common ruin and spoliation of all ecclesiastical buildings which had any pretension to architectural beauty, and it seems highly probable that upon the death of the last Provost it became one of the residences of the Maxwell family, for in the charters and correspondence published in the Book of Caerlaverock continual mention is made of it down till 1660. At what time it ceased to be thus occupied by them it is impossible to tell. Indeed, nothing further is known of its history until the beginning of the present century, when it became necessary to protect the ruins from the depredations of the surrounding peasantry, and the ruined wall along the east side of the road to the Cluden was then erected. It does not seem to have affected its purpose, however, for from then till now wanton destruction and desecration have been the rule.

Such then is a brief resumé of the history of this ancient house and a short account of its principal architectural features. It only remains to be added that its present condition is as unsatisfactory as it well could be, and that fresh injury is being done each day to the finest portions of the ruins.

NOTES ON A GLACIAL DEPOSIT NEAR THORNHILL.

By Joseph Thomson.

Read January 4th, 1878.

During the formation of the branch railway line to Gatelawbridge Quarry from Thornhill Station, a deposit of a peculiar character was exposed in one of the cuttings. As far as can be gleaned from the Memoirs of the Geological Survey nothing similar occurs in Dumfriesshire, and—if my inferences be true—it will be found that a very important page of the later geological history of this country has been revealed by its discovery. This breccia—for so we may term it, as being both convenient and applicable—is overlain by a deposit of ordinary boulder clay, which covers all the surrounding country, and as a description of the characters of the latter will serve to bring out more prominently those of the former, we may take them both into consideration.

Extending along the east side of the Glasgow and South-Western Railway there is a ridge of a somewhat irregular contour which in Closeburn breaks up into great mounds and heaps, and which shades off towards Carronbridge. The greater part of it is composed of boulder clay, having as a backbone or nucleus the glacial deposit which forms the subject of this paper. The boulder clay has all the ordinary characters of that deposit. It is unstratified, forming a loose unarranged mixture of all sorts of materials derived from the neighbouring rocks. In one place it may be pure gravel, in another sand, or both may be mixed with clay. The drifted fragments of stone are principally greywacke, together with Carboniferous sandstones, Permian Porphyrites, and sandstones, or, it may be, even fragments of the underlying glacial breccia. They are all derived from local rocks; the boulders vary in weight up to two or three cwts., and are considerably rounded, polished, and striated. This glacial accumulation occurs scattered over the whole of Middle Nithsdale in confused heaps and mounds. Some six months ago, while the ridge was being cut through near Thornhill Station, a rock differing in many important

respects from the ordinary boulder clay was exposed beneath 15 feet of the latter.

In the first place it is distinctly and regularly stratified, dipping at an angle of about 30° due east; secondly, it is a compact, solid rock, so firm and hard that in cutting through it dynamite had to be used oftener than the pick or the wedge. This character of itself is sufficient to stamp it as an almost unique case. Jukes, indeed, mentions the occurrence of a solidified glacial deposit in the south of Ireland, but in that case solidification had been produced by the solution and subsequent precipitation of the carbonate of lime forming the boulders. It is also not uncommon to find the boulder clay round a chalybeate spring hardened by the deposits of iron in the interstices of the deposit. Neither of these explanations apply, however, to the present case.

In the third place the boulders, sand, and clay are not mixed confusedly together, but lie in distinct layers forming beds of shale, sandstone, and breccia.

The contained fragments vary in weight up to 14 lbs. Many of them do not belong to any known rock of the district, while, again, fragments of local Permian and Carboniferous rocks are conspicuous by their absence. They are remarkably angular, frequently presenting as fine and sharp an edge as if newly broken by a hammer, and many of them are unpolished by erosion, and present no trace of striation. The beds of sandstone and shale are of insignificant thickness. The exposed section is about 400 feet in length, the beds dipping at an approximate angle of 30 deg., which would make their real thickness 100 feet, after making an allowance for one or two small faults, which bring the same bed twice to the surface. The beds are traversed by slickensided joints running north and south. The out-crop is extremely uneven, presenting evidence of having suffered a considerable amount of denudation previous to being covered by the overlying boulder clay.

These are a few of the main features of this glacial deposit, and as most natural objects contain their own history

we may proceed with some confidence to decipher it. And first, as to the origin of these two formations—It is very evidently vindicated that the boulder clay has not been deposited in water, while the underlying breccia has. To prove this I need only point to the absence of stratification in the former, and its presence in the latter; as well as the confused mixture of clay, sand, and boulder in the one, and their regular arrangement into beds of shale, sandstone, and breccia in the latter.

In the second place, it is equally evident that the stratified deposit has been transported by the agency of floating ice, while the boulder clay derives its origin from land ice. The great angularity of the boulders and their mode of occurrence in the case of the former, make such a theory imperative. It likewise accounts for the absence of boulders from local Carboniferous and Permian rocks, and for the presence of fragments of rocks which do not belong to the district.

As to the boulder clay, if it has been formed on land, necessarily it must be due to glaciers. In the third place we may proceed a step further in our reasoning, and say that subsequent to the deposition of breccia, and previous to that of the boulder clay, a considerable period must have elapsed during which Middle Nithsdale was raised out of the water, and suffered a great amount of denudation, nearly obliterating every trace of the glacial breccia, which must have covered the whole valley to a depth of more than 100 feet, as it is utterly impossible to believe that the icebergs got relieved of their burden always at one restricted spot.

With these detached fragments of past events, is there not a possibility of adding an interesting chapter to the physical history of Dumfriesshire? According to my deductions from these glacial deposits, the skeleton of such a chapter would read as follows, and I leave you to judge of the reasonableness of it:—At some very early stage of the glacial epoch Middle Nithsdale, with an unknown part of the surrounding country, was submerged under several

hundred feet of water. Somewhere or other high land did exist, the position of which may yet be traced from the erratics in the breccia.

Upon the higher parts of this land the climate was cold enough to allow of the formation of glaciers, which moved down through the valleys, their natural courses. Naturally, in their progress downwards, as in glaciers of the present day, rubbish of various kinds tumbled down upon them, and was carried off, the stones suffering little or no erosion from their position upon the top of the moving ice. These glaciers, when they arrived at the sea, which was not yet frozen up, would break off, carrying with them the rubbish from the sides of the valleys. In lower latitudes these would melt and, of course, deposit their burden, which would thus give rise to the glacial breccia which we have described.

After this had continued for some time a great change took place in the physical geography of the district—the submerged land once more changed to *terra firma*. Necessarily this land became subject to the denuding agents—rains, frosts, rivers, &c., which, as I have already said, nearly obliterate every trace of the breccia.

Glacial conditions were evidently not very severe at this time; perhaps there might even have been an inter-glacial warm period. After this state of matters had lasted for a long time conditions began to change. A glacial climate gradually came on, culminating in the formation of a vast sheet of ice, which in its motion produced the Boulder Clay.

Such are a few of the more important features of this interesting deposit. A more exhaustive study of its character may modify them to some extent, and, doubtless, will reveal many important facts which may throw further light upon the physical history of Dumfriesshire

THE RARER COLEOPTERA OF THE DUMFRIES DISTRICT. By Wm. Lennon.

Read February 1st, 1878.

As is found to be the case with other orders of Insects, some Beetles are common everywhere, others common only in perhaps one particular field, a few are confined to a single spot of perhaps a few yards square, while some species are dropped on singly, apparently solitary strangers, who receive anything but what should be a stranger's reception, though none will dispute the joy their appearance causes in the breast of the fortunate collector. In consequence, perhaps, of their warm welcome (they are usually dropped into boiling water) these rarities may not be seen for years. In some instances I have seen only one specimen of particular species during 17 or 18 years. It is this uncertainty as to what may turn up that constitutes one of the principal charms of this interesting pursuit, and I have always found that when I had captured an insect unknown to me, I get into a "perfect fidget," as the saying, is to get home again and have it examined.

The order I have made my special study is the Coleoptera or Beetle tribe, and I may say that during the last 12 or 13 years I have searched almost every field, moor, moss, glen, and stream in the district, so that I may be allowed to speak with some degree of authority on the Beetle-producing power of the country immediately surrounding Dumfries.

Within a circuit of five or six miles I have found 1440 species. Amongst these there are of course a fair number of rarities, and others known to the "brethren of the Net and Pins" as "good things." Without further remarks I now propose to enumerate them to you. In the case now on the table, the species are placed in the order in which I mention them :—

The first, then, is *Dyschirus nitidus*, a very local species, which I have found nowhere else except on the salt marsh at Kelton, so that it is probably confined to places overflowed by the tide. The next is *Lebia crux minor*, one of

the very rarest of our British Geodephaga. I have only found it on the banks of Auchencrieff Loch. It is of exceedingly rare occurrence in Britain, not being known at all in many parts of the country. Another member of the same genus, *Lebia chlorocephala*, is a local insect, found only on the banks of the Cairn near Irongray Kirk. *Trechus longicornis* is very rare, being found only on Kelton salt marsh. *Haliplus striatus* is another rarity. I found it in one small pool in Kirkconnell Moss. I believe I have dredged all the other pools in Kirkconnell, but without finding this beetle in any other than the pool referred to. *Hydroporus obsoletus* is very scarce. I had the good fortune to be the first to discover this insect in Great Britain, but unfortunately was not scientific enough to be able to give a correct diagnosis of the species. Hitherto I have found it only at Kelton in refuse brought down by the floods. I am inclined to believe that it is brought down the river from far up amongst the hills. It occurs during summer after an extra high flood. It is also very rare on the Continent.

Hydroporus incognitus is another local insect found in a deep mosshag near Gasstown. No other locality is known to me.

Myrmedonia collaris is rare, and one of the beetles found at Kelton after high floods.

Homalota littorea is, as its name implies, found on the sea shore. I have found one specimen only near Caerlaverock.

Homalota clavipes is rare, and confined to Alpine districts. I found it on the top of Criffel on the occasion of our Field Meeting there on 4th August last.

Homalota incognita is found sometimes in the flood refuse at Kelton.

Gymnusa brevicollis is exceedingly rare. The only specimen I possess was found at the same place as the last mentioned.

Bledius spectabilis, *B. tricornis*, and *B. atracapillus* are not at all plentiful, and being marine species, are found on Kelton salt marsh.

Delister dichous is very rare, and also found at Kelton.

Paederus fucipes is not only very local, but also very rare. When I turned it up first I was agreeably astonished to find that both genus and species were new to Scotland. It is found on the Caerlaverock shore near the Fishers' Thorn.

Anisotoma cinnamomea is also very rare. My specimen was found at Kelton in the flood refuse. This was also a new Scotch species, and is even rare in England.

Omosita depressa was a desideratum in almost every cabinet until I discovered a method of taking it by which I have been enabled to supply nearly all the Beetle hunters of the Kingdom with it. My method is to get a number of bones—those left from the dinner table are the best—put them into an open wire basket secured from prowling cats and dogs, and with a little hay in the bottom. Then on warm summer days when a gentle breeze blows towards the Solway I am certain to have, from four o'clock in the afternoon all through the night, a constant succession of *bona-fide* travellers all eager to partake of the savoury banquet spread for them. Next morning the revellers are "run in," and none return to carry the news of their untimely end. This is a remarkable instance of the power of smell, or whatever it is, possessed by insects, for this beetle, which is found only on the shore, arrives at the Crichton Institution grounds, a distance of six to eight miles, in a very short time after a westerly breeze begins to blow.

Heterocerus laevigatus and *H. fusculis* are both local species, and seldom found outside the wash of the salt water.

Aphodius Zenkeri is very rare ; found in flood refuse at Kelton. I added this species to the Scotch lists.

Aphodius tristis is a local Beetle, and is found in the same place as the last.

Troscus dermestoides is another local species, found in the birch trees at Dalscairth and near Gasstown,

Trachys trogiodytes has an almost romantic history as a British species. Many years ago a member of this Society

—Dr Sharp of Eccles—when out beetle-hunting on the Cairn near Irongray Kirk, examined a mass of flood refuse and secured one specimen of this rarity—the first ever known in Britain or, in fact, Europe (for it has only recently been found on the Continent). Dr Sharp's joy at his good fortune I leave to your imagination. A few days after I happened to be in the same locality on the same errand and found another specimen, which considerably depreciated the value of Dr Sharp's prize, much to that gentleman's disgust.

These two specimens, however, are the only two yet found within the circuit of our coasts; not even the British Museum, with all its treasures, can boast of a single British specimen.

Elater elongatulus is another rarity which I captured amongst the birch trees in Dalscairth Park. It was not known as Scottish until I found it, and I had considerable difficulty in getting its name, as it was posted backwards and forwards from one Entomologist to another, until Dr Rye, one of the Editors of the E. M. M., told me what it was.

Cryptohypnus maritimus and *C. Sabulicola* are both of rare occurrence at Kelton in that prolific source of "good things"—flood refuse. They are, no doubt—like a good many other rare Beetles—brought down the Nith on the occurrence of sudden floods, clinging to straws, sticks, and leaves.

Telephorus abdominalis is a local insect, only found on the hills near the Routan Bridge.

Blaps mortisaga came into my hands in a curious and unexpected manner. When proceeding along Shakespeare Street early one Sabbath morning a few years ago, my attention was drawn to the strange attitude and gestures of a cock. With head to one side, and with as knowing a look as might become the countenance of an Entomologist, the cock was earnestly examining the under side of a large beetle, and calling to his paramour to partake of the choice morsel. I was just in time to preserve *Blaps mortisaga* from so ignoble a fate. This specimen is the only one that has yet been found in the district.

Polydrusus chrysomela is a local species, confined to Kelton, so far as I have ascertained.

Erirhinus Æthiops is of excessive rarity, and an insect in which I take a lot of, I think, excusable pride. I have taken somewhere about fifty specimens altogether, and you will see the reason of my pride when I tell you that not in all Europe is there another beetle-hunter who has taken more than a dozen to his own hand. In London the dealers in insects sell this little beetle at 15s 6d each, so you will see it is of some value.

Apion Cerdo is a species which I discovered as British. I found it on the Purple Vetch on the railway bank below Collin. It is found there in small numbers. It belongs to the same genus as the Weevil, so destructive to clover seed.

Rhinomacer attelebioides is got by beating the Mountain Ash at Tinwald Downs, and is not found elsewhere.

Rhynchites auratus is found only at the Glen Mills on the common Blackthorn.

Donacia obscura is confined to a small swampy spot near Collin, or, at least, *was* found in that spot, for I fear it has been driven away, the cows having nibbled away the tall tussocks of grass in which it bred.

Phaeodon concinnum till a few years ago was scarcely known in Britain, and not much more so in Europe even. I found it (along with Dr Sharp) in great profusion on the salt marsh at Kelton. Whole pints of it might easily have been collected. The insect feeds on marine plants, and when the flood tide flows in amongst the grass this pretty little Beetle is seen borne on the advancing wave and sparkling like tiny emeralds. As the tide creeps over the large expanse of flat merse, either drowning or bearing on with it every living thing on its way, the Beetles are soon floating in handfuls, again to be dispersed with the receding tide. Although so common in this particular place, it seems strange that this species is not found at all on other parts of the Solway coast. It has been found on a part of the coast of the English Channel, but not in such numbers as with us.

Cassida Chloris has occurred in the flood refuse at Kelton; only one specimen, however, has been got.

Hippodamia 13 *punctata*, a member of the pretty and familiar family of Lady Birds, is another species of excessive rarity, found also in Kelton flood refuse.

Hyperaspis repensis, the last on my list of rarities, is procured by tearing up moss tufts and shaking them on a cloth. It is only found near Gasstown.

It only remains for me to explain why so many rare species are found at Kelton amongst the flood refuse. This flood refuse, or "wrack" as some people call it, is the sticks, branches, leaves, straws, and other material brought down the Nith and its tributary streams, in conjunction with similar material brought in from the Solway along with seaweeds, &c. When the weather has been dry for a month or so the beds of streams away up amongst the hills become filled up with rubbish of all sorts, and this is resorted to for food and shelter by numerous Beetles. Then the rains descend and the floods come, and all this rubbish, with its tenant beetles, is borne down to the sea, and the first tide throws it on the merse at Kelton in great heaps. Riddling this material into a sack, and afterwards examining it at home, it is found to be literally crawling with beetles gathered from the whole basin of the Nith and some of the streams which discharge themselves into the Solway. In this way you will see that an hour's collecting at Kelton is equal to a week spent in hunting for rare beetles in the hills and glens of Nithsdale.

I am afraid I have wearied you with my tedious narration, but, speaking for myself, I am sure I would be only too glad if I could compass a list of rare beetles which would occupy an hour or two more in reading.

I still hope for further extensions of the list, and may I also hope that I may be aided in extending it by some of our younger members, who, as yet, are only considering what branch of Natural History to study.

SPECIAL REPORT ON THE GEOLOGICAL FEATURES OF THE DISTRICTS VISITED BY THE MEMBERS OF THE DUMFRIES NATURAL HISTORY SOCIETY DURING THEIR SUMMER EXCURSIONS IN 1878. By Dr GILCHRIST.

Read Nov. 1st, 1878.

As considerable geological uniformity exists in the several districts visited, it will save much repetition to give a brief general description of them, leaving details to be noticed in the successive excursions.

1. The prominent rock forming the basis of the hill system of the South of Scotland is the so-called Silurian, constituting the various well-known groups of hills in the neighbourhood, as the Tinwald, Mouswald, Galloway groups, &c. It formed a noted feature in every one of the places visited.

2. A second variety of rock not unfrequently seen in the neighbourhood is the so-called Permian. It is characteristic as well of the subordinate as of the main valleys in the district, which forms the subject of consideration, in most of which at least fragments of it will be found where it has not been entirely swept away by denudation. It will be readily recognised in the sandstone quarries of Locharbriggs, Craigs, &c.

3. A third feature of the districts visited is the result of the so-called glacial action in the form of glaciated rock and glacial till. These are seen much less frequently, though not at all uncommon, the former especially in its ruder aspects, which are easily recognised in the so-called Roches Moutonées, constituting a series of rounded smooth rocky knolls not unfrequently seen in certain districts. The till is, as a rule, only seen in natural or artificial sections of the surface. It consists of a matrix of clay with fragments of rock of all sorts and sizes irregularly interspersed through it, being smoothed, striated, and more or less rounded. In its typical form at least once seen it is easily afterwards recognised.

4. A fourth feature of the districts visited is the superficial accumulations of gravels and sands, the result of

aqueous action. These are found for the most part at the mouths or along the sides of the valleys. Viewed as to time they are posterior to those last mentioned, that is, they are the result of river, lake, or sea action, subsequent to the so-called glacial period, often consisting of the reassorted materials derived from the surface deposits of that period. They are well seen in almost every excavation in the immediate neighbourhood of the town, and are notably developed in the vicinity of Auldgirth Bridge, Cummertrees, &c.

5. Connected with these, but forming a distinctive feature, are the ancient raised beaches, which are very marked in several parts of the valley of the Nith.

The first excursion of the season was to Lincluden, Holywood, and neighbourhood. The district then visited presented us only with the features referred to in No. 4 of our general statement, namely, the superficial accumulations of gravels and sands. These are well seen on the road from town to Lincluden, and especially in the railway cutting of the Castle-Douglas line, where beautiful examples of bedding, frequently characteristic of these deposits, are visible. These gravel accumulations, as seen in their undisturbed condition, consisted of rounded, oval, or elliptic, or even linear mounds or elevations on the surface of these districts in which they occur, their longer axis, as a rule, lying parallel with the valley. When seen in section, as in the railroad cutting referred to, their true character and origin are at once made manifest. On passing along the side of the Nith interesting sections of these mounds were noticed, obviously indicating the existence of water action at a much higher level than that which now obtains. Near the farm of Jardinetown the members were conducted to the top of one of these mounds to examine a shallow depression in the surface not easily explained. In crossing the Cairn at the village of Newbridge, in the bed of the stream a sandstone rock was observed, which is a member of the Permian system of rocks already referred to. No example of the Silurian was seen in this excursion, unless it be certain fragments constituting

the Druidical Circle well known at Holywood. These fragments are not boulders and must have been brought to the spot from some distance, by what means we leave others to determine.

The second excursion was to Dalswinton and neighbourhood. At Friars' Carse and on to Auldgirth Bridge we have a magnificent development of the gravel mounds. In some parts of the river itself we have again examples of the Permian sandstone, lying nearly horizontally, as it generally does, and thus well contrasted with the Silurian, constituting the Dalswinton hills in the immediate neighbourhood, which lies at a very high angle, often-times nearly 90 degrees. At various points in crossing the hills the ordinary characters of this rock system were well seen, namely, its grits, shales, conglomerates. On leaving the hills towards Dalswinton village an interesting fragment of Permian sandstone was noticed. Its outlines at a distance were so soft and round that it was mistaken for an ordinary kames or collection of gravel. This character was obviously owing to the soft and easily abraided nature of the sandstone. At Dalswinton House we have an interesting example of river action ; the cliff on which the mansion stands being an old river bank. On reaching the Holywood Station we had an opportunity of examining a most interesting section of ancient river action in a new cutting which was being proceeded with through ancient gravel sands, etc. There we found numerous beautiful specimens of the variegated sandstone, so often found in the bed of the Nith, the original site of which, so far as we know, has not yet been ascertained.

The third excursion was to the Bridge of Dee and neighbourhood. On this occasion we shall begin by taking a rapid glance of the geological features of the districts through which we are passing per rail. 1st. From the Station onwards for about a mile we pass through a series of the gravel mounds in the vicinity of Maxwelltown. We then come to a most interesting section of the Permian breccia commencing near the schoolhouse of Drumsleet. 3d. Im-

mediately we reach equally interesting sections of the Silurian, east and west of the Goldielea viaduct. Passing by many minor but not unimportant features we reach at the Dalbeattie cutting the Syenite, usually termed Granite. Immediately on crossing the River Urr we come again upon a succession of sections of the Silurian, which accompany us more or less to Castle-Douglas. Thence to Bridge of Dee Station, where we left the train, and the Bridge of Dee itself, were pointed out unmistakable indications of glacial action on the exposed rocky surface. The upturned edges of the Silurian strata were again well seen in the bed of the stream on crossing it to Threave Castle. After visiting Kelton Hill we proceeded along the Kirkcudbright road for a few miles to visit the site of a lead mine. This, so far as we could examine it, consisted of a horizontal shaft at the bottom of a cliff at the side of a burn. The traces of lead and zinc found were somewhat vague and uncertain, although the rock had the usual appearance of veinstone. The cliff consisted of our old friend the Silurian, and what was perhaps more interesting to us, it exhibited a fine though small example of contorted strata. In the immediate neighbourhood a large mass of Felstone Porphery stood out prominently, a not unfrequent associate of the Silurian in the South of Scotland. The surface of the fields and grounds around is characterised by its broken irregular features. These are due to a succession of rounded, rocky knolls, the so-called Roches Moutonées, and are as fine an example of this variety of glacial action as can be seen anywhere. Lower down in the glen we came upon a section produced by the burn which runs through it, which presented us with a fine specimen of glacial till. Thus we had, in this narrow spot, a very crowd of interesting objects for observation, thought, and study.

The fourth excursion was to Lochmaben, across the ridge of the Lochmaben and Mouswald hills, intervening between the valleys of the Nith and Annan. Starting by the Glasgow and South-Western Railway for the Racks Station, the members once more pass through a series of gravel mounds, as at Gasstown, Dargavel, Racks, &c. ; second, through a portion of the Solway moss, an ancient arm of the sea. Almost immediately after leaving the station they commence the ascent of the Lochmaben hills, which the members are now aware consist of the Silurian system, the strike running nearly east and west, and dipping to the north and east at a very high angle. The character of the rock is occasionally seen in quarries, cliffs, and exposed rock surfaces along the

ridge. A fine example of contorted strata in this system was recently detected in a broken cliff immediately west of the Beacon Hill. On reaching Lochmaben the members had an opportunity of seeing the extensive remains of glacial and post-glacial periods, covering the surface in its neighbourhood, and the numerous lochs surrounding it, most interesting from a geological point of view.

The last excursion included a visit to Hills Tower, Lochrutton, Lochaber, &c. The train was taken advantage of to Lochanhead Station, and gave the members another opportunity of seeing the gravel mounds at Maxwelltown, the deep cutting through the Permian breccia at schoolhouse, and the successive cuttings through the Silurian shale in the vicinity of the Goldielea Viaduct. The character of the rock, its dip and strike, were still better seen in two quarries near to the station; in the one nearest some specimens of dentritic manganese were obtained. On leaving the Station the Silurian hills were crossed towards Hills Tower. In the lower ground before reaching the Tower, in an artificial cutting for drainage, were found glaciated till and glaciated boulders. After visiting the Tower the members proceeded to walk along the eastern side of Lochrutton Loch. The water was unusually low, and gave the members an opportunity of witnessing numerous indications of a belt of wood having grown along its margin, several of the trees being of considerable size, some prostrate, some broken off, but the roots apparently in their natural position of growth. As some doubts were expressed as to whether their position was a natural or artificial one, we would leave the question for further consideration. On nearing the south-east end of the Loch it was declared that its waters must at one time have covered a larger surface, if not occupied a higher level; this is indicated by the existence of a small morass now covering a number of acres, and standing at some height above the present surface of the water. Lochaber was next visited. Here again we had proofs of change of level, the existence of wood along the margin now covered by the water. On returning to the Station ridges of Porphorites and Silurians were crossed, indicating, as they usually do in the positions they occupied relative to the surrounding hills, glacial action.