Extracts from *Proceedings of the Geological Society of Glasgow*

### Session 8 (1865-1866)

Extracts from the Proceedings for 1865-1866 (Session 8)

**Meeting held on March 22, 1866**

Mr. JAMES FARIE, the Secretary, exhibited a specimen of “Wulfenite,” or Molybdate of Lead, from the Lochantyre mine, near Gatehouse, Kirkcudbrightshire, a mineral which he believed to be hitherto unknown in Britain. Mr. Farie exhibited also, from the same mine, a specimen of Vanadate of Copper, new to Britain, and stated in recent works, such as Bristow’s and Dana’s, to be found only in the Urals.

The SECRETARY read a communication from Mr. James Croll “On the reason why the Change of Climate in Canada since the Glacial Epoch has been less complete than in Scotland”. *(This paper can be seen [here](#).)*

*In the Proceedings for the year 1866-1867 (Session 9) it was recorded that, at the meeting of February 7 1867, James Croll was elected an honorary associate.*

### Session 9 (1866-1867)

Extracts from the Proceedings for 1866-1867 (Session 9)

**Meeting held on February 7, 1867**

It was remitted to the Chairman and the Secretary to draw up a minute expressive of the great loss which the Society had sustained by the death of the late President, James Smith, Esq., of Jordanhill; and of the value of his scientific labours in the science of Geology, that it might be recorded in the Society’s Minute-book; and that the Secretary should transmit a copy of it to Archibald Smith, Esq., of Jordanhill, son of the late President.

The CHAIRMAN delivered an Address on the scientific labours of the late President of the Society, James Smith, Esq., of Jordanhill. *(The text of this address can be read [here](#).)*

*It is interesting to note that the minutes of the meeting on February 7, 1867 also record that it was on that date that James Croll was elected an honorary associate of the Society. The minutes of the meeting which took place just over two months later, on April 18, 1867, record that the following was one of the papers read:*

On the change in the Obliquity of the Ecliptic; its influence on the Climate of the Polar Regions and Level of the sea. By Mr. James Croll. The reading of this long and valuable communication was followed by some observations by the President and the Rev. H. W. Crosskey. *(The President referred to was Dr. John Young, Professor of Natural History at Glasgow University, who was elected on March 7, 1867 following the death in January 1867 of James Smith. More information about James Croll can be found [here](#) and his paper can be read [here](#).)*
Session 10 (1867-1868)

Extracts from the Proceedings for 1867-68 (Session 10)

Annual General Meeting held on October 3, 1867

The Secretary read a report on the state and progress of the Society for the past year, which showed that the members on the roll were, for 1867, 233—a satisfactory increase over the preceding year. The library had been largely increased by exchanges with Foreign and British societies; and, among other donations, Archibald Smith, Esq., of Jordanhill, had, with great liberality, presented the Society with one hundred volumes of geological works from the library of his late father, sometime President of the Society.

Meeting held on October 31, 1867

The PRESIDENT [Dr. John Young] paid a high tribute to his predecessor in office, the late Mr James Smith, of Jordanhill, and expressed his gratification at the erection of the Geological Survey of Scotland into a separate branch, under the directorship of one so competent as Mr Archibald Geikie.

James Smith of Jordanhill was President of the Geological Society of Glasgow from 1864 until his death (aged 84) in January 1867. A link to the account given to the Society by Rev. Henry W. Crosskey of James Smith’s remarkable life can be found in the entry for Session 9 in the extracts from the Proceedings for previous anniversary years.

Meeting held on February 6, 1868

Mr. J. WALLACE YOUNG exhibited sections of pitchstone from Arran by means of the microscope. Pitchstone to the unaided eye appears like a piece of bottle glass, but when sections are examined under the microscope beautiful needle-shaped crystals of pyroxene are observed in a colourless felspathic base.

Mr. JOHN SMITH exhibited a remarkably well-preserved crinoid from the carboniferous limestone, Beith. The specimen, evidently belonging to the genus Phodocrinus, showed the stem, calyx, and fingers all in position, a state of preservation in which crinoids are very rarely obtained in the carboniferous limestones of Scotland.

John Smith (1845-1930) was an active member of the Geological Society of Glasgow for 65 years. He devoted much of his life to the study of the geology, natural history and archaeology of Ayrshire. An account of the life of John Smith, written by Dr. Murray Macgregor, can be found here.

Meeting held on February 27, 1868

Sir WILLIAM THOMSON, D.C.L., read a paper on “Geological Time”. (This paper can be seen here.)

Meeting held on March 28, 1868

ARCHIBALD GEIKIE, Esq., Director of the Geological Survey of Scotland, read a paper on “Modern Denudation”. (This paper can be seen here.)

[There followed] an animated discussion, in which Sir William Thomson, Professor Allen Thomson, Mr. John Young and the President took part, after which the Society adjourned till April 2nd.
Session 11 (1868-1869)

Extract from the Proceedings for 1868-1869 (Session 11)

Meeting held on November 5, 1868

Mr. JOHN YOUNG exhibited a vertical section of the strata in Gilmorehill Quarry, which he has constructed out of the pounded material of each stratum. The section is enclosed within a long wooden box, with a glass front, and is constructed on a scale of one-half inch to the foot. It exhibits in a clear manner the comparative thickness of each stratum, their natural colour, and the gradations they assume. It has been placed in the Hunterian Museum as a memorial of the quarry.

Mr. JOHN YOUNG read a paper, “On the section of strata at present being worked in the western portion of the Gilmorehill grounds, for the purpose of obtaining building-stone for the erection of the new Glasgow University.” The paper was illustrated by specimens of the sandstone, &c., and by vertical and horizontal sections of the strata in the quarry.

This paper was published in the society’s Transactions for 1869 (Volume 3). It can be found here.

Meeting held on April 1, 1869

Mr. ROBERT CRAIG, Langside, Beith, exhibited several species of arctic shells, recently discovered by Mr. Yates, junior, coalmaster, Kilmarnock, in sinking a pit, on the farm of Woodhall, near Kilmarnocks. The shells were found in a thin bed of sand, one foot three inches in thickness, which in this new pit underlies fifty feet of boulder clay and upper drift, and overlies the bed in which the remains of the mammoth and reindeer were formerly found. Among the many shells found, the following species had alone been preserved, many having been broken during the process of extraction from the matrix, viz.: - Leda oblonga, Tellina calcerea, Pecten Islandicus, Cyprina Islandica, Astarte sulcata, A compressa, Natica Groenlandica and fragments of a large species of Natica and a Littorina.

Mr. JOHN YOUNG exhibited a collection of upwards of 300 seeds of freshwater plants belonging to five or six species, the more abundant being a species of Potamogeton and a Ranunculus, recently obtained by him from the washing of a small piece of sandy clay, which had lain in the Hunterian Museum since 1829, being part of the matrix in which the tusk of the mammoth and horns of the reindeer found in the old Woodhill quarry, Kilmarnocks, were embedded. Mr. Young said he had failed to discover any trace of marine organisms in the clay in question, and he was therefore of opinion that it was an old estuarine deposit, which at one time had partly filled up the Carmel Valley.

A fuller account of the above presentations was given in a paper published in Volume 3 of the society’s Transactions (published in 1869). It can be found here.

Meeting held in April, 1869

Professor Sir WILLIAM THOMSON, read a paper on “Geological Dynamics”, in the course of which he replied to the criticisms of his views contained in the anniversary address to the Geological Society of London, by the President, Professor Huxley.

This paper was published in Volume 3 of the society’s Transactions (published in 1899). It can be found here.

Summer excursions, 1869
April 17.—Hurlet. Mr. Hull, F.R.S., Conductor. Train to Nitshill. Sections of carboniferous limestone, with intrusive trap dykes.

May 1.—Crofthead. Mr. Robert Craig, Conductor. Train to Crofthead. Lacustrine deposits and boulder clay.

’’ 15.—Thornton Quarries. Mr. James Thomson, F.G.S., Conductor. Train to Eaglesham Road Station on Kilbride Railway. Section of trappean ash in railway cutting—Sections of carboniferous limestone, trappean ash and boulder clay.

’’—(Queen’s birth-day).—Bathgate. Dr. John Young, President, Conductor. Extensive sections of carboniferous limestone and shale, rich in corals and other fossils.


A report of the June 5 excursion to Campsie Glen can be found here.

Session 33 (1890-1891)

Extract from the Proceedings for 1890-1891 (Session 33)

Meeting held on January 16, 1891

Mr. JOSEPH SOMMerville called attention to the death of a distinguished Honorary Associate of the Society, Mr. James Croll, LL.D., and paid a feeling tribute to the memory of the deceased gentleman. The Chairman said the members of the Society owed it as a duty to themselves, and to the memory of the deceased member, to adopt such a motion as that shadowed forth by Mr. Sommerville. Dr. Croll had done much special and original work which was not yet fully recognised and acknowledged as it ought to be by the world of science. Mr. John Young, F.G.S., corroborated the Chairman's remarks and spoke of Dr. Croll's early association with Glasgow, and his first connection with the Society. The Chairman then moved, and Mr. Dugald Bell seconded, a motion that an expression of deep regret at the decease of Dr. Croll should be recorded in the Society's minutes, from which an extract should be forwarded to Mrs. Croll.

Session 34 (1891-1892)

Extracts from the Proceedings for 1891-92 (Session 34)

Meeting held on January 14, 1892

The HON. SECRETARY said that the Council had agreed that, subject to the approval of the members, a letter of congratulation to Sir William Thomson, President of the Society, on his accession to the peerage [under the title of Baron Kelvin], should be sent, and moved accordingly. The motion was unanimously agreed to.

A motion to devote £8 from the funds towards the purchase of books for the Library was made by Mr. James Thomson, F.G.S. Mr. John Wight, C.A., Hon. Treasurer, seconded, upon the condition that the expenditure should, if possible, be restricted to £5, and, with this alteration, the motion was agreed to.
Meeting held on February 11, 1892

Mr. JOHN MAIN, F.G.S., exhibited, by the oxy-hydrogen lantern, an extensive series of Photographs of the Moon's Surface, showing numerous evidences of Volcanic Action on a large scale, and also other views of corresponding terrestrial appearances. An interesting discussion followed, being taken part in by the Chairman (Mr. Young), Drs. Ross and Sloan, Messrs. Dunlop, Sommerville, and other members.

Meeting held on April 14, 1892

Mr. M. BLAIR exhibited specimens from two large boulders near King's Cross, Arran. He remarked that the erratic blocks in this neighbourhood are very numerous, but are nearly all local, being traceable to Goatfell, 10 miles north, from which they must have crossed two deep valleys and a ridge. The two large blocks referred to are totally different from any Arran rock. From a description given by Professor Judd, in a paper on “The Secondary Rocks of Scotland” in the Quart. Jour. Geol. Soc, of certain beds in the Island of Raasay, Mr. Blair thought that the rock might be found there in situ, and he had brought up the specimens in the hope that some of the members might be able to identify them. Prof. Judd's description is as follows:—“Conglomerates (formed of rounded or sub-angular fragments of white or purple quartzite, of Torridon sandstone, and of compact or sub-crystalline limestone) alternating with irregular lenticular beds of coarse micaceous sandstone, into which the conglomerates insensibly graduate.” The CHAIRMAN said he would endeavour, through the good offices of the schoolmaster in Raasay, to obtain specimens of the rock in situ, so that they might be compared with these Arran boulders.

Session 35 (1892-1893)

Extracts from the Proceedings for 1892-93 (Session 35)

Meeting held on December 8, 1892

The HON. SECRETARY (Mr. Murdoch) read a note “On the Life and Work of the late Mr. David Corse Glen, F.G.S.,” since 1866 one of the Society's most active working members. His remarks were supplemented by Mr. John Young, F.G.S., who proposed a vote of condolence with the family of the deceased gentleman. This was seconded by Dr. Forster-Heddle, F.G.S., and unanimously agreed to.

David Corse Glen was a wealthy businessman and a keen amateur geologist who was a leading member of the Geological Society of Glasgow in the second half of the nineteenth century. He played an important role in the description and preservation of the fossil trees in what is now known as Fossil Grove. A brief account of his life and geological activities can be found here and the paper on Fossil Grove of which he was co-author can be found here.

Mr. DUGALD BELL, F.G.S., read a paper “On the Origin of certain Granite Boulders in the Clyde Valley.” The author's remarks were illustrated by Nicol's and Geikie's Geological Maps of Scotland. At its close some discussion was taken part in by members, the speakers generally agreeing with Mr. Bell in the theory he had advanced. Mr. John Young, F.G.S., stated that most of the granite boulders found in the excavations made for the foundations of the New University Buildings at Gilmourhill were of the same type as the boulders described by Mr. Bell. About 25 years ago a Captain Littlejohn had brought some similar specimens from the Arrochar hills, which were now in the Hunterian Museum. Dr. Heddle complimented Mr. Bell upon his paper as being the model of what such a paper should be—calm, logical, and dignified.

This paper was published in volume 10 of society's Transactions (published in 1895). It can be found here.
Meeting held on April 13, 1893

Before beginning the regular business of the meeting, the CHAIRMAN briefly referred to the honour which had just been paid by the University of Glasgow to the Society's old and worthy member, Mr. John Young, F.G.S., by conferring upon him the degree of Doctor of Laws (LL.D.). Several members also remarked upon the occasion, and the meeting received the announcement with much enthusiasm. Dr. Young briefly responded, expressing his acknowledgments for all the good wishes he had been offered.

An account of John Young's life can be found [here](#).

The CHAIRMAN (Mr. Smith) exhibited - (1) A specimen and microscopical section of Amygdaloidal Burnt Coal from Crosshouse. This Burnt Coal is a seam which has lost its volatile matter from being in contact with trap rock. Some parts are beautifully columnar, and where this is the case the amygdaloidal structure has not been developed, no doubt owing to the gases and steam having passed off from the coal along the divisional planes of the columns. Where the columnar structure is very faintly developed, or not at all, the amygdaloidal structure is best seen, and though a good deal dispersed through that part of the seam, still it is best developed in certain bands parallel with the original bedding of the coal. The amygdaloidal cavities run up to an inch in diameter, are very unequal in shape, and have often pointed ends. They are filled with calcite with highly polished surfaces from contact with the original polish of the cavities. After weathering they become brownish from oxidization, but still retain their polish. The coal has also bands and streaks filled with calcite.

(2) A specimen of Aporrhais pespelecani, or Pelican-foot shell, said to have been found at Lugar in a pit 600 feet above sea-level. Mr. Smith said he had possessed this shell for about twelve years, always expecting to get some more information about it. Not having found it himself, nor even having got it from the person who did find it, he had not succeeded in getting any further particulars. It is evidently a fossil, and has been preserved in dark mud. The species has been found in Scotland in four glacial-bed localities, at Gourock, Kilchattan, &c.

(3) A specimen of what might be described as "Nature-polished" Stones, from the Irvine Water, near Shewalton. At a point in the bed of the river at Shewalton a little iron-charged stream enters it, and for some distance downwards the stones in the bed of the river are highly polished. After a time the hydrated oxide is deposited, but the tops of the boulders, which stand well up in the water, still retain the polish, which appears to be a result of chemical action. As the Society visits this locality in the excursion arranged for the 5th of August, the members may have an opportunity of inspecting these polished stones if the water in the river is sufficiently low at the time.

Meeting held on May 11, 1893

Professor M. Forster-Heddle, St. Andrews, read a paper "On the Occurrence of Tachylyte at Loch Scredren [Scridain], Mull," a new Scottish locality for this rare substance, which the author described as "the black bottle-glass like selvage occasionally found upon the contact surfaces of basaltic dykes." The paper was illustrated by numerous drawings, made by the author on the blackboard with coloured chalks. An interesting discussion followed, being taken part in by several members.

Session 36 (1893-1894)

Extracts from the Proceedings for 1893-94 (Session 36)
Meeting held on October 12, 1893

Dr. JOHN YOUNG, F.G.S., exhibited specimens of a White Vein-Quartz, enveloping crystallized calcite of a deep, reddish-brown colour. This is the Haematoconite of Hausman, a variety of red calcite seen in the Italian marble, “rosso antico.” The specimens exhibited were found on the Corrie shore, Arran, during last autumn, by Dr. Thomas Young, of Manchester, and were presented by him to the Hunterian Museum. They formed part of a small boulder, the great contrast in colour between the pure white of the quartz and the red of the calcite giving the rock a striking and handsome appearance. Such colour appears to be rare in Scottish calcite.

Meeting held on November 9, 1893

Sir Archd. Geikie, Bart., [was elected] as President; the CHAIRMAN proposed a hearty vote of thanks to Lord Kelvin, the retiring President, for his long-continued services to the Society, and this was warmly approved of.

Mr. James S. M’Lennan read a paper entitled “A Ramble up the Maich Water, Ayrshire.” A short discussion followed.

*This paper was published in Volume 10 of the society’s Transactions (published in 1895). It can be found [here].*

Meeting held on January 11, 1894

The HON. SECRETARY (Mr. Murdoch) exhibited, on behalf of Mr. John Smith, specimens of Serpentine from the Boulder-clay near Lendalfoot, Ayrshire, and read some notes by Dr. Forster-Hedde on the occurrence in Ayrshire of this particular variety of the mineral. The find is of considerable interest, as serpentine, with veins of chrysotile, crystals of pseudo-enstatite, and precious serpentine, all of which are contained in Mr. Smith’s specimen, has only been known previously to occur in Scotland at Colafirth, in Shetland. Its presence in the Ayrshire Boulder-clay seems to indicate that it may be found at no great distance in situ from the same locality. (See also March 8 extract.)

Dr. JOHN YOUNG, F.G.S., exhibited several specimens, as follows:

1. Pearlstone, which belongs to the pitchstone group of the felspars, has a pearly lustre, and is sometimes found in small spherules, as in spherulite.

2. Uraninite or Protoxide of Uranium, from Perth, Western Australia. This mineral is of much value in the painting of porcelain, as it yields an orange colour in the enamelling fire, and a black colour in the baking furnace.

3. A new species of Sigillaria found by himself, in 1864, during the sinking of a pit to the Possil ironstone at Robroyston, north-east of Glasgow. This species had been recently described by Mr. Robert Kidston, F.G.S., in a paper to the Royal Physical Society of Edinburgh, as being the first British example of the Ribbed Sigillaria which had been found in strata older than the millstone grit series. Mr. Kidston had named it, after its discoverer, Sigillaria Youngiana, its provisional name having been S contracta, Brongt.

Mr. JOSEPH SOMERVILLE exhibited, with remarks, specimens of Magnesian Limestone, with Oolitic Structure, from Somersetshire—the stone of which St. Paul’s Cathedral is built—also specimens of Magnesian or Dolomitic Limestone from Roker, near Sunderland, on the coast of Durham. Dr. Young and other members took part in the subsequent discussion on the structure of these limestones.

Meeting held on March 8, 1894

The HON. SECRETARY (Mr. Murdoch) exhibited specimens as follows:—
1. Serpentine with Chrysotile, from Colafirth, Shetland, the only known locality for the latter mineral in Scotland until specimens of Serpentine containing it were found by Mr. John Smith in the Boulder-clay near Girvan.

2. Steatite from the "Klebber Name Rock," a huge mass of the mineral which stands out cliff-like in the north end of Fethaland, Shetland. The softness of the rock, which allows it to be easily cut with a knife, has induced visitors for many years past to carve their names and initials upon its face, and the present specimen is part of the inside circle of a large O in the name Victoria, which had scaled off and fallen down.

Meeting held on April 12, 1894

The HON. SECRETARY (Mr. Murdoch) showed some fine specimens of Barytes, and part of the root of a Carboniferous Tree (Stigmaria ficoides), from the highest part of Eaglesham, Renfrewshire, which had been sent for exhibition by Mr. Allan Gilmour younger of Eaglesham. The latter specimen, which must have been transported by ice to the place where it was found, contained a portion of the large central pith, with the characteristic markings. Its perfectly round form showed that the root must have been fossilized while in a growing position, and without being crushed.

Meeting held on May 10, 1894

Mr. JOHN SMITH, V.P., exhibited a specimen of prismatic Sandstone, from Saltcoats. When the Caledonian Railway was being made, a bed of very fine grained sandstone, rendered prismatic by its proximity to trap, was passed through. Thinking from its appearance that it would make a good whetstone, Mr. Smith took a specimen, but on attempting to work it into shape he found it to be exceedingly hard, taking a polish and glitter like a cut agate.

Meeting held on May 31, 1894

Mr. JAMES NEILSON exhibited specimens of Zeolitic Minerals from the new Lanarkshire and Dumbartonshire Railway, near Bowling, including Prehnite, Analcite, Thomsonite, Lamontite, &c, making some remarks upon their occurrence. He also exhibited (2) a portion of a Glass-pot, shewing radiated prehnite-like structure from excessive firing, and (3) a specimen of Red Stilbite, said to have been got at New Kilpatrick. Mr. Neilson also exhibited a number of Worked Flints, from the Raised Beach at Larne, Co. Antrim, and read some interesting notes on the section there. Photographs of the locality and of the flints were thrown on the screen.

Session 58 (1915-1916)

During 1916, two papers were presented on the controversial topic of The Auld Wives’ Lifts, a sandstone feature situated north of Glasgow; an excursion to the site also took place. The archive shows that the debate about The Auld Wives’ Lifts continued within the society beyond 1916.

Extracts from the Proceedings for 1915-1916 (Session 58)

Meeting held on May 11, 1916

Mr. MACNAIR exhibited a series of specimens got from the ancient bed of the Clyde in the course of digging the foundations of the new Dalmarnock Power Station. The specimens consisted of hazel nuts, twigs, and timber, and the epidermis of pearl mussels. The pearl mussels had lost all trace of the calcareous shell, through the action of percolating water, and only the chitinous epidermis remained, resembling dead leaves in brittleness and form. Mr. Macnair pointed out that the occurrence of such relics had been recorded about half a century
ago in proximity to the present course of the Clyde, and there could be no doubt that they came from the same bed, which also contained human relics in the shape of dug out canoes.

Professor J. W. GREGORY then read a paper on "The Auld Wive's Lifts: a Pseudo-Megalithic Tor."[1] He described the position of the well-known stones and referred to the traditional explanation of their origin, which ascribes them to a trial of strength between three witches of the district. For long the stones had been regarded as an example of a cromlech erected by the race which has dotted the country with megalithic structures. Careful examination, however, had shown that the group is purely the result of natural processes of denudation isolating a portion of the gritty sandstone of the district which had been dismembered, and the fragments thrown into their present attitude by slipping along joints and bedding-planes. It was shown that this could be proved by the fact of the existence, on the lines of fracture, of prominences corresponding with hollows on the opposite block.

Mr. LUDOVIC M.L. MANN pointed out that although the erection of the blocks could not be ascribed to man and the structure differed in some respects from the typical cromlech, there could be no doubt that it had been adopted by the early inhabitants of the district. He believed that the upper surface of the capstone had been levelled by the prehistoric process of "knapping," and had then been sculptured, the traces being quite evident to the trained eye. Other evidence also showed that the district had been one of special interest to the early inhabitants, and was now of importance to the archaeologist.

1. Scot. Geog. Mag., vol. xxxii., pp. 279-82, 1916. (This paper can be seen here.)

The second paper on the The Auld Wives' Lifts was presented at the December 1916 meeting of the society (during Session 59) by James Neilson, a council member. This paper was discussed at the February 1917 meeting and, as late as 1920, James Stark (another council member) published a paper which took the discussion further. Both of these papers were published in "Transactions of the Geological Society of Glasgow". (Details of how to access the Transactions can be found here.)

Excursions in 1916

To the Geological Department of the University and the Hunterian Museum on Saturday, 18th March. The party was conducted through the Museum by Professor J. W. Gregory and Mr. W. R. Smellie, and numerous interesting specimens, including the type-specimen of *Apractocleidus teretipes*, were exhibited. The Laboratory of the Geological Department was also visited, and the methods of slide-making and the uses of various instruments such as the Goniometer, the Sclerometer, the Westphal Balance and so forth were demonstrated.

To Dalry, on Saturday, 15th April—Mr. G. V. Wilson, conductor. The volcanic neck near Holmbyre was examined. The material of the neck is a dark grey ash containing abundant crystals of biotite, fragments of various types of basalts and specimens of *Euphemus* and brachiopods such as *Productus*. The sections of the Upper and Lower Limestones on the Caaf Water were also visited.

To the Kames of Carstairs, on Monday, 24th April (Spring Holiday)—Professor J. W. Gregory, conductor. The party proceeded from Cleghorn to Stonebyres, where the pre-glacial valley of the Mouse Water was indicated, and then walked along the Kames to Carstairs. Sections, showing fluvio-glacial gravel and sand, were examined and the super position of the Kames on the boulder clay was pointed out.

To Bridge of Weir, on Saturday, 13th May—Mr. H. R. J. Conacher, conductor. The general structure of the district was explained by the leader, and then a visit was paid to a glacial pit north-east of the station, where Mr. Ludovic Mann discussed the probable origin of the gravels and their points of archaeological interest. The sections of volcanic rocks of Calciferous
Sandstone age and the sediments of the Lower Limestone series, exposed in the Gryfe as far down as Crosslee, were afterwards examined and their leading features indicated.

To Dunfermline, on 23rd May (King's Birthday)—Messrs. R. Dunlop and P. Macnair, conductors. The party proceeded from Dunfermline Station to Woodmill for the purpose of examining the outcrop of highly fossiliferous shales which have been described by Mr. Dunlop (Transactions, vol. xv., p. 167, 1915). The party then visited the fine section in the Lower Limestone series exposed at Charleston and Mr. Macnair explained his correlation of the different strata with the Hurlet sequence in the West of Scotland.

To Gourock, on Saturday, 3rd June—Messrs. P. A. Leitch and J. L. Begg, conductors. Craigmushet Quarry was first visited and the keratophytic rocks noted, a number of minerals, including fluorspar, barytes, quartz, and tourmaline, being collected from the geodes. The section westwards along the shore, comprising Calciferous Sandstone sediments and Old Red Sandstone conglomerate, was then examined. Two volcanic necks near the Cloch were pointed out and also a fresh basalt of the Markle type in the quarry north of Lunderston Bay.

To the White Loch, on Saturday, 27th June—Dr. A. Scott, conductor. The dependence of the topography of the district on the underlying rocks was first indicated and then the party traversed the sequence of Calciferous Sandstone lavas from Patterton to the White Loch. The volcanic rocks seen included basalts of various types as well as more acid mugearitic and trachytic rocks. The basaltic plug of Duncarnock was examined and also the series of lavas south-east of Neilston.

To the Auld Wives' Lifts, on Saturday, 14th October—Professor J. W. Gregory, conductor. The party proceeded from Milngavie to the Auld Wives' Lifts, where Professor Gregory pointed out the evidence in favour of the view that the "tor" had been formed by the weathering, in situ, of a block of the local sandstone.

Session 59 (1916-1917)

Extracts from the Proceedings for 1916-1917 (Session 59)

Meeting held on February 1, 1917

For the background to the following extract, see the entry for Session 58.

The discussion of Mr. J. Neilson's paper on "The Auld Wives' Lifts" was continued. Prof. J. W. GREGORY pointed out that the structure shows a much greater resemblance to a tor than to a cromlech. He admitted the glacial moulding of the surrounding surface, but held that the amphitheatre was pre-glacial, as the direction of its drainage was across that of the ice. Mr. J. RENWICK maintained that the "Lifts" could not be classed as a dolmen, as the latter were erected for use as burial places and had much larger chambers. Similarly it could not be likened to a menhir, as the top stone could not be raised in the way the latter are supposed to have been erected. While the legends and superstitions show that the trilith had been used for religious purposes, it probably originated through the action of frost in the joint planes of the local sandstone. The absence of other blocks in the immediate neighbourhood is probably due to their use in building dykes, as there is good reason to believe that a very large block near the "Lifts" was broken up for this purpose a number of years ago.

Mr. NEILSON agreed that the hollow was natural, but objected to a pre-glacial origin for it, as a tor would certainly have been swept away completely during glacial times. The stones themselves are not glacial, and were erected by human agencies. With regard to Mr. Macnair's suggestion that the problem of its origin might be settled by excavations, in order to determine whether the rock surface on which the trilith rests was glaciated or not, he did not
think that this was necessary, as it seemed a fair inference that the glaciated nature of the surrounding rock surfaces extended to that underlying the “Lifts.”

Meeting held on April 12, 1917

Mr. G. V. WILSON read a paper entitled, "Notes on the Geology of Mull." A brief description of the structure of the island was given, and the distribution of the Pre-Kainozoic rocks pointed out. In Kainozoic times a great sequence of lava flows was poured out; in the north and west areas these are fresh olivine basalts, but in the south-east, within a circle passing through Salen, Craigmure, and Lochbuie, the basalts are much altered and baked. Within a smaller circle round the head of Glenmore lavas of the pillowform variety are also found. These are thought to have been deposited in the caldera of an old volcano. A few interbedded sediments occur sporadically through the whole lava series, and these include the famous plant-bed of Ardtun. This great series of lava flows has been folded into a set of anticlines and synclines in south and central Mull, but in the west it is flat, and gives rise to a terraced country. Large masses of gabbro and granophyre have also been intruded at various periods, some being probably connected with the folding, and others being definitely later. In central Mull large patches of volcanic breccia occur in the crater of the old volcano. Besides the large intrusive masses, central Mull is ridded with "inclined sheets," having a concentric arrangement, and dipping inwards at an angle of about 50 degrees. Two sets occur with slightly different foci, and the later can be seen cutting through the earlier. Another kind of concentric intrusion, "ring-dykes," is also found; these consist of vertical, circular dykes of gabbro and granophyre, which in some cases occur along fault-lines, good examples being seen near the head of Glenmore. In addition to the intrusions already mentioned, the whole area is cut by a great series of N.-W. and S.-E. basalt dykes, which may be regarded as the last phase of volcanic activity in the island. The paper was illustrated by a large number of lantern slides.

Session 60 (1917-1918)

Extracts from the Proceedings for 1917-1918 (Session 60)

Meeting held on January 10, 1918

Dr. R. KIDSTON, F.R.S., delivered the presidential address on "An Old Red Sandstone Plant: its Structure and Mode of Occurrence."

Dr. KIDSTON first referred to the discovery of the chert bed, containing plant remains at Muir of Rhynie, by Dr. W. Mackie of Elgin. So far, two vascular plants have been found in the deposit. These are Rhynia Gwynne-Vaughani and Asteroxylon Mackiei, but only the former has been examined in detail. The chert zone was originally formed of a series of peat beds, which, through periodic inundation, have been intercalated with thin layers of sand. In some cases, the plants can be seen growing vertically from the ancient land surface. In many places the silicified peat is made up almost entirely of the stems and rhizomes of Rhynia.

The plant, which is found with its structure excellently preserved, formed a pure growth with erect cylindrical stem, 8 inches high and 1 to 6 mm. in diameter. It had neither leaves nor roots, but was attached to the peaty soil by numerous rhizoids branching from rhizomes which occasionally become aerial. The stem was dichotomously branched, and bore small hemispherical projections. In both the rhizomes and stems the epidermis, outer cortex, inner cortex and stele can be distinguished. The narrow outer cortex in the aerial stems had the character of a hypoderma, while numerous intercellular spaces in the inner cortex occurred, apparently in relation to the stomata. The stele was cylindrical and composed of a solid mass of tracheides, the protoxylem and metaxylem being indistinguishable. The phloem of thin walled, elongated cells surrounded the xylem. The sporangium, which was large and cylindrical, contained numerous spores, all of one kind.
This is the most ancient land plant whose structure is at all fully known. With regard to its position in the vegetable kingdom it is allied to Psilophyton princeps, the two making up the only known genera of the class Psilophytales, which belongs to the Pteridophyta, and which is characterised by the sporangia being borne at the end of certain branches of the stem without any apparent relation to leaves.

Meeting held on February 14, 1918

Mr. H. R. J. CONACHER read a paper, entitled "Notes on the Micrology of Coal."

At the outset it was stated this work was incomplete, but as it was unlikely to be resumed for some considerable time, the results were brought together in the hope that they may be of some use to others.

Micro examination, which nearly a century ago had provided the first internal evidence as to the vegetable origin of coal, has been much neglected during the last twenty years, probably owing to the difficulties in producing satisfactory sections of coal.

The earliest plant structures to be recognised in coal were spores, shown by Bennie and Kidston, to be those of vascular cryptogams, and these often occur as closely packed masses of mega and microspores. Tasmanite is made up of the spores of an unknown plant, mixed with sand.

The two types of material in bright coal are—(a) jet-like layers with conchoidal fracture, and showing in thin section vegetable cell structure, and (b) dull cannell-like portions, enveloping the former and consisting of minute debris of spore coats, plant tissue, &c. Charcoal, often with an altered cell structure, occurs along with the above types. In the cannels are varying degrees of elimination of all recognisable plant tissues, while there is evidence of open water in the presence of fish scales and teeth, and even marine shells. Allied to the cannels are the Boghead coals or torbanites, and the "rhums" of Fife, and the hornie shales of Lanarkshire and Ayrshire. The formation of coal seems to be the result of the operation of numerous variable factors—the nature of the vegetation, conditions of accumulation, and the biological and geological processes which act on the vegetable deposits.

Meeting held on March 14, 1918

Mr. STARK read a paper, entitled "Geological Notes on Burma." The geology of Burma is especially interesting on account of the light it throws on the origin of the Scottish Old Red Sandstone. The basin of the Irrawady lies in soft new rocks, which are so rapidly eroded by the river that during the rainy season 340 million tons of yellow clay is removed and spread out in a thickness of 0.1" per annum round the river mouth. Twenty-five miles from the shore the depth is not twenty fathoms, so that we have here a great submarine plain of deposition. In this delta, which is about half the area of Scotland, numerous changes in the river channels, accompanied by the formation of banks and islands, occur in the rainy season.

Most of the rivers flow in synclives in Miocene and Pliocene rocks, the latter being 4000 feet thick, and containing vertebrate fossils similar to those of the Siwalik hills. Much silicified wood occurs, but marine organisms are absent. During the rainy season large temporary lakes form with the deposition of coarse boulder beds, twenty miles wide and 200 miles long, and closely resembling the Old Red Sandstone conglomerates.

The Burmese oil wells were also described, and it was pointed out that the oil is found in the antclives, and water in the synclives. Numerous interesting lantern slides were shown. Mr. C. R. COWIE contributed some additional facts relating to the oil wells and the underground water.
Session 61 (1918-1919)

Extracts from the Proceedings for 1917-1918 (Session 60)

Meeting held on December 12, 1918

Mr. JAMES STARK read a paper on "The Glacial Origin of the Auld Wives’ Lifts," and a short paper on “The Whangie.”

This paper was published in Volume 16 of the society’s Transactions (published in 1920). It can be found here.

Messrs. Dron, Macnair, Neilson and Tyrrell took part in the discussion, and Mr. Stark was warmly thanked for his interesting paper.

For information about previous papers and discussions on the subject of The Auld Wives’ Lifts, and also about an excursion to the site, see Extracts from the Proceedings for Session 58 (1915-1916) and Session 59 (1916-1917).

Meeting held on February 13, 1919

Mr. G. W. TYRRELL delivered a lecture, entitled “Modern Views on Volcanoes.”

The older idea of volcanic activity was that steam escaping from magmatic solution was the chief agent in bringing about the ascent of the lava and the accompanying explosions. The essential features of volcanoes were the escape of lava and gases from a pipe or fissure. The gases observed, which differ in different volcanoes, were steam, hydrogen, methane, sulphur, sulphur dioxide, hydrogen sulphide, chlorine, boric acid and carbon dioxide.

In attempting to explain how volcanic vents are opened one had to consider the place of eruption and its persistence in one place, also its independence of neighbouring vents. Mr. Tyrrell then discussed the hypotheses put forward by Daly, Brun, Day and Shepherd. Prof. Daly’s great contribution is the linking of volcanic activity with the vastly greater subterranean activity, and developed the gas-fluxing hypotheses of volcanic vents. Dr. Brun advocated the view that volcanic activity is essentially anhydrous; but this was disproved by Drs. Day and Shepherd, who actually collected the gases from the lava lake at Kilauea, and demonstrated the presence of water, although in comparatively small quantity. The other view of volcanic mechanism was that it was comparable to a steam engine; the more modern view is that the analogy is more with a gas engine actuated by internal combustion.

Meeting held on April 10, 1919

Mr. G. W. WILSON, H.M. Survey, read a paper on “The Millstone Grit Fireclays of North Ayrshire.” These beds, when discovered by Mr. John Smith, were described by him as Volcanic Tuffs, but the discovery by Mr. Douglas of the highly refractory nature of the Monkcastle clay led to a reconsideration of the whole deposit of the Bauxitic clays. The outcrop has been traced from Saltcoats to Kilmarnock, and deposits of a similar nature occur at Mauchline, Sanquhar, Stranraer, and in Arran. The material is very black, hard and non-plastic, and contains many oolites. Its Al₂O₃ content runs from 26 to 50 per cent. When exposed to high temperatures rosettes of sillimanite, coloured blue possibly by titanium, are formed. This, as well as the oolitic structure, was demonstrated by a series of photomicrographs. With regard to the origin of those deposits the lecturer put forward the hypothesis of tropical conditions acting on the beds of lava, on which perhaps a hummocky surface permitted the formation of extensive pools of stagnant shallow water, with abundance of decaying vegetable matter giving rise to CO, CO₂, CH₄ gases. The gases, by reducing action, might render soluble the iron and alumina, and lead to their segregation in different parts of the deposit. The oolitic
structure of the alumina particles seemed to suggest that this mineral might, under certain circumstances, pass into solution. The deposits elsewhere are regarded by Mr. Wilson as due to redistribution.

Mr. TYRRELL asked if any evidence had been noticed as to volume change, but Mr. Wilson said he had none, as the rock is non-porous. Mr. Macnair also took part in the discussion. A hearty vote of thanks was accorded Mr. Wilson.

Meeting held on May 8, 1919

Mr. H. R. J. CONACHER read a paper on the “Micrology of the Oil Shale Series.” It was pointed out that the most striking features of the sandstones was the angularity of the grains, and the occasional presence of fresh and angular particles of volcanic rock. The cement of these sandstones is generally calcareous, and frequently constitutes a very large percentage of the whole rock as seen in thin section.

Some clue is given as to the age of this cement by its relation to the oil which sometimes saturates the rock, and the age of which can be fixed by that of the igneous rock which distilled it from the shales. Occasionally the sandstone occurs as very thin ribs in blaes, or even as a single layer of sand grains along the bedding plane, as if strewn across the wet surface of mud by wind. The sandstones sometimes pass by imperceptible gradations into dense hard oolites. When a nucleus can be detected in the oolitic grain it is generally found to be a fragment of plant tissue still showing the structure, but signs of animal life are rare, except carbonised worm tubes, although an oolitic limestone may pass either upwards or downwards into an entomostracan seam. Spirorbis limestones occasionally occur, and the frequent ostracod beds present numerous interesting features under the microscope. Not the least interesting part of Mr. Conacher’s notes was the very fine series of some fifty micro-sections by which it was illustrated. These were exhibited with the Society’s micro-projector, and were demonstrated by Mr. Conacher. Mr. Conacher was complimented for the skill and industry in which his researches on the oil shales and their origin were being prosecuted, and a hearty vote of thanks was awarded him.

Session 83 (1940-1941)

_The archive material for the war years is understandably rather sparse. The talk by Dr M. Macgregor on February 11, 1941 has obvious relevance to the war and the need for resources._

Extracts from the Proceedings for 1940-1941 (Session 83)

Meeting held on February 11, 1941

The President intimated that the Murchison Medal of the London Geological Society had been awarded to Dr. M. Macgregor and the Murchison Fund to Dr. J. Weir.

Dr. M. Macgregor gave an address on "The Ironstone Resources of Scotland." He pointed out that these had been fully investigated by the Geological Survey during the last war and were dealt with in volume XI of the series of _Special Reports on the Mineral Resources of Great Britain_. This volume, "The Iron Ores of Scotland," was published in 1920. Since then further research on potential resources had been carried out and was being prosecuted at the present time. The lecturer outlined the results so far obtained and gave an account of the mode of occurrence of the different types of iron ore found in Scotland, under the headings of sulphides, oxides, silicates and carbonates.

Session 84 (1941-1942)
Extracts from the Proceedings for 1941-1942 (Session 84)

Meeting held on October 11, 1941

This meeting was held in the Geological Department of the University and at its close members present were the guests of Professor and Mrs. Trueman at tea. (Professor Arthur E. Trueman was the retiring president of the society.)

The meeting was devoted to a series of exhibits and demonstrations arranged by various members: (a) wooden implements from old coal-workings near Law village, by Dr. M. Macgregor; (b) a map illustrating transcurrent faulting in oil-shale workings near Uphall, by Dr. W. Q. Kennedy; (c) coal with oil films, by Mr. H. H. Roderick; (d) natrolite and pectolite from Orrock Quarry, by Miss E. Melville; (e) a Lower Devonian trilobite with the rostral plate in position, by Mr. J. L. Begg; (f) ammonites from Morvern, by Miss R. M. MacLennan; (g) slides showing shell structure, by Professor A. E. Trueman; (h) cellulose peel sections of ammonites, by Dr. E. D. Currie; (i) minerals from the U.S.S.R., by Dr. G. W. Tyrrell; and (j) a series of photographs, by Dr. D. Leith.

Meeting held on November 8, 1941

A paper by Dr. M. Macgregor entitled “A Notice of John Smith,” was read by title and Mr. Colin Leitch, B.Sc. then delivered an address on ‘Roumanian Oil-fields,’ in which he outlined the history of the Roumanian oil industry from 1918 up to the present time. (The paper on John Smith can be found here.)

John Smith devoted much of his life to the study of the geology, natural history and archaeology of Ayrshire, where most of his life was spent. He was an active member of the Geological Society of Glasgow from 1865 until shortly before his death in 1930.

Session 85 (1942-1943)

Extracts from the Proceedings for 1942-1943 (Session 85)

Meeting held on October 10, 1942

The President conveyed the congratulations of the Society to Professor A. E. Trueman on his election to the Fellowship of the Royal Society. He also congratulated Dr. W. J. McCallien on the award by the Royal Society of Edinburgh of the Neill Prize for the period 1939-41, and Mr. J. L. Begg on the award by the Edinburgh Geological Society of the Clough Memorial Prize for the period 1941-42.

A communication by Dr. J. Phemister, entitled “Note on Fused Spent Shale from a Retort at Pumpherton,” was read by title.

Mr. V. A. Eyles then delivered a lecture on The Inter-basaltic Beds of North-East Ireland. Mr. Eyles described the occurrence of these beds between the great suites of plateau basalts known as the Upper and Lower Basalts. The process of laterisation, by which bauxite is produced from basalt, was described, as well as the products at different stages of the process. Two different types of bauxite are found in North-East Ireland, derived from two distinct parent rocks. The bauxite derived from basalt is red and ferruginous in character, with a small percentage of silica. On the other hand, interbasaltic sediments, containing rhyolitic debris have also been reduced to bauxite which is light grey in colour and contains more silica and less iron. A publication describing these beds in detail is in course of preparation.
Meeting held on December 5, 1942

This meeting was devoted to a discussion on the subject of “The Boundary between the Old Red Sandstone and Carboniferous Formations in the Midland Valley.” The discussion was opened by Dr. M. Macgregor who pointed out that the problem of fixing a boundary line was one of long standing and traced the history of the changes in the nomenclature of the Lower Carboniferous and Upper Old Red Sandstone rocks, since the time of MacLaren. For a long time the “red sandstone—cornstone group” was regarded as the basal division of the Carboniferous succession, but was later placed in the Upper Old Red Sandstone, mainly from its lithological resemblance to the Upper Old Red Sandstone of East Fife, dated by means of the fossil fish-remains of Dura Den, etc. Since these rocks pass up conformably into the Lower Carboniferous, the criteria used in drawing a boundary line are sometimes lithological, sometimes palaeontological. The palaeontological evidence is often very scanty, however, and the lithological evidence, so far as this has been studied, is not always conclusive. In some areas, for example, there is a transition series from Upper Old Red Sandstone types of sediment to Lower Carboniferous (Cementstone) types. Dr. Macgregor suggested that further research on the characteristic rock types and sedimentary cycles of the two formations might help towards a solution of the difficulty.

Those taking part in the discussion included Mr. B. H. Barrett, Professor J. Walton and Professor A. E. Trueman.

Meeting held on February 6, 1943

The President congratulated Dr. E. D. Currie on the award of the Wollaston Fund by the Geological Society of London.

*Dr. Ethel D. Currie was the first woman to become president of the Society; she was president from 1952 until 1955. An account of her life and work can be found [here](#).*

Mr. B. H. Barrett, M.A., B.Sc delivered a lecture on the Canonbie Coalfield and detailed the results of the examination of this area carried out in conjunction with Dr. J. E. Richey of the Geological Survey (see “Economic Geology of the Canonbie Coalfield,” Geological Survey Wartime Pamphlets, No. 42, January, 1945.)

Meeting held on March 6, 1943

The President referred to the loss sustained by the Society through the death of Mr. P. A. Leitch and read an obituary notice by Mr. P. Robinson.

*This notice is not recorded in the Proceedings, but was published in the Transactions of the Geological Society of Glasgow (Vol. 20 (1945), page 349), as follows:*

P. A. LEITCH.—Patrick Arthur Leitch was born on October 25th, 1880, and died at Bothwell, on February 15th, 1943. A member of a well-known Greenock family, he was educated at the High School of Glasgow and studied civil engineering at the Royal Technical College and at the University. In 1899 he joined the staff of the District Engineer to the Middle Ward of Lanarkshire and by successive steps rose to be head of the Department under the designation of County Drainage, etc., Engineer. During his professional career he was responsible for the design and construction of many important drainage schemes and sewage purification works within the County, and he became an acknowledged authority in that particular field of engineering practice.

Mr. Leitch was a man of varied intellectual pursuits. He took a deep interest in geological problems, especially those associated with the study of petrology. He joined the Society in 1908, served as a member of Council for several periods and in 1941 was elected a Vice-President. Keenly interested in the work of the Society, he seldom missed being present at its
meetings. In 1917 he contributed, in conjunction with Dr. A. Scott, a paper entitled “Notes on the Intrusive Rocks of West Renfrewshire” which is published in Volume XVI of the Society’s Transactions (vol. xvi, part ii, 1917, pp. 275-289). In his later years antiquarian research held a strong fascination for him, and he made a special study of the Antonine Wall between the Clyde and the Forth, reconstructing it in a series of wooden models which are now on exhibit in the Hunterian Museum, University of Glasgow.

Mr. Leitch was a Member of the Institute of Civil Engineers, a Fellow of the Geological Society of London and a Fellow of the Antiquarian Society of Scotland.

P.J.R.

Session 86 (1943-1944)

Extracts from the Proceedings for 1943-1944 (Session 86)

Meeting held on October 9, 1943

This meeting was held in the Geology Department, The University, where tea was served in the Palaeontological Laboratory.

At the first meeting of Session 82, held in the Hunterian Museum on October 21, 1939, a decision had been taken that, under war conditions, “the Society should endeavour to carry on its meetings as regularly as possible, but that the day and time should be changed to Saturday at 3 p.m.” Five years later, at the first meeting of Session 87, held in the Geology Department on October 14, 1944, it was decided “to revert to evening meetings to be held on the second Thursday of the month at 7 p.m.” It appears that, during the Second World War, the October meetings of Sessions 83 to 87 (1940 to 1944) were held in the Geology Department of the University. Although the minutes do not record where the remaining meetings of each session were held, it may be assumed that they took place in what previous minutes refer to as “Society’s Rooms, 207, Bath Street, Glasgow”; this building was owned by the Royal Philosophical Society of Glasgow, and, between 1880 and 1961, it was also the principal venue for meetings of the Geological Society of Glasgow.

Meeting held on November 13, 1943

The President [Dr. John Weir] announced that Dr. E. B. Bailey had been awarded a Royal Medal of the Royal Society.

Dr. J. B. Simpson delivered an address on “The Study of Fossil Pollen Grains.” He pointed out that the serious study of fossil spores has been confined to the last twenty-five years, and went on to describe the work done by others on fossil pollen grains in peat mosses and in Tertiary coals and lignites, as well as on spores in coals of Carboniferous age. Dr. Simpson’s own work was the study of pollen in Tertiary coals and in coal seams occurring in Upper Cretaceous, Lower Cretaceous, and Jurassic strata. Most of the plants are still flourishing and so the fossil pollen can be compared with that of living forms. The method of study was described in some detail. The lecturer then showed lantern slides of fossil pollen grains of alder, maple, conifers, and water-lily, together with corresponding living forms. In the case of the alder and maple, it was pointed out that the British Tertiary pollen grains are allied to present-day Asiatic forms.

Meeting held on December 11, 1943

Dr. G. W. Tyrrell exhibited a series of lantern slides illustrating some mineral deposits of Soviet Russia. The slides were made from photographs taken by Dr. D. Williams who was Dr.
Tyrrell’s companion on the expedition to the Kola Peninsula during the Geological Congress in Russia in 1937.

Meeting held on January 8, 1944

Dr. T. Robertson delivered a lecture on “The Limestone Resources of Scotland”, in which he summarised the results of the investigations on Scottish limestones carried out recently by the Geological Survey with the collaboration, on the chemical side, of the Macaulay Institute for Soil Research. The results of this work are now available in a series of eight wartime pamphlets issued by the Geological Survey.

Meeting held on March 11, 1944

Dr. J.C.G. Anderson gave an address on “Scottish Slates” and summarised the results of the work recently carried out by Dr. J.E. Richey and himself on the slate deposits of Scotland (see Geological Survey Wartime Pamphlets, No. 40, May, 1944). An exhibit of slates arranged by Mr. T. Graham and others interested in the industry were on view and both visitors and members took part in the discussion which followed the lecture.

Session 108 (1965-1966)

Extract from the Proceedings for 1965-1966 (Session 108)

Meeting held on February 10, 1966

The President expressed the regret felt in the Society over the death of Dr. Murray Macgregor and the Society’s gratitude to him, particularly for his work on the Transactions and, latterly, the Arran Guide.

Murray Macgregor (1884-1966) joined the Geological Survey in 1909. Throughout most of his life thereafter, he was involved in the survey of coal, ironstone, oil-shale, limestone, and of many other resources that were essential to the Scottish economy, especially during the two world wars and their aftermath; in particular, his work made a significant contribution to the development of the coal-mining industry. He is also celebrated for his work on the Carboniferous stratigraphy of Scotland.

His association with the Geological Society of Glasgow spanned 55 years; he was President of the society from 1926-29, and he was editor of the Transactions from 1937-58.

To the wider public, his name is well known through the 1965 “Excursion guide to the geology of Arran”, of which he was the author.

Murray Macgregor’s obituary was published in the Proceedings of the Geological Society of Glasgow for Session 108. It can be found here.

Session 109 (1966-1967)

Extracts from the Proceedings for 1966-1967 (Session 109)

Meeting held on March 9, 1967

The following papers were read by members:
‘A temporary exposure in Quaternary sediments at Renfrew’ by Mr. P. Aspen and Dr. W. G. Jardine. (This paper can be seen here.)

‘Arthropleura — a giant “centipede” from the Coal Measures’ by Dr. W. D. Ian Rolfe (Scott. J. Geol. 3: 118-24).


Meeting held on September 7, 1967 (Extraordinary Meeting)

Dr. Patterson (Edward M. Patterson, the society's president) opened the meeting to a general discussion on the financial position of the society and the necessity for raising the subscription. Two main points emerged from this discussion. The first was a request for a widening of the qualification of Associate Membership, the second was for consideration to be given to any Member whose circumstances may warrant a reduced subscription.

The proposal to increase the subscription to £3 per annum was carried.

The previous subscription, held since 1960, was 30/- (£1.50), and so the new amount represented a 100% increase. Prior to the meeting, Dr Patterson sent a letter to all members giving a detailed justification for the increase. This letter, which contains a fascinating account of the society's subscription history and its financial situation in 1967, can be seen here.

Session 110 (1967-1968)

Extract from the Proceedings for 1967-1968 (Session 110)

The obituary of James Ernest Richey appeared in the Proceedings for Session 110. James Richey was president of the society from 1929 until 1932. The obituary can be seen here.

A paper entitled “Quaternary deposits near Garscadden Mains, Glasgow” by W. G. Jardine was also published in this volume of the Proceedings. This paper can be seen here.

Meeting held on February 8, 1968

Two lectures were given at this meeting. The Proceedings contain the following summary of the first of these.

“Collecting on the Great Devonian Barrier Reef of W. Australia” by Dr. W. D. Ian Rolfe.

The speaker, who was a member of the 1967 Joint British Museum, Hunterian Museum and Western Australia Museum expedition to the Fitzroy region, discussed how sedimentation in Middle and Upper Devonian times took place in the large intracratonic Canning Basin in northern Western Australia. Stromatoporoid reefs, which grew on a more stable, fault bounded shelf forming the northern edge of this basin, are now exposed as one of the finest examples of a palaeozoic reef complex. A great variety of facies is present and several rock units, some formerly thought to be of Carboniferous and Permian age, have recently been shown, by refined correlation using ammonoids and conodonts, to be facies equivalents of the reef proper. Collecting was confined to concretions from the inter-reef facies which were known to yield a unique assemblage of at least six phyllocarid crustaceans and a number of early fish.
Session 111 (1968-1969)

Extracts from the Proceedings for 1968-1969 (Session 111)

Meeting held on October 10, 1968

Dr. K. A. G. Shiells delivered a lecture entitled “Palaeoecological Perspectives”.

Dr. Shiells gave a general account of some aims and achievements in the study of fossils in relation to the environments in which they lived.

Dr Shiells and his wife were drowned in a boating accident in November 1968. This tragedy was referred to at the meeting of December 12, 1968 (see below). Dr. Shiells’ obituary, which was published in this issue of the Proceedings, can be seen here.

Meeting held on November 14, 1968

[Two lectures were delivered by] members of the Society who had attended excursions in Czechoslovakia prior to the 23rd International Geological Congress in Prague.

Dr McLean outlined the regional geology which includes mountain chains of Variscan and Alpine age. In Slovakia the Carpathians may be divided into two structural areas separated by a “klippe” zone. The Inner Carpathians have nappe structures where Trias has been thrust north over Cretaceous for distances of 20 miles. There are intermontane basins containing poorly-sorted sediments which have undergone spectacular weathering. Most of the country has not been glaciated.

Professor George described karst country with spectacular limestone caves. He also showed coloured slides of tufa at Carlesbad where recent volcanic activity has given rise to mineralizing hot springs.

Both speakers paid tribute to the Czechs for the magnificent work they had done in organising the Congress and expressed their regret that it had been disrupted by the Russian invasion.

Meeting held on December 12, 1968

The president referred to the recent tragic loss, in a boating accident, of Dr K. A. G. Shiells and his wife.

It was agreed that a letter of sympathy be written to Dr. Shiells’ parents on behalf of the Society.

Session 133 (1990-1991)

Extract from the Proceedings for 1990-1991 (Session 133)

The annual Members’ Night was held on 14 February 1991. The following illustrated talks were presented:—

Mr. A. Herriot — Refractometry for Beginners;

Dr. J.G. Todd — The Costa Del Clyde, 9000 B.C.;

Miss. R. McGill — North Island, New Zealand, a Geothermal Tour;
Miss. L. Ferguson — A Geologist in China;

Mr. A. McKelvie — The Hidden Depths of Kloof Gold Mine, R.S.A.;

Dr. T. Fallick — The Scottish Universities Isotope Geology Unit: what is it, and what does it do?, and

Dr. C. Burton — Jellyfish and other Monsters from Trearne Quarry.

Both before and after the talks, members had the opportunity to view the following exhibits in the laboratory beside the lecture theatre:

A. Herriot — Refractometry - try for yourself;

C. Burton & N. Clark — Jellyfish and other Monsters from Trearne;

J.G. Todd — Fossils and Microfossils from the Clyde Beds at Linwood;

D. Hollis — Carboniferous Fossils from the Johnstone By-Pass;

J. Jocelyn — Selected Mineral Specimens and Thunder Eggs;

A. Roberts — L.A. Necker’s ‘Geological Map of Scotland, 1808’;

M. Kennedy — Rocks and Minerals of Aberdeenshire, Part II, and

R. McGill — East Kirkton.

In addition, there were photographs and a video display relating to the Society’s field trip of the previous summer to Durham and the north of England.

Session 134 (1991-1992)

Extracts from the Proceedings for 1991-1992 (Session 134)

Meeting held on November 14, 1991

Dr. Michael C. Keen (University of Glasgow) gave his Presidential Address to the Society. He spoke on “Global Events and Sea Level Changes”.

The recent geological past has seen dramatic changes in eustatic (global) sea levels caused by the expansion and contraction of the polar ice caps. Whole continental shelves which were recently above sea level have been submerged during the past 10,000 years, giving rise to some of the earth’s most spectacular features such as the Great Barrier Reef of Australia. These eustatic changes are clearly related to climatic change, and study of oceanic cores has shown climatic cycles of varying duration known as Milankovitch Cycles* (20k, 40k, and 100k years). These are increasingly recognised in the geological record as small scale cycles (1-2 Ma). While they are readily explained in the context of a glacial world, such cycles are more difficult to explain in a non-glacial world such as existed during the Jurassic and Cretaceous. Larger scale cycles, which form the basis of sequence stratigraphy, have a duration of 2-3 million years and are difficult to tie in with climate. Repeated transgressive-regressive events are seen as large scale coarsening-upwards cycles believed to be eustatically controlled. The succession of biofacies can help in their recognition. Not all sea-level changes are of eustatic origin, however. The Messinian salinity crisis of the late Miocene affected the whole of the Mediterranean Basin, but was brought about by geographical changes related to plate
movement; the closure of the Straits of Gibraltar brought about the desiccation of the basin, with sea level changes of several thousand metres. Major regressions have had considerable effects on the biosphere, and are considered to be one of the prime influences on faunal turnover. The mass extinctions the Permian/Triassic and Cretaceous/Tertiary boundaries were examined in this light.

*The existence of astronomically-related climatic cycles, in particular the eccentricity (100 ka) and precession (23 ka) cycles, was first proposed by James Croll in 1857, 60 years before Milutin Milankovitch published his more detailed theory.*

**Excursion to East Kirkton Quarry and the Bathgate Hills, September 19 1992 (Leaders Dr. A. J. Hall and Miss R. McGill)**

This excursion was planned in relation to the East Kirkton Symposium held in Edinburgh.

The Lower Carboniferous sequence exposed in the quarry and excavated by the Royal Scottish Museum is interpreted as that of a lacustrine deposit with a hot-spring influence within a volcanic terrain. Its fame stems from its unique early terrestrial biota. The Petershill Limestone, rich in marine fossils, was also visited as well as the nearby site of Hilderston silver mine.

*More information about the Hilderston silver mine can be found here.*

**Session 135 (1992-1993)**

Extracts from the Proceedings for 1992-1993 (Session 135)

**Meeting held on October 8, 1992**

The new session again started with a social evening. This time it was to mark the publication of a new guide, 'Geological Excursions around Glasgow and Girvan'. A small presentation was made to the two editors - Doctor J.D. Lawson and Doctor D.S. Weedon - and to the person who won the competition to supply the photograph chosen for its cover, Professor B.J. Bluck.

**Meeting held on January 14, 1993**

The original speaker intended for the 14 January meeting called off. Dr. Con Gillen (Centre for Continuing Education, University of Edinburgh) kindly agreed to step into the breach at very short notice and to give a talk on “The Kola Superdeep Borehole, Arctic Russia.”

The Superdeep Borehole being drilled at Zapotyarny in northern Russia is the world’s deepest scientific well. It is located close to the town of Nickel on the border with Norway and Finland and is situated within the Pechenga copper—nickel ore field. Drilling has been continuing for 20 years, and the present depth of 12,266 metres has been reached on several occasions, due to technical problems causing collapse and the need for parallel wells to be drilled. The upper 7km of the section consists of Proterozoic volcanics and metasediments with several ore rich horizons, Archaean gneisses form the lower part, the lowermost unit so far encountered being a strongly sheared biotite-feldspar gneiss. No granulite facies rocks have been drilled to date. It is intended that drilling will continue to the planned depth of 15km.

The lecture considered the geology, geophysics and drilling technology of the well and the geological structure of the surrounding region in the Kola Peninsula, and discussed the progress of the large-scale joint international seismic experiment conducted in the spring of 1992, in which the speaker was among a team who carried out a 45km long surface reflection profile, linked to a 6km deep vertical seismic profile within the borehole.
Library Report (Session 135)

The Society’s library, together with that of the Department, was completely reorganized this session. Thanks to a donation to the Department, by B.P., of a large amount of library shelving, the library annexe is now fully equipped. This has allowed the annexe to be filled with the Journal collection, some runs coming from storage. The space created in the library itself has been further reorganized and the full reorganization is now complete. A new library location plan will be issued shortly.

The reorganization generated a considerable amount of surplus material which the Council has authorized the librarian to dispose of. This material consists of duplicates, old stock, out of date (19th century) serials, etc. and will be removed section by section, with members having first refusal (or opportunity to purchase).

A new library leaflet for members is in preparation and will be issued to all members next session.

New books purchased this session cover as wide a spectrum as ever. The guides this year include those to the English Lakeland, Epping Forest, and the Quaternary of British regions and of China and Slovakia. Basic texts include the new edition of Holmes’ ‘Principles of Physical Geology’ (ed. Duff), and Butler and Bells’ ‘Interpretation of Geological Maps’. Derek Ager’s last, and still controversial, book ‘The Nature of the Stratigraphical Record’ is on the shelves. Two rather unusual books, ‘A Faculty for Science’ and ‘From Anatomy to Zoology’ represent part of the celebrations of the centenary of the University’s Faculty of Science.

Regular borrowers this session numbered 22 (28 last session), borrowing between them 85 items (107 last session). One item of stock was destroyed while on loan - by the explosion of a melon in Death Valley - a story so tall that the librarian had no recourse but to believe it! The book was replaced by the borrower.

C.J. Burton

Chris Burton retired from the society’s council in December 2017, after 45 years of continuous service.

Appreciation: Elizabeth R. Brock

Miss Brock, known as “Sally” to her close friends, was the oldest member of the Society at her death in September 1992, aged 97. She was also our longest serving member.

Born in Dumbarton, she moved at age two to the house that was to remain her home until her death. Appropriately enough, this house was known as “Spittal Cottage”, apparently named after the source of the flags which formed the front path. Many years later, she was to search for fossil fish in the quarry in the village of Spittal which had given the house its name.

After completing her schooling in Dumbarton, Miss Brock progressed to the University of Glasgow, where she studied mathematics. As a female student, her degree required to be that of Master of Arts, subject notwithstanding. It was whilst at University that her interest in geology was kindled.

After leaving University, Miss Brock entered teaching. She first spent a short period teaching in the Hebrides. Thereafter she returned home to teach mathematics to countless pupils in Dumbarton Academy for the rest of her working life. Shortly after this return home, she joined the Geological Society of Glasgow, in 1927. She was a member of the Society for 64 years, eventually becoming one of the rare band of honorary members.
In geology Miss Brock’s interests were wide. She collected mineral specimens in the Lang Craigs near Dumbarton in the heyday of that locality. She collected fossils throughout Scotland and further afield. Though always stating that she lacked the necessary patience to collect fossils successfully, her collection showed that she was perfectly able with hammer in hand.

Miss Brock served on the Society’s Council as an ordinary member and then for 14 years until 1970 was the Excursion Secretary. This was a period of rapid expansion in the membership of the Society. This was due in no small part to her efforts in attracting additional members, particularly at the exhibition staged by the Society to mark its centenary in 1958.

Outside of geology, Miss Brock had wide interests in natural history, especially in birds and wild flowers. She was for many years a member of the Andersonian Society (later to become the Glasgow Naturalists). She was the last founder member of the West Dunbartonshire Natural History Society still to attend its meetings. A few years before her death she was active in the establishment of the Dumbarton Natural History Society.

For many years Miss Brock shared house with another spinster sister. Miss Brock worked to earn their keep; her sister kept home. Not until the death of her sister, in Miss Brock’s late sixties, did she start to learn to cook. Like anything else which she threw her energies into, she became accomplished at this too. One of my abiding memories of Miss Brock will always be her efforts to learn to speak German. She was in her 75th year when she started. Her classes involved a twice weekly train trip from Dumbarton to Glasgow. The reason for all this effort? She wished to be able to speak more easily with the locals when she went on her annual walking and mountain flower hunting trip to the Alps!

Always willing to give of her time to encourage newcomers to geology, especially youngsters, Miss Brock will be fondly remembered by all those who knew her. With her passing ends a link to the past of our Society. She could remember lectures by all of the great names of Scottish geology before the last war. To many of us who knew her well the Society will never be quite the same place without her.

P.M.M.


Extracts from the Proceedings for 1993-1994 (Session 136)

Meeting held on October 14, 1993

[The first meeting of the session] was the occasion of the presentation of the T Neville George Medal to Professor Diane Edwards (University of Wales, Cardiff) in recognition of her work in the field of palaeobotany. Her lecture was entitled “In the Footsteps of Kidston and Lang”. It is a fitting tribute to the enduring quality and fundamental nature of the research activities of these two Glasgow based palaeobotanists that their pioneering descriptions of early land plants are as relevant as ever to studies of terrestrialization. In this lecture Professor Edwards returned to some of their Scottish and Welsh Borderland assemblages and showed how technological developments such as scanning and transmission electron microscopy have extended their anatomical observations and very occasionally modified their assessment of affinity. She also explained how an integrated approach, involving zoologists, botanists, geologists and geochemists, can provide new insights into early terrestrial ecosystems.

Meeting held on February 24, 1994

Prof. Jake Hancock addressed the Society on “Geology of Wine”.
Of the five controls on the quality of wine before the manufacturing process (grape-variety, type of yeast ferment, amount of warmth, supply of water and nourishment), geology is the major factor for the last three in most quality vineyards. Warmth is a critical factor in northern vineyards, as in Germany, where the best vineyards are directly related to orientation and angle of slope. Water supply is more complex, but ideally a vineyard-rock has a high porosity, high mass permeability and low matrix permeability. Nourishment of vines is mostly related to availability of $K^+$ but it is better for the nitrogen content of the soil to be low. The lecture was illustrated by examples from a broad variety of vineyards.

**Summer excursions, 1994**

**May 7, 1994: Corrycharmaig, Killin**

Leader: Dr A J Hall, University of Glasgow

18 people attended this excursion and the number of cars was limited to five due to access. The Corrycharmaig serpentinite is one of a number of intriguing small serpentinite bodies that occur in a linear zone extending through Middle Dalradian rocks of the Scottish Highlands from near Loch Fyne in the south east to the Moray Firth in the north east.

We examined the textures and minerals present in the serpentinite and considered how the rock originated and was modified by regional metamorphism. Relatively unusual minerals such as antigorite, chromite, talc and magnesite are found here in abundance. There are old workings here representing trials for chromium ore but both the chromite and talc magnesite have been considered more recently for their economic potential as refractories. Other minerals of economic significance which are often associated with serpentenites are platinum, asbestos and, indirectly, gold. The serpentinite outcrops as crags on the side of Glen Lochay with Loch Tay visible in the distance and it is a particularly suitable locality for contemplating the problem of balancing man's consumption of metals and industrial minerals with the inevitable environmental consequences.

Access is easy, involving about a 1 km walk along a farm track from Corrycharmaig Farm (NN 528359) and up a gentle incline from about 150 m to 250 m; examination of the outcrops involves walking short distances up and down some fairly steep slopes but extending from about 250 m to only 350 m altitude. (OS 1:50000 sheet 51: Loch Tay)

**August 17, 1994: Glensanda Quarry**

Leaders: Mr I. MacDonald, Foster Yeoman  
Miss A. Smith, Tarmac Roadstones

*by David Wilkinson*

Everyone turned up at the arranged time of 6.45 a.m. at the Boyd Orr car park. Dr Alan Hall, who was to lead the visit and drive the minibus, was there in very good time – he thought it was a 6 a.m. start!

During the drive up Loch Lomond the weather kept changing from bright sunshine to showers and our arrival at foster Yeoman’s jetty at Rubha Garbh coincided with one of the gloomier periods. Looking down Loch Crerand towards Eriska and the Appin Peninsula however, the sea appeared silvery and smooth. As we threaded through the network of channels, past the island of Lismore and punched our way across Loch Linnhe, the sun came out and gave us spectacular views in all directions. Looking across the Loch to Glensanda, the red scar of the quarry workings just above the shore line was prominent, as was the road winding up the hill out of sight. Just to the south of the quarry buildings, in rather incongruous juxtaposition, was the rectangular tower of Glensanda Castle, decorated by the Saltire. Lying just offshore was a red
and green ore carrier and on the shore line was a large shed and three conical heaps of aggregate.

The quarry manager, Iain McDonald, greeted us on our arrival and was introduced by Anne Smith, who had arranged the visit. We were then shepherded into the “man transporter”, which is rather akin to a Portakabin mounted on a truck with massive wheels. Inside, the seating was comfortable and, as we zigzagged our way up the hill, Iain told us something about the quarry operations. Glensanda is worked continuously day and night except in exceptionally bad weather, for example in heavy mist at night, or, less frequently, after a very heavy snowfall.

When we arrived at the top, 2,000 ft up the hill, we were able to look at the “benches” where the rock was being excavated. These slices out of the hill were several hundred metres long and about 30 metres deep along each bench. The quarry is being gradually worked further into the hill towards the boundary fence in roughly a semicircular arc. The rock was predominantly pink granite, well shattered and cut by several dykes of black basalt. The rock is not of particularly high quality, having a Polished Stone Value (PSV) of about 55, but it has good consistency and is widely used for concrete aggregate and road foundations.

There is an ICI plant on the site who provide the explosive used for blasting. The explosive used is inactive until the two components are mixed as they are poured down the pre-drilled blasting holes. After being blasted, the rock is transported by dumper trucks to the primary crusher, which breaks it up into pieces of about 20 cm cube. The crusher is somewhat like a giant pestle and mortar made of chrome steel with the mortar being in the form of an inverted cone. The crushed rock falls through a hole in the bottom of the cone. From the crusher, the rock is taken by conveyor to the “glory hole” - a 3.3 m diameter vertical shaft 300 metres deep. The shaft is kept full and the rock gradually falls as it is removed at the bottom and fed on to another conveyor. During its fall asperities on the “clasts” are abraded away, thus reducing the amount of final crushing required. This was one of several serendipities which came about with the utilisation of gravity for the transport of the rock.

A near horizontal tunnel 1.8 km long houses the conveyor which removes the rock from the bottom of the glory hole. This conveyor is a continuous, steel-cored rubber belt about 2 m wide. This emerges to the surface where a downhill conveyor takes the rock to the final crushing plant. Secondary and tertiary crushing produces a range of final sizes from 50 mm down to 4 mm. The quarry has its own water supply, which is essential, as it is sometimes necessary to add up to 3% water by weight to the aggregate to meet the user’s specifications.
The final transfer of aggregate to the ship is done by remotely controlled conveyer which allows a 75,000 tonne ship to be loaded in 24 hours.

The economics of quarrying are important, just as with any other business, but Foster Yeoman seem willing to wait longer than the average company for their return on their capital investment. This may be because they are a family owned company, but they also anticipate that the quarry will have a lifetime of eighty years, and it gives them control of the product from production to the point of use. Much of the English half of the Channel Tunnel has been constructed from the Glensanda aggregate; it is exported to Germany and even to the USA. Current maximum productive capacity is 5 million tonnes per annum, although the ultimate planned capacity is 15 million tonnes per annum. The company have not stinted the investment required, although the depressed state of the economy means that some of the projected development has been held back. All our party were very impressed by the scale of the quarrying and the efficiency of the operations. All quarrying operations have effects which are social, economic and environmental and Glensanda is no exception. There are arguments against disturbing an area of great scenic beauty, but, compared with large quarries I have seen in Germany, France, Italy and mainland Britain, Glensanda seems a model of an attempt to minimize pollution of the environment.

Our visit was well organised, visually stunning and extremely interesting. Our thanks go out to Foster Yeoman, Iain McDonald, Anne Smith, Allan Hall and Rosemary McCusker, who made this event so rewarding.

Nearly seven years after this 1994 Glensanda excursion, David Wilkinson, the writer of the above report, was one of four members of the society killed in a road accident. A statement in the Proceedings for Session 143 begins, “It is with deep regret that the Council records a serious road accident on Friday, 18th May, 2001. This occurred on the A9 north of Blair Atholl as members were travelling north by minibus to Durness for the first excursion of the Society’s summer programme and were involved in a collision with a jeep travelling south.” The report goes on to pay tribute to David Wilkinson and to each of the other three members of the society who died in the accident.