XVII.—*Fifty Years' Work of the Edinburgh Geological Society.*
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the Society.*

“*Edinburgh, 4th December 1834.*”

“At a special meeting of the Mineralogical Class, held in Mr. Robertson's Tavern, Milne's Square.

“Present—Messrs. Dun, Forrest, Laidlaw, Castle, Jamieson, Porteous, Moir, Jeffrey, Brodie, Mr. James Muir, and Mr. Peter Muir.

“Mr. Dun having been called to take the chair, it was resolved that a Geological Society be formed for discussion and mutual instruction, to meet in Mr. Rose's house, No. 2 Drummond Street, every Monday evening, at half-past eight o'clock, Mr. John Castle to be President, and Mr. James Brodie Secretary.

“It was resolved that a subscription be entered into for the purpose of presenting to Mr. Rose a testimonial of gratitude and esteem for the knowledge he has communicated to them as their preceptor in the sciences of mineralogy and geology, and that Messrs. Dun, Castle, and Brodie be appointed a committee to carry this resolution into effect.

“Resolved, further, that all questions for discussion be agreed on at one meeting, and discussed at the next.

“The question for discussion at the first meeting of the Society, ‘To examine the evidence for Arthur Seat being of volcanic origin,’ was proposed by the President.”

Such, gentlemen, was the origin of our Society, and this the minute of the first meeting, as extracted from the minute-book of the Society. I purpose laying before you a short history of our Society as detailed in the minute-books, now in my possession as Honorary Secretary of the Society. These books have been carefully kept, and the notes of the meetings fully detailed. More especially is this the case during the earlier years of the Society's existence, which is most fortunate, as at that time no volume of Transactions was published, and our information is therefore derived from these minute-books only.

The second meeting of the Society came to the following conclusion regarding Arthur Seat:—“After examining the evidence for Arthur Seat being of volcanic origin, also the evidence for its being of aqueous origin, concluded that its resemblance to the

lavas of existing volcanoes, the minerals contained in it being the same, the hardening and disturbance of the strata at the point of junction and neighbourhood, show that it has been forced up from below in a state of great heat, and it is of volcanic origin." Such was the decision arrived at. The minute shows not only the state of geological science at that date, but also proves that the subject had been fully and fairly discussed, and that the decision arrived at was based not upon mere opinion or fancy, but upon practical field work, and a knowledge of the rocks *in situ*.

During this first session very many questions were discussed, and in every case the reasons adduced show that the decisions arrived at were only obtained after long and serious thought, and were based on solid foundations. The Society, therefore, from its first meeting, was a working one—no mere show, but called into existence to take the place of a felt want. It started as it has continued, with hard work, not a little weary toil, and considerable rivalry, but withal, and above all, with a friendly and manly brotherly feeling amongst its Fellows.

I quote a few more of the subjects of discussion during this first session.

Is grey wacké of aqueous or igneous origin?

Why is there no indication on the surface of slips or faults in the substrata?

Is granite of aqueous or igneous origin?

These questions show the position of the science in those days. May not these discussions have done much in placing the subject in the advanced position it now holds amongst the sciences?

The testimonial to Mr. Rose was duly presented to him at a special meeting of the Society, held in Mr. Robertson's tavern on 19th January 1885. "All the members were present. Mr. Dun having been called to the chair, in a handsome manner, in name of the Society, presented to Mr. Rose a copy of Mantell's 'Geology of Sussex,' and the published numbers of Lindley and Hutton's 'Fossil Flora,' bound in calf, gilt, &c., as a testimony of their gratitude and esteem for the knowledge he has communicated to them as their preceptor in the sciences of geology and mineralogy."

At a meeting held on the 16th February 1835, "it was resolved that a subscription of one penny per week be henceforth collected from each member, also that a fine of a halfpenny be imposed on members being a quarter of an hour behind the time of meeting, and one penny if absent from a meeting; fines and weekly subscriptions to be applied to the purchase of geological specimens; Mr. Dun to be Treasurer."

Next meeting finds the Society considering a plan for a cabinet to hold geological specimens, which was ordered to lie on the table till next meeting, when the estimate, amounting in all to £3:3s., was accepted. The cabinet contained twenty drawers, and was in the Society's possession till the session before last, when it was decided that the Museum of Science and Art, now having a magnificent collection open to the members, that our collection should be offered to them, and that the Society should cease to possess a museum.

During March 1835 the members began the discussion of the classification of the Primary rocks. These discussions were carried on night after night, and the results I now give—

“*Primary* granite, gneiss, mica slate, and clay slate.

“*Subordinate*—Quartz, statuary marble, serpentine, pitchstone, and hornblende.

“*Varieties of Granite*—Sienite and porphyry granite is of igneous origin, the others of aqueous.”

On the 30th of March 1835 the Society received a deputation from the Cuvierian Society of Natural History, who proposed an amalgamation of the Societies. This proposal was discussed at the subsequent meeting, and the members present rejected the proposals, but agreed to change the night of meeting to Thursday, so as to admit of the Fellows of both Societies attending the meetings.

On 13th April 1835 a committee was formed to draw up rules for the government of the Society. It consisted of Messrs. Dun, Castle, Forrest, Maxwell, and Brodie, with power to add to their number. This committee did not waste time, for the next week the following laws were discussed and adopted by the Society:—

“1st. This Society is formed for the purpose of promoting and extending our knowledge of the science of geology, and shall be called the Edinburgh Geological Society, constituted 4th December 1834.

“2d. No person shall be admitted a member of the Society unless he be recommended by one member, and obtain the concurrence of three-fourths of the members present, ascertained by ballot.

“3d. In order to defray the necessary expenses, and to have a small fund at the disposal of the Society, each member shall pay the sum of one shilling per quarter, payable at the Society's first meeting in January, April, July, and October.

“4th. The stated meetings of the Society shall be held weekly, on the evening of Thursday, at half-past eight o'clock.

“5th. The General Annual Meeting shall be held on the first Thursday of January, when the office-bearers for the ensuing year shall be elected, and any other business of the Society transacted.

"6th. The office-bearers shall consist of a President, Vice-President, Treasurer, and Secretary, to be elected by a majority of votes by ballot.

"7th. The President shall preside at each meeting, and in his absence the Vice-President shall take the chair.

"8th. The duties of the Treasurer shall be to collect the quarterly payments, fines, &c., to discharge the Society's obligations, and to keep a cash-book, in which these shall be regularly entered.

"9th. No account shall be paid by the Treasurer until sanctioned by the Society.

"10th. The duties of the Secretary shall be to give any directions the President may consider necessary, to attend all meetings, and to minute the proceedings. He shall also be custodian of the Society's library and museum.

"11th. Any member having an essay to read shall give notice to the Society at the previous meeting.

"12th. The subject for consideration shall be fixed at one meeting, and discussed at next.

"13th. A fine of one penny shall be imposed on any member absent without a sufficient excuse.

"14th. Any member absenting himself for six months consecutively shall be held as having left the Society.

"15th. No alteration on these laws shall be made without the consent of a majority at a general meeting.

"16th. Each member on joining the Society shall sign these laws.

"Office-bearers for the present year (1835)—

President—Mr. Rose.

Treasurer—Mr. Dun.

Vice-President—Mr. Castle.

Secretary—Mr. Brodie."

Comparing these with the laws now in force, we find that, although somewhat extended, yet they bear so close a resemblance to the present constitution that, practically, they are identical.

The transition rocks were classified as follows:—"Grey wacké, coarse and fine slates, sandstones and conglomerates, crystalline limestone, Old Red Sandstone, coarse and fine siliceous sandstones, and conglomerates of various colours."

"*Secondary Rocks*.—Mountain limestone, coal measures, magnesian limestone, New Red Sandstone group. The Lias group—earthy limestone, inferior oolite, great oolite, soft calcareous and shelly freestone, coarse and fine shelly limestone, sandy limestone, slaty clay, compact limestone. The Wealden group—limestones, marls and beds of clay, lower green sand, upper green sand, chalk without flints, chalk with flints.

"*Tertiary Rocks*.—1. Paris basin, lime and sandstones; London and Hampshire basins, blue clay. 2. English craig and sub-appenines, marls, and yellow sand, containing land and fresh-water fossils. 3. Consolidated gravel and calcareous limestone.

Unstratified Rocks.—Granite, basalt, greenstone, clinkstone, compact felspar, pitchstone, wacké, amigdaloid, and traptuff.

Volcanic Rocks.—Trachyte, which abounds in ancient extinct volcanoes, basalt, porous lava, pumice, tuffa, volcanic dust.

Modern Period.—Diluvium, gravel (loose soil) and sand of valleys, consolidated sand and gravel, alluvium, loose soil and *débris* of rocks, estuary of rivers, &c.

On 4th June 1835 "it was proposed, and unanimously agreed to, that the Society take advantage of the summer to visit and examine the rocks in the neighbourhood of Edinburgh." Joppa Quarry was first visited (11th June 1835), and afterwards Burdiehouse, Castle Hill, and Dalry, Dean Bridge, for Water of Leith, Craigleith Quarry, Broughton Quarry, Newhaven and Cramond Island, Queensferry, &c. These excursions, and the resolution of 4th June, determined an important point, namely, that the Society should be not only theoretical, but also do an amount of field work. It is acknowledged that a great amount of knowledge has been accumulated, and much good work has been done, and is being done, by the Society in this practical department.

On 15th October 1835 the Treasurer was empowered to make his first payment "for the Secretary's books, amounting to 3s. 9d., and to place in the hands of the Secretary 4s. 6d. for oil or candles."

From October essays were frequently read and discussed, and the Society took more of its present form. On 22d October "Mr. Forrest brought forward a drawing of a lime quarry, which had been worked at the south-west base of Arthur Seat."

Mr. Rose, on 12th November, "was requested to purchase any books on geology he considered necessary for the Society, leaving to his own judgment the extent of such purchases," and Mr. Macdonald was unanimously elected *Librarian*.

On the same date we are informed that "Messrs. Maxwell, Aitken, Forrest, and J. and A. Macdonald have books from the Library."

On 26th November 1835 "it was agreed that the Society should meet next week in Mr. Robertson's Tavern, Milne Square, to celebrate the anniversary of the Society," and accordingly we find that the first anniversary meeting was held there on 3d December 1835. "The President, with a few prefatory and appropriate remarks on the nature and history of the Society, proposed its success as a toast, which was drunk with enthusiasm, not loud, but deep." We are also told that Mr. Jamieson introduced with a short, pithy, and humorous address a new fossil found by him in the mountain limestone—the first on a long list to which he added year by year.

A month afterwards, the Society elected their second board of office-bearers. The only change was in the Vice-President, Mr. Laidlaw succeeding Mr. Castle. At the same meeting an entrance fee of 2s. 6d. was imposed on all new members. The Treasurer was empowered to pay £1:8s. to Messrs. Tawse and Imrie, as part payment of the cabinet obtained for the museum.

At this date the Society consisted of twenty-two members. Eleven of these were the original members, namely, Messrs. Dun, Forrest, Laidlaw, Castle, Jamieson, Porteous, Moir, Jeffrey, Brodie, James Muir, and Peter Muir, with Mr. Rose; and they elected during this first season ten others—Messrs. Davidson, Thomas Macdonald, Kemp, Maxwell, John Fletcher, Falkner, Alexander Macdonald, William Aitken, John Gibson, and Rutherford.

On 28th January 1836 it is chronicled that Mr. Jamieson added to the list of known fossils from the mountain limestone a new one, which was named *Orthoceras Jamiesonia*. From an after entry it would appear that this fossil was obtained from Kilbride Quarry.

On 18th February Mr. Rose commenced a series of conversations on geology. These would appear to have been of the nature of papers, and were very fully discussed by those present. These communications were to some extent chemical, for the Society decided on 3d March that alumina “consists of aluminium 1·25, oxygen 1·0.” The composition of the earth was discussed at subsequent meetings.

The attendance at the meetings was gradually becoming smaller, so, on 31st March, it was agreed to meet only once a fortnight.

The Secretary, Mr. Brodie, seems to have ceased to act, for we find mention of Mr. Dun as Interim Secretary, and a blank occurs in the minutes from 14th April 1836 to 26th January 1837. The latter date was the annual meeting, and Mr. Brodie again became Secretary, but the following is agreed on:—“That the meetings of the Society be held on the evenings of the last Thursday of every month, and during the summer months to meet as often as may be convenient.”

On 27th April 1837 Mr. Jamieson mentioned that a boulder from the Castle Rock was to be seen in the foundations now digging in Victoria Street. The President (Mr. Rose) mentioned the importance of studying these transported masses, the place from which they travel, and the nature and date of their transport. Thus was started in 1837 the study of those masses of rock, to our knowledge of which our present worthy President, Mr. Milne Home of Milne-Graden, has added so much.

In 1838 Mr. Forrest read some remarks on the Starleyburn, and stated that it passed over limestone, which it dissolved, and that when materials were placed in the waters they became petrified. This notice is interesting in regard to Mr. Henderson's recent valuable additions to our Transactions.

During November 1839 the meetings of the Society were again increased to two monthly, the first to be for discussion only.

In 1840 our Society comes to the front as appointing a conference with other scientific societies, having for its object the drawing up of a memorial to the Commissioners of Woods and Forests, praying that "the different specimens of geology in their possession obtained by them during a late survey should be transmitted to Edinburgh."

In the same year it is minuted that Messrs. John Mackay, Whins Colliery, Alloa, and Mr. John Castles, 21 Leith Street, had been previously elected honorary members, but the appointments had not been minuted at the time. These honorary members, however, were different from those now elected, as they had the power of voting and taking an active part in the business of the Society, privileges they seem to have taken full advantage of.

A Law Committee was appointed to revise the laws, auditors were elected to go over the Treasurer's books, and catalogues of the library and museum were completed, and lodged with the President. At the end of April 1840 there were thirty-one members in the Society. This number was increased during the year by eight, in 1841 by eleven, in 1842 by five, and in 1843 by five new members. The first annual report was read to the Society on 12th November 1840 by Mr. Castle. It gives most full and interesting details of the state of membership, funds, papers, &c. for each year since the commencement of the Society. It is worthy of note that this annual report, by the then laws, must be presented at the beginning of each session by the Vice-President, and not by the Secretary.

In the Annual Report for 1841-42 we learn that a principal feature of the past season's work has been Mr. Rose's "very pleasant descriptions through all the various specimens belonging to this important family (the Silicates). Then followed the Zeolite group, the Corundum, Sapphire, and Augite next engaged his attention," and that "the past session has been extremely barren in original communications." Mr. Forrest was elected a Vice-President, but otherwise the Society re-elected its old office-bearers.

Mr. Lyon came to the rescue, laying "upon the table a circular draught of the city, by which he proposed to divide it into

several parts, for the individual examination of the members, who were to report, and thereby make up a geological survey of the whole."

In January 1842 a committee was appointed to revise and print the laws.

The Society has, ever since its existence, done its utmost to chronicle facts relating to the district, and "Mr. Rose is requested" in May 1843 "to write to Mr. Nixon, manager of the new road making round the base of Salisbury Craigs," and to solicit him to spare a large boulder unearthed during the cutting of the road. This request, however, was not granted, and the boulder was broken up to macadamise the road. It is stated that the stone measured 24 feet in circumference, and was 6 feet high. Its probable origin Corstorphine Hill. This road gave many new facts, and led to numerous papers and discussions during 1845-46. It undoubtedly did much to create a taste for personal observation.

From this date the discussions were more keen, and the subjects more wide afield. The coal scare had just begun, and the Society had many and long sederunts on the subject, and many attempts are made to calculate the length of time coal would be obtainable.

The ballot-box appears on the scene, and we are told that Mr. Weir was admitted a member by means of it (Sept. 14th, 1843). It was a piece of Mr. Jamieson's work, who for so long taught practical joinery in the old School of Arts in Adam Square, and that he did his work well the box can now testify.

The funds of the Society were in a bad condition, for it is stated that the sum due the Treasurer was £3:15s., and for many years this deficit gradually increased, but withal men were got to take the responsibility readily upon their shoulders, and on one occasion it is distinctly stated "that the Treasurer did not hold the Society liable for the sum due."

The parallel terraces have always been a fruitful source of discussion, and Mr. Lyon concludes in 1844 that the inland lake theory is inapplicable to account for the terraces at Eildon, Dunkeld, Glen Roy, &c.

Glacier action also received much attention, and the Society admitted the possibility of glaciers descending by their own weight.

On September 19th, 1844, Mr. Hay of Musselburgh read a most important paper on his observations on the recedence of the sea at Musselburgh, and the Society, at an excursion conducted by Mr. Hay, came to the conclusion that the observations of that gentleman were correct. This is undoubtedly one of the most important of the earlier papers.

We have in 1845 a statement regarding the conversion of peat into coal by artificial means, and we are told the experiments were successful, and would be of vast benefit. Unfortunately, no further statement is made as to the *modus operandi*.

Boulders again came in for attention, and we find the water-carriage theory somewhat decidedly declared to be correct.

The presence of frogs and other live animals in solid rock was much discussed, and the Society put the subject to the practical test by enclosing a frog in a sealed glass bottle. After five days the animal was much emaciated, and the bottle was broken—the test being considered sufficiently conclusive to prove that such animals cannot exist in solid rock. The theological question caused much trouble, and Mr. Lyon, in his report for 1846, does his utmost to settle the point.

On 11th February 1847 Mr. Macadam read a paper and showed a specimen of pottery made by the Chippeway Indians. The specimen was obtained from near Peterboro, Canada West, and was supposed to have been manufactured by the Ajebbeway or Chippeway Indians. The vessel was of a brownish black colour, and was ornamented with a design taken from nature. The material of which it was composed was studded throughout with small masses of silica, and also contained organic matter of vegetable origin. Its chemical constituents were silica, organic matter, alumina, protoxide and peroxide of iron, magnesia, lime, with traces of the alkalies. From the composition of the pottery and its general appearance, the writer was inclined to believe that it had been made from an admixture of pulverised silica, ferruginous clay, and organic matter, and from the presence of the latter, as well as from the protoxide of iron, it appeared evident that the heat employed for the purpose of baking the earthenware when made was one of no high temperature.

This John Macadam, an uncle of the present Secretary, afterwards went to Melbourne as Government analyst, and became latterly Member of Legislature for Castlemaine. At this time he was assistant to Dr. George Wilson, Lecturer on Chemistry in the School of Medicine, and latterly Professor of Technology in the University of Edinburgh.

During 1847 the Society sustained a great loss in the death of Mr. George Sanderson, whose work as an optician is so well and extensively known. To him is due the means of section-cutting fossils, &c. for the microscope, and he was ever ready to aid our Society in any investigation where his skill, as well as his vast store of knowledge, were called into requisition. Probably no man did more for our science in his day than George Sanderson, and had it not been for him, it is doubtful if the

polarising instruments now in our hands would ever have existed in so perfect a state.

In the same year M. Joubert brought out a book in which he contested the views of Lyell, Hutton, and Playfair, and accordingly we find Mr. Sturrock refuting these statements, and summing up a most exhaustive critique in these words—"Mr. Hutton comes out from the trial unscathed, and that although on his mind the first ray of a new light had dawned, yet after years have proved it to be a true light and steady, increasing by every new discovery in its thorough truthfulness."

The Society had up to this time been in the habit of publishing journals, but the funds had now gone so far in arrear that, in September 1847, it was resolved to discontinue printing till the debt be cleared off.

In 1849 Mr. Andrew Taylor was nominated as a member by Mr. Alex. Rose, and seconded by Mr. J. Rose. Mr. Taylor is now our oldest member, and I am sure you will join with me in wishing that he may long remain to go in and out among us. Very many of us are under a debt to him for information always readily given, and we all know that had it not been for his unselfishness, he might have gained more worldly, but certainly not more esteem.

Mr. Rose, who had been President for many years, now vacated the chair, and was succeeded by Mr. George Lyon.

Analysis by Professor Heddle of St. Andrews of the minerals Galactite and Datholite, from Glengarry, were placed before the Society. No minutes exist of the meetings held from 6th December 1849 till May 1850, when a paper of Mr. Taylor's is recorded, and a further blank then occurs till 4th December 1851. That nothing of great importance can have taken place seems evident, for in the Annual Report for session 1850-51 the Vice-President, Mr. James Brown, says, "The subjects treated of at the regular meetings of the Society during the past year have been rather limited, being chiefly confined to reviews of recent geological works, and of notes of country tours by members, if we except the regular and systematic papers of our President on the organisms of all the stratified formations up to that of the mountain limestone." In fact, the earlier days of the Society were employed by our worthy founder, Mr. Rose, in laying such an elementary grounding as would enable the members afterwards to form their own opinions. Thus we find Mr. Rose discoursing on silica, oxide of iron, magnesia, and by chemical information showing how these were formed and constituted. Mr. George Lyon then took up the course, and by easy steps led the members upwards in geological knowledge. Now-a-days we may laugh at such elementary work, but bear in

mind that geology at this time had no sure basis, and that those desirous of studying had little aid from practical men. True, Hutton, Playfair, MacCulloch, Boné, Williams, Allan, Milne, Jamieson, Cunningham, and Maclaren had lived, worked, and written,—true the Society had the privilege of the latter gentleman's advice; but remember geology was not a popular science on this side of the border, it was heterodox—at least, so the Church said—and therefore denounced; and remember that you are now dealing with the *first Geological Society in Scotland*; that for years after no other existed, whilst that in England you had only London, York, Huddersfield, and Bristol, and in Ireland Dublin only. The Society at this time, too, was struggling with poverty. In 1851 we learn that it has just managed to clear off a debt due to the Treasurer, and that with unfettered feet great things are expected.

At the annual meeting—4th December 1851—we find Dr. Foster Heddle elected President. Things brighten up a little, and the Chairman gave many most valuable contributions of a chemical mineralogical nature, but which, unfortunately, the Society never published. It may, however, interest the Fellows to know that within the last month I have learned from Professor Heddle that many of these analyses were published elsewhere, and the remainder in course of time will appear when their districts come to be systematically worked.

During 1851 Dr. Heddle moved that the Society should urge on Government the desirability of the Trigonometric Survey of Scotland being conducted more rapidly than hitherto. The Society did so, and also urged on the Government the necessity of additional surveys of the geology and mineralogy of the country. In 1852 the President congratulated the Society in these words:—"I have now to notify to the Society that our requests have been in every one particular acceded to by Government. We were the only Society that made any petition on these heads (the Geological and Mineralogical Surveys), and I think it justly follows that, for the benefit which must accrue to Scotland from these Geological and Mineralogical Surveys, we deserve the entire thanks." We know the result. Whilst copies of the Geological Survey publications have been given to other societies, the Society who petitioned, and were the means of getting the Survey, have not received a sheet.

In April 1852 the Society petitioned Government to give to Scotland a Natural History Museum, and it offers to hand over its Museum for that purpose. The Museum of Science and Art, under the directorship of our Honorary Fellow, Professor T. C. Archer, was the outcome of this movement.

In 1852 Dr. Dubuc became a regular contributor to the work

of the meetings, and his many and valued papers form a feature in the Transactions. Dr. Dubuc also gave a very large proportion of his magnificent collections (principally Paris basin shells) to the Museum.

On 17th November 1853 the following entry occurs:—"Mr. Geikie, a frequent visitor of the Society, then read the first part of his Observations on the Lias of Strath, in the Isle of Skye;" and further, after an abstract of the paper, "the members expressed themselves highly gratified with the manner in which Mr. Geikie treated the subject, and observed that it was much to the credit of so young a man to have made so extensive a series of observations, his account of which was written in so elegant and mature a style." The author of this paper is now the Director-General of the Survey of Great Britain.

On 2d November 1854 "Mr David Page was unanimously elected a member of the Society."

The Society, however, was in an unhealthy condition, and not even Mr. Page could save it. In 1858 the list of members contains only sixteen names. It is not complete, but still the number could not be over twenty. Mr. Rose died, and the Society dwindled downwards. The head was gone—the body was rapidly following; a great effort must be made, or this Society must go the way of the Cuvierian, Wernerian, and Philosophical. Who was fit for such a task? Who could breathe again the breath of life into the paralysed body? A champion came forward—no new member with new ideas, but an old Fellow of the Society—a Fellow of Fellows—a Fellow who, as President, Vice-President, and Secretary, had served the Society for many long years—George Lyon. Would that he were here once more to aid us, and join in our celebrations! Our old member, Dr. Hunter of Carlisle, wrote, answering an invitation asking him to join in the jubilee meeting, "I will come, even although the pleasure of the present will be deeply mingled with the memories of the past." He told me afterwards that he referred especially to George Lyon.

An advertisement was put in the daily papers, calling a meeting of those favourable to a Geological Society, and the response was such that, on 16th January 1862, the Society was revived by a large inflow of new blood, and appeared once more with the following office-bearers:—

President—George Lyon.

Vice-President—Foster Heddle, M.D.

Hon. Secretary—James Rome, M.A., LL.B.

Treasurer—James Haswell, B.A.

Curator—James P. Faulkner, S.S.C.

Librarian—George A. Pantou.

"The Society had prospered so far, that towards the close of the first session the members had increased to about thirty.¹ In November 1862 the Society moved from Mr. Rose's Class-room, No. 2 Drummond Street, to its present rooms, Mr. Lyon delivering the closing address, "On the necessity of Accurate Observation of Physical Phenomena."

Next session, under Mr. Faulkner's presidency, the members increased to about sixty, and the Society held its first conversazione in the Masonic Hall, at which about three hundred attended. Addresses were given by Dr. Aytoun, Mr. Marshall, and Mr Sadler. Mr. Page during this session delivered a course of lectures on elementary geology, which were largely attended, and did the Society much good. Mr. Page became President for Session 1863-64, and was followed by Mr. Charles Maclaren in 1864, who remained in the chair till his death in 1866.

In 1866 Dr. Page again became President, and a second conversazione was held in the newly opened Museum of Science and Art (6th December 1866), the first of its kind held in the building. The attendance was large, about 1700 being present. Mr. Page was the chief speaker, his subject being "Geologic Life Periods." In 1866-67 we find an addition to the roll of members, amounting to 65, and the total then stood at 156.

The work of the Society's historian now becomes easy, for instead of poring over old minute-books, oftentimes written in a shaky hand—doubtless shaky from long use of the hammer—he now has printed Transactions, with all the main facts recorded in good black Roman type. For this reason also little need be said, and your time, already too much encroached upon, need not much longer be taken up.

The thirty-third session was inaugurated by an address from Mr. David Page on "Scottish Geology, its Proofs and Problems," which was, like all Mr. Page's work, most interesting and instructive.

Dr. Alleyne Nicholson read his first papers before the Society "On the occurrence of Fossils in the Old Red Sandstone of Westmoreland," and "On a New Genus of Graptolites."

Mr. John Henderson contributed his first paper on the Silurian Beds of the Pentlands in "a notice of three species of Trilobites."

Dr. J. R. S. Hunter spoke on the Geology of the Carboniferous Strata of Carlisle, the paper being in that gentleman's usual exhaustive style; charts and lists of fossils are given.

Mr. Thomas Davidson sent a communication on Brachiopoda from the Upper Silurian Rocks of the Pentlands.

¹ Mr. Lyon's "Memoir of the Society," vol. i., part i.—*Trans. Geo. Soc. of Edin.*

The closing address of the session by Dr. Page, the President, was entitled "On the Nature of Geological Evidence."

The following session finds Dr. Page addressing the Society on the "Practical Bearings of Geology." On 23d January (1868) a conversazione was held in the Museum of Science and Art, and was most successful. Dr. Page delivered a lecture on Ice Action. Dr. Nicholson during the session read a paper on the Granite of Shap, Westmoreland. Glacier Action is treated of by Mr. Wm. Jolly, who considered principally the evidences in Galloway. The closing address of the session was delivered by Dr. Page, who took for his subject "The Natural Sciences—their place in Education." At the close of this session the Society had the following number of members:—

Ordinary Fellows,	163
Patron,	1
Honorary Fellows,	13
Foreign Corresponding Fellows,	31
Associates,	14
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At the Annual Meeting Sir Roderick Murchison became Patron, Professor Archibald Geikie, President, Mr. Geo. A. Panton, Secretary.

Dr. Page, on retiring from the chair, delivered an address on "Field Work, its Charms and Instructions," and at the following meeting Dr. Geikie, on taking the chair, delivered an address on the Scientific Societies of the Country, and defined the position occupied by the Edinburgh Geological Society. He afterwards treated of Local Geology.

Professor Hull sent a paper "On the Extension of the Coalfields of England under the more recent Permian and Triassic Formations" ("Transactions," vol. i., p. 13).

The Silurians of the Pentlands are again represented in papers by Messrs. Henderson and Brown.

Mr. James Powrie gave a most interesting paper "On the Earliest known Vestiges of Vertebrate Life," being a description of the fish remains of the Old Red Sandstone rocks of Forfarshire.

Mr. Robert Brown treated of the "Geographical Distribution and Physical Characters of the Coalfields of the North Pacific Coast," a paper still so much in demand that the part of the Transactions is practically out of print.

Local geology found a worker in Mr. George Lyon, who read "Notes on the Trapdykes of Edinburgh and Neighbourhood."

Buried River Channels yielded a most interesting paper in the hands of Mr. James Croll of the Geological Survey.

Professor Geikie closed the session with an address on the work of the Society and the importance of local research.

The yearly joint excursion with the Glasgow Geological Society is first mentioned in this volume (vol. i., part iii.), and was to Campsie Glen. The party was under the guidance of Mr. John Young, who so often has led these field meetings.

The Library received very large additions during this session, and this fact alone would speak volumes in praise of our then Secretary, Mr. Panton.

The opening of the thirty-sixth session finds Dr. Geikie again in the chair, and addressing the Society on the Scope of Palæontology. This session will remain memorable as the one in which Sir Roderick Murchison, our Patron, delivered his last address on geology, the subject being "Observations on the Structure of the North-West Highlands."

Mr. James Linn read most interesting communications on the Bathgate Hills, and Mr. Taylor treated of the same locality.

Mr. C. W. Peach notes certain fossils in the Burdiehouse limestone, &c. Whilst Professor Alleyne Nicholson considered the Conistone Limestones in an exhaustive paper.

Mr. (now Professor) Charles Lapworth gave the first of his papers on the Lower Silurian Rocks in the Neighbourhood of Galashiels, a paper unique for its style and research. To lovers of the Borders this paper is perfectly indispensable.

From the Annual Report we learn that the Society had gained in numbers, having 273 members on the roll, as against 267 the previous year, or a net gain of 6.

In 1871 Sir Charles Lyell became Patron of the Society, with Professor A. Geikie as President, and Messrs. Milne Home and Haswell as Vice-Presidents. Mr. Ralph Richardson took the Secretary's books.

Mr. Somervail gave several papers on local subjects, all important, but especially so that one "On the occurrence of *Strepsodus* and *Rhizodopsis* in the Upper Coal Measures of Edmonstone, Midlothian.

1872-73. The thirty-ninth session was opened by Mr. Milne Home, who delivered his first address to the Society, dealing principally with the boulder-clay.

Mr. Jolly gave "Notes on the Glaciers of Glen Spean, and their relations to Glen Roy."

Mr. R. Etheridge, Junior, read a paper "On the Shells contained in the Shell-marl of the Alluvial Deposit of the Meadows, Edinburgh," and Mr. D. J. Brown contributed further to the knowledge of the "Silurian Rocks of the South of Scotland, Moffat, and Gala Beds."

1873-74. Professor Geikie opened the fortieth session with an address on "Earth Sculpture and the Huttonian School of Geology," in which he combated certain theories put forward by the Duke of Argyll. Professor Geikie also contributed a paper "On some Points in the connection between Metamorphism and Volcanic Action."

Mr. Etheridge gave an important list of "Additional Species of Fossils from the Upper Silurian Series of the Pentland Hills," and was followed by Mr. Lapworth on the Graptolites discovered in the same district by Mr. John Henderson.

The second part of the Silurian Rocks of Southern Scotland and Llandovery Rocks came from the pen of Mr. Brown, as well as a paper on the Wenlock and Ludlow Rocks of the Series, and Professor Rupert Jones gave "Notes on some Silurian Entomostracæ from Peeblesshire, collected by Mr. Brown."

Mr. John Horne read a paper on the Geology of the Isle of Man, which was so complete that even now it is in considerable demand.

Glacial phenomena was represented in Notes by Mr. Henderson on the Pentland Hills.

1874-77. The forty-first session was opened by Professor Alleyne Nicholson, "On the Palæontological Significance of the Migrations of Animals."

"Metamorphism and Vulcanicity, as noted in the Irish Rocks," came from Mr. G. H. Kinahan, and was a fitting addition to Professor Geikie's Scotch paper.

One of the principal works undertaken by the Society was the Catalogue of the Brachiopoda of the Lothians and Fife, and the Report made by Messrs. Thomas Davidson, F.R.S., and Alexander Somervail was presented during this season, and was printed in the Transactions.

Glacial Phenomena was represented in a paper by Mr. Somervail.

1875-76. Mr. Milne Home, President, opened the session (forty-third) by an address on the Parallel Roads of Glen Roy, in answer to a lecture delivered by Professor Tyndall to the Royal Institution, London.

Mr. Ferguson of Kinmundy gave his first paper on Aberdeenshire, noticing the chalk flints of that county, and Mr. Melvin contributed a valuable paper "On the Nature and Origin of the Surface or Vegetable Soil, and its Influence on Glacial Phenomena."

Mr. Taylor added one other paper on Metamorphism and Vulcanicity, drawing his illustrations from the Edinburgh district.

At the close of this session the Society lost, through an accident, its Vice-President, Dr. James Bryce. In search of know-

ledge, led to a lovely Highland glen, he fell from the top of a cliff, and so perished.

1878-79. During this session the Society gained a worthy member in Mr. Wallace of Inverness, and his first paper, "On the Structural Geology of Strathnairn," appeared in the printed Transactions for the year.

Dr. Traquair followed with a paper on a Collection of Fossil Fish Remains from Nairnside, made by Messrs. Wallace and Ross.

During this session Dr. Page died. As a President, for many years he had done much for the Society. As one of the first men of his day, geology owed him much.

Local geology was represented by Mr. Henderson's paper "On the Structure and Arrangement of the Rocks of Arthur Seat."

Mr. Richardson became a Vice-President during this session, and the Secretary's duties fell to Mr. W. Ivison Macadam.

1879-80. Our well-known member, Mr. Stock, during January 1880 read a paper "On a Section recently exposed near Straiton."

Mr. John Young gave a most interesting notice "On Scottish Carboniferous Microzoa, and the Methods by which they may be Collected and Mounted."

Mr. H. M. Cadell, now of the Geological Survey, read an exhaustive paper "On the Volcanic Rocks of the Borrowstounness Coalfield," and afterwards led the Society over the ground.

Northern geology received attention in Mr. Wallace's paper on "Rathven and Enzie."

A further contribution was made to our knowledge of the Silurians of the Pentlands in Mr. Henderson's communication.

The session was closed with an address by the President, Mr. Milne Home, on the various theories to account for the transport of boulders.

During the interval, between sessions (1880-81), the Society again lost an old and useful Fellow in Mr. George Lyon, who, as Secretary, Vice-President, President, and Fellow, served the Society for many long years. Had it not been for Mr Lyon, the Society might probably not now exist.

Mr. H. M. Cadell contributed a local paper in a "Notice of the Surface Geology of the Estuary of the Forth round Borrowstounness."

Mr. Stock chronicled the discovery of a nearly entire specimen of *Rhizodus* in the Wardie Shales, and also a note on the occurrence of *Anthrapalæmon Etheridgii* in the Ironstone above the Sandstone in the Craigleith Quarry.

Mr. Wallace and Mr. Fraser give papers on Recent Geological Changes in the Moray Frith and Strathnairn, and Mr. John Young notes on the Genera of Gasteropod Mollusca, from the

Carboniferous Limestone Series of Central and Western Scotland.

The membership consisted of 10 Honorary, 143 Ordinary, and 55 Corresponding Fellows, with 21 Associates. The Library received very considerable additions during this session.

The forty-eighth session (1881-82) was opened by the President (Mr. Milne Home) in a sketch of the Progress of Geology during the past year, more especially referring to the slow progress being made with the Geological Survey of Scotland, and ended by moving that the Society petition H.M. Secretary of State for the Home Department to appoint more observers, or do otherwise as he may see fit to push on the Survey. This petition was presented, and a reply received that it was the intention of the Surveyor-General to move more men to Scotland whenever England had been finished.

Clay shell beds are considered during this session in three papers by Messrs. Fraser, Wallace, and Macadam, on Beds occurring at Clava, Fort-George, and Strachur; and Mr. Richardson gave notes of all the localities in which such deposits had been found.

Mr. Ferguson of Kinmundy read a paper on Sand-covered Districts in Aberdeenshire.

The Geology of Deeside is sketched by Mr. Hamilton Bell, and a preliminary notice of a white substance from the peat was given by Mr. Macadam.

Mr. H. M. Cadell read additional notes on the Surface Geology of the Estuary of the Forth.

The forty-ninth session (1882-83) was by no means barren.

Mr. Ralph Richardson opened the session by an address, in which he sketched the life and work of Agassiz.

Mr. Wallace gave papers on Enzie, Glen-More-nan-Alban, and Strathnairn.

A further communication appears from Mr. W. Ivison Macadam on the Results of the Analyses of Diatomaceous Deposits from the Peat of Kinnord, Ordie, Drum, Black Moss, and Lewes.

Probably the most important paper of the session was that by Messrs. Tait-Kinnear and W. Anderson, on the Fossils of the first Gilmerton Limestone.

Mr. Cadell added to our knowledge of the Borrowstounness Coalfield by notes on the Fossiliferous Rocks of the Field, and Mr. Kinahan sent a paper on the *Cervus Megaceros*.

Now, gentlemen, before bringing this history to a close, let me give you a few statistics. It would be useless for me to show the progress of the Society by comparing the number of Fellows now in the Society with those connected with it in its very early years. I will therefore go no further back than 1869—in

other words, five years after the reconstruction of the Society, and when it was in a most flourishing condition.

In that year we had—

<i>7th November 1867.</i>		Foreign Fellows, . . .	58
Patron, . . .	1	Associates, . . .	20
Honorary Fellows, . . .	12		
Ordinary do. . .	155	Total, . . .	<u>247</u>
Foreign do. . .	32		
Associates, . . .	16		
Total, . . .	<u>216</u>		
<i>1st January 1870.</i>		<i>1st August 1880.</i>	
Patron, . . .	1	Patron, . . .	1
Honorary Fellows, . . .	12	Honorary Fellows, . . .	10
Ordinary do. . .	171	Ordinary do. . .	143
Foreign do. . .	66	Foreign do. . .	53
Associates, . . .	16	Associates, . . .	23
Total, . . .	<u>266</u>	Total, . . .	<u>230</u>
<i>14th May 1874.</i>		<i>1st November 1883.</i>	
Patron, . . .	1	Patron, . . .	1
Honorary Fellows, . . .	12	Honorary Fellows, . . .	8
Ordinary do. . .	156	Ordinary do. . .	159
		Foreign do. . .	52
		Associates, . . .	21
		Total, . . .	<u>241</u>

The donations to the Library always show the position of a Society scientifically, for such donations are only obtained as returns for Transactions sent out.

Societies with which publications were exchanged—

1874, . . .	92
1880, . . .	133
1883, . . .	172

Just one word as to the class of papers the Society has placed before it. As the Geological Society of Edinburgh, local papers have always formed an important part of our Transactions. But the membership of the Society is far from local, and it is proud to have the best workers of the north of Scotland, and not a few from England, numbered with it. At first a local Society, now it has spread over a wider area; it has Fellows all over the country—all over the world. Its papers come from all parts of the globe, and it welcomes all true accounts of scientific labour. The Edinburgh Geological Society is no longer a local Society, it is, as behoves the Geological Society of the Metropolis of Scotland, the principal Geological Society in Scotland, and as such welcomes all comers. It is desirous of an even more large representation, and it offers the hand of welcome to all lovers of the hammer—to all workers on geology in its various branches.

At the beginning of the present session, the Society held a

conversazione in the Museum of Science and Art, at which an address was delivered by His Grace the Duke of Argyll, Patron of the Society. Deputations were present from all the learned Societies in Scotland, with one or two minor exceptions. The numbers attending the conversazione were 3617, being the largest (by about 1500) ever gathered together to the same class of meeting in Edinburgh. The tickets for the address, on account of the size of the hall, had to be limited to 981. The guests were received on entering by the President and office-bearers. The meeting was a most successful one.

The following is a list of those Societies represented at the lecture and conversazione:—University of Edinburgh; University of Glasgow; University of St. Andrews; School of Medicine, Edinburgh; The College of Justice; Royal Society of Edinburgh; Society of Antiquaries of Scotland; Royal Scottish Society of Arts; Scottish Meteorological Society; Botanical Society; Architectural Society; Scottish Arboricultural Association; Naturalists' Field Club; Scotch Fisheries Improvement Association; Royal Physical Society; Geological Survey; Geological Society; East Lothian Naturalists' Club; Berwickshire Naturalists' Club; Royal College of Physicians; Royal College of Surgeons; Education Department; Royal Scottish Academy; Pharmaceutical Society of Great Britain; Scottish Horticultural Association; Mathematical Society; Glasgow Philosophical Society; Glasgow Natural History Society; Glasgow Geological Society; Glasgow Archæological Society; Greenock Philosophical Society; Stirling Natural History Society; Perth Literary and Antiquarian Society; Perth Society of Natural History; Arbroath Natural History Society; Aberdeen Philosophical Society; Aberdeen Natural History Society; Banff Field Club; Inverness Scientific Society and Field Club; Montrose Scientific and Field Club; Montrose Natural History and Antiquarian Society; Elgin and Moray Scientific Association; Paisley Philosophical Society; Birmingham Philosophical Society.

The proceedings terminated by a vote of thanks to the Duke of Argyll, proposed by the Earl of Elgin, and seconded by the Lord Provost of Edinburgh.

During the session (1883-84) several important papers were read, including those by Mr. Morrison on Albertite, Mr. Richardson on the Tay Terraces, and Mr. Macadam on Butyrellite. Local geology was especially well represented in Mr. Henderson's masterly readings of the sections exposed in cuttings for the Suburban Railway, and Mr. Taylor's notices of a Lacustrine deposit at Holyrood, and of a section exposed at Warrender Park Road, and in Mr. Milne-Home's notes of Boulders exposed at Rothesay Place and North Palmerston Place. Messrs. Kinnear

and Anderson exhibited a magnificent collection of Carboniferous Crustacea from Ardross, Fife. Papers on districts more wide afield were communicated by Mr. Cadell on the Stassfurt Salt Deposits, and by Mr. Somervail on the Apparent Absence of Glacial Phenomena in Devon and Cornwall.

Professor (now Sir Wm.) Dawson, Principal and Chancellor of McGill College, Montreal, closed the session with a lecture, in which he compared "some salient points in the Geology and Geological work of Canada and Scotland."

The Society added a considerable number of new members to its roll of Fellows, and at the close of the fiftieth year of its existence, finds itself with its list of Fellows larger than it has ever been on previous occasions. Signs of decay and old age are wanting, and instead, all the evidences of vigour and youth are displayed. Hard work and the search after truth are visible everywhere amongst its Fellows, and the Society bids fair to show itself worthy of the city that gave it birth, and worthy of the country whose rocky structure it exists to study.