

Robert Kidston (1852-1924): a biography of a Scottish Palaeobotanist

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Synopsis

This brief biography summarises the life of Scots-born Robert Kidston, who arguably became the best and most influential palaeobotanist of his day. His collections of slides (deposited in the Botany collection University of Glasgow), together with the hand specimens and notebooks (deposited in the collections of the British Geological Survey, Nottingham) provide a wealth of important scientific data with modern applications in plant taxonomy, biostratigraphy and palaeoclimatic reconstruction.

Introduction

Throughout the 18th and 19th centuries Scottish palaeontologists were making fundamental advances in the science. Amongst these were people such as Reverend David Ure (1750-1798), Hugh Miller (1802-1856), John Young (1823-1900) and Elizabeth Anderson Gray (1831-1924). As the 19th century closed, three outstanding international specialists of Carboniferous palaeobotany had emerged: René Charles Zeiller (1847-1915) of Paris (Fig. 1a), Alfred Gabriel Nathorst (1850-1921) of Stockholm (Fig. 1a) and a ‘gentleman scientist’ Robert Kidston (1852-1924) of Stirling, Scotland (Fig. 1a-c).

The early years

Robert Kidston was born in Bishopston, Renfrewshire on 29th June 1852 the youngest child in a family of twelve. He was born into a wealthy family; his parents, Robert Alexander and Mary Anne Kidston (nee Meigh of Stoke) owned businesses in Glasgow. Having moved to Stirling when an infant, he was educated at Stirling High School and although his early ambition was to go to sea (Lang, 1925), on leaving school he began a career as a Clerk in the Glasgow Savings Bank. He had always been an ardent field botanist and his interests were eventually to take him into science rather than a career in economics and banking. He became Joint Secretary of the Stirling Horticultural & Natural History Society at the inaugural meeting in 1878 and went on to collaborate with Colonel J.S. Stirling on ten papers dealing with the flora of Stirlingshire. In an article of the Transactions of the Society written in 1939, David Morris wrote: “Robert Kidston received many honours and distinctions during his lifetime and we feel pleased to know that the first of these was as our Joint Secretary at the age of twenty-six.” Even whilst at the bank, Kidston attended lectures in Glasgow. However, it was probably the lecture given by William C Williamson (University of Manchester)

and the associated excursion to Arran to collect Carboniferous lycopods (when the British Association which met in Stirling in 1876), that inspired him to take up palaeobotany.

The Glasgow Savings Bank closed in 1878, but the loss of his job was an opportunity to change careers. The death of his father and several other family members resulted in Kidston becoming a wealthy man. As a result he was able to devote his time to scientific research and further his education by attending the University of Edinburgh where he studied Botany under Sir Hutton Balfour. He was awarded a First Class Certificate and a Medal in Practical Botany in 1880.

For much of his adult life, Robert Kidston lived with his three older unmarried sisters (Mary, Caroline and Isabella) in Victoria Place, in the King's Park area of Stirling, and even after his marriage, he took great care of his sisters throughout his life. In 1898 he married Agnes Marion Oliphant (Fig. 2a), who was almost twenty years his junior, and in the following three years she gave birth to two daughters, Hannah and Marjory (Fig. 2a). He bought a large house in Clarendon Place, Stirling (Fig. 2b), and being a keen gardener (he was particularly fond of his collection of saxifrages and alpines) tended his grounds with the help of a part-time gardener. The 1901 Census return shows Kidston also employed a nurse, a cook and a housemaid who all 'lived in'.

Kidston became a Magistrate in Stirling; took a prominent part in the politics of the local burghs, and was also an active member of the Church of Scotland.

The Palaeobotanist

Robert Kidston began his botanical career relatively late in life compared to many scientists, and between 1878 and 1880 focussed on botany and palaeobotany, almost to the exclusion of all else. His devotion to the science and his flair did not go unnoticed. Despite the fact that he had received relatively little formal botanical training, in 1880 Ben Peach, the acting Palaeontologist of the Geological Survey, asked him to become their honorary Palaeozoic Plant Consultant. So began a life-long association with the Geological Survey. In fact he was working on the Survey's Memoir on Fossil Plants of the Carboniferous Rocks of Great Britain when he died in 1924. In his obituary, his colleague and friend Albert Charles Seward wrote "from first to last he concentrated attention on Palaeozoic floras, to him more than any man the Survey is indebted".

Kidston's first palaeobotanical paper was published in 1881, in which he questioned the conclusions of WC Williamson, probably the most influential person in his scientific career. Over a 40 year period, he published more than 180 papers on the taxonomy and distribution of floras of the Carboniferous, Permo-Carboniferous and Devonian. Kidston also collaborated with many leading scientists of the time, several of whom visited Stirling, including Narthorst of Sweden, Zeiller of France, Jongmans of Holland, Zalessky of Russia and British scientists such as Woodward, Peach, Bower, Traquair, Seward, Davies and Crookall. However, it was with David Gwynne-Vaughan and,

later, William Lang that he perhaps produced his most outstanding work. There is insufficient space here to mention anything but some of the highlights of his career.

Early in the 1880s Robert Kidston was asked by the British Museum (Natural History) if he would catalogue their Palaeozoic plant collection. He began in February 1883, having been awarded a Royal Society grant, and completed the task in 1886. During that time he collected about 250 specimens, predominantly from Radstock, Somerset, which were donated to the BM(NH).

Robert Kidston can also claim to be amongst the first to use the microscope in research on fossil spores and (in Bennie & Kidston 1886) described the two wall layers in megaspores (exosporium and endosporium); dispelled the idea current at that time that any original cellular structure of the wall would not fossilise; observed that spores were often found attached in tetrads; and used spores to characterize and correlate individual coal beds.

In 1886-1887 Kidston visited Liverpool to examine the Ravenhead Collection. This collection of fossil plants from the Upper Westphalian A Coal Measures, were collected mainly by an amateur palaeobotanist, Henry H. Higgins, from the Ravenhead Railway Cutting, near the village of Thatto Heath, Lancashire. Kidston taxonomically described a number of ferns, seed ferns, and species of *Calamites* and *Sphenopteris*, from the collection, presenting his results to the Royal Society of Edinburgh on 16th July 1888 and published his research in 1889.

Fossil Grove, located in Victoria Park in Glasgow, was opened to commemorate the Jubilee of Queen Victoria in 1887. During landscaping a quarry in the park, ten erect trunks and root systems, together with several prostrate trunks, of the Carboniferous tree-like clubmoss *Lepidodendron veltheimianum* (and its root system, *Stigmaria ficoides*) were found below a dolerite sill. It must have been an exciting time for Kidston, who assisted in their excavation in 1887-1888. In 1888, he wrote a note on the nature of the fossil trees found at Whiteinch, in the Transactions of the Geological Society of Glasgow. The site became a popular attraction and a building was erected to protect the "Fossil Grove", which opened on January 1st 1890.

In 1911 he published a full account of the Belgian Carboniferous Flora and a few years later, with Willem Jongmans, collaborated in a monograph of the *Calamites* of Western Europe, which was published by the Dutch Government as the Atlas of 158 superb plates in 1915 and the text was added in 1917 (Bower, 1924a-c).

Kidston and D. T. Gwynne-Vaughan described fossil Osmundaceae in a series of five joint papers; the co-operation of the palaeontologist and the plant anatomist, both masters in their craft, resulted in the production of what is recognised as a botanical classic (William Lang 1925). The loss of his friend Gwynne-Vaughan in 1915, when he was just 44 years old, was a real blow to Kidston.

Another of Kidston's important research projects involved the plants of the Rhynie Chert. He had originally intended to collaborate with Gwynne-Vaughan on this project, but after Gwynne-

Vaughan's sudden death he was joined by William Henry Lang. Between 1917 and 1921 they produced the most important contributions ever made on the knowledge of the plants of the Devonian period (Seward 1924). Edwards (1984) corresponded with Kidston's daughter, Marjory, who described him as always being so cheery and full of life. Edwards (1984) went on to state that Lang, being much younger than Kidston, was a firm favourite with Kidston's daughters and Marjory recollected that he liked to join in with one of their most popular pastimes, sliding down two flights of stairs on trays while Robert Kidston held the stopwatch to see who was fastest!

At the time of his death in 1924, Kidston was working on the Memoir on Fossil Plants of the Carboniferous Rocks of Great Britain. About half of the intended Volume 2 had been completed at the time of his death, and although parts 5 and 6 had been completed, Kidston never saw them published; the final part was published in December 1925. In the Preface of the final part, Sir John Flett, Director of the Geological Survey, wrote "It is hoped that means will be found to complete the work on the lines he laid down, but this cannot be done without considerable delay." Just before his death, Kidston had begun collaboration with Robert Crookall who briefly described the collection and Kidston's life in 1938 and went on to complete the memoir on Fossil Plants of the Carboniferous Rocks of Great Britain between 1955 and 1976.

During his lifetime, Kidston was honoured with many distinctions and awards: the Murchison Fund by the Geological Society of London (1887); the Neill Gold Medal by the Royal Society Edinburgh (1890); Fellow of the Royal Society (1902); LL.D. by University of Glasgow (1908); the Murchison Medal from the Geological Society of London (1916) and an honorary D.Sc. from the University of Manchester (1921). His international reputation resulted in several awards listed by Bower (1924c): Foreign Member Kaiser, Mineral Gesell, Petrograd, Honorary Member Société de Russe de Mineralogie, Petrograd and Foreign Member Société Géologie de Belgique. What is less well known is that Robert Kidston was also awarded two medals for his photography (his superb collection of 4,000-glass plate negatives were also bequeathed to the Geological Survey), and both medals (Fig. 3a-d) were donated to the British Geological Survey by Robert Kidston's grandson Geoffrey Wilkinson in July 2007.

The death of Robert Kidston

Just two weeks after his 72nd birthday and with no thought of retiring, Robert Kidston made another of his annual trips to see his good friends Robert Crookall in Bristol and David Davies in Wales. It was while staying with David Davies in Gilfach Goch that he became very ill and a message was sent to his wife. Mrs Kidston and her oldest daughter travelled by train overnight and then by taxi, but, the taxi driver did not know where Gilfach Goch was, and although it is only 17 miles from Cardiff, it took more than three hours to find the house. Tragically Dr Kidston passed away half an hour before his wife reached him. He died on July 13th 1924.

In Lang's obituary to Kidston, he stated "in my own case and I am sure in Gwynne-Vaughan's also, the most important and valued influence in our mature scientific lives was the privilege of working with Kidston. He was a wise counsellor and a delightful companion and inspired liking and love in all who knew him". In a letter to Lang (Lang, 1925), Zalessky wrote "il était le chef travail paléobotanique dans votre pays, et ce soleil d'Ecosse éclairait par sa lumière lumineuse tous les paléobotanistes de l'Univers et les excitait aux recherches nouvelles." Sir Albert Charles Seward also wrote movingly "the recollection of days spent with Kidston in his home is a precious possession. He was a true friend, generous and unchanging, a student and intensely human, unequalled in his knowledge of plants, which grew in an era inconceivably remote. The loss of him is hard to bear because he was one who inspired affection as well as respect; the memory of what he did for others and the sacrifices he made for the advancement of knowledge will long remain but the written record of his work will endure longer" (Seward, 1924).

Agnes Kidston remained in the family home until after the marriage of both daughters, and then she moved to Helensburgh to be nearer them, until her death in 1950. She was buried beside her husband in Stirling together with Mary, Caroline and Isabella, Robert Kidston's three sisters.

Kidston's legacy

Sir John Flett, Director of the Geological Survey at the time of Kidston's death wrote in the Preface of the final part of Fossil Plants of the Carboniferous rocks of Great Britain, "He was himself an ardent collector, and brought together probably the most complete and varied series of Palaeozoic plants that has ever been acquired by one individual...[and]...made careful records of the precise horizon and distribution of all the specimens collected."

Kidston's collection of about 3000 thin sections is held in the Botany collection of the University of Glasgow and about 250 specimens, predominantly from Radstock, Somerset, are deposited in the British Museum (Natural History). However, the bulk of his collection, some 7500 superbly preserved fossil plants specimens was bequeathed to the Geological Survey in 1925 (e.g. Fig. 4a-d) and has been recently registered into the BGS Palaeosaurus Database. The collection, which was for many years largely forgotten, also includes his notebooks (Fig. 5a-b), photographs and palaeontological sketches. The photographic negatives in the collections of the BGS have recently been collated by one of us (C.A.T.) ready for scanning into the BGS Geoscience Imagebase data set.

Despite the age of the collection, the geographical and geological locations of the fossils is very comprehensive, reflecting Kidston's meticulous attention to detail, and are now being used to understand climate and environmental change that took place 300 million years ago. Today the value of fossil collections is being realised the world over and it is certain that had Robert Kidston

been alive today, he would have been delighted to know that his lifetime's work is now being studied in an international effort to understand climate change.

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Selected bibliography of Robert KIDSTON

Robert Kidston published over 180 papers himself or in collaboration with others. There is insufficient space to include all of them here, but the following selected bibliography gives a flavour of the immense amount of research he was involved in between 1881 and his death in 1924. Crookall (1938) gave a complete bibliography.

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Figure captions

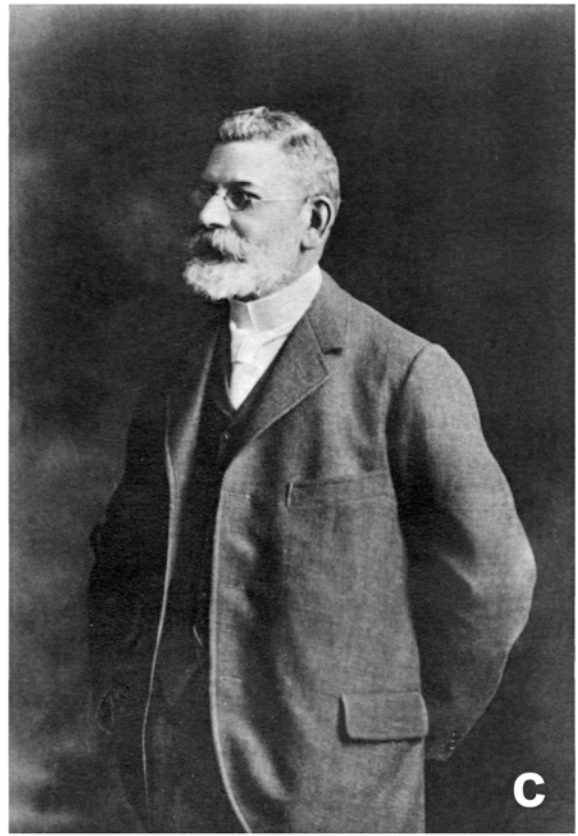
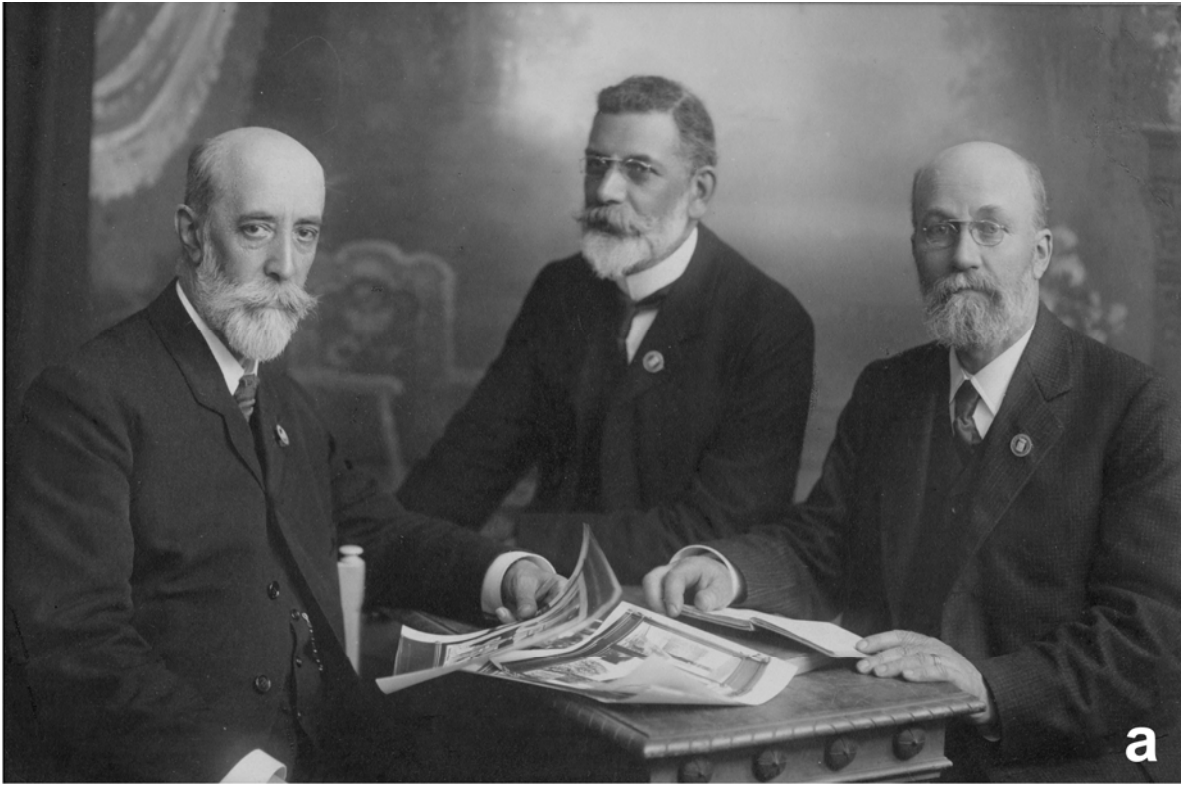
Figure 1. (a) The three internationally renowned palaeobotanists of the early 20th century: René Charles Zeiller (1847-1915) of Paris (left), Alfred Gabriel Nathorst (1850-1921) of Stockholm (right) and Robert Kidston (1852-1924) of Stirling (centre). (b) Robert Kidston as a young man in the conservatory at 12 Clarendon Place, Stirling. (c) The “gentleman scientist” Robert Kidston later in life.

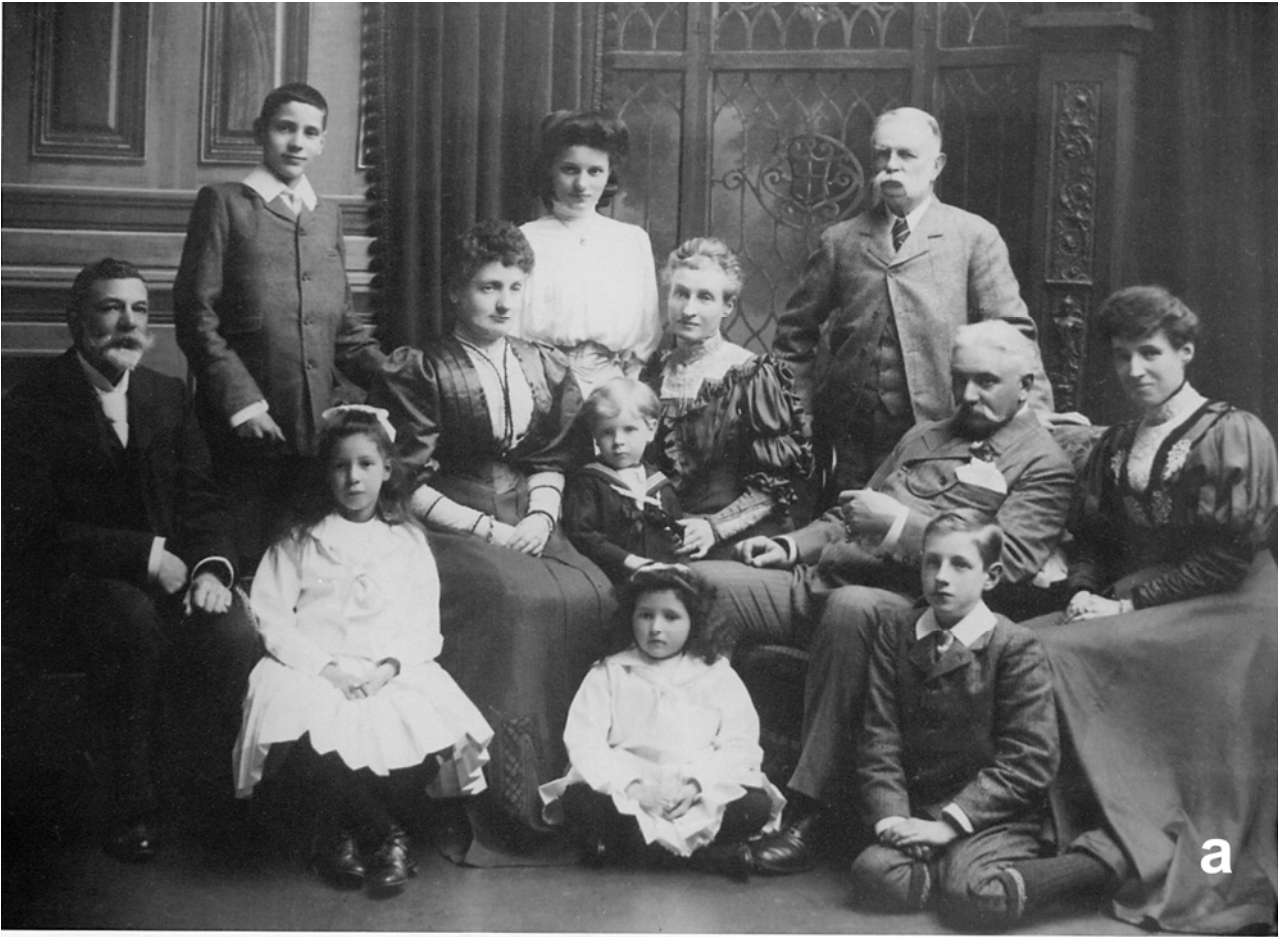
Figure 2a. Family photograph taken at Clarendon Place, Stirling: Robert Kidston (far left), Agnes Marion Kidston (nee Oliphant) (far right) and his two daughters Hannah (front left) and Marjory (front right) together with other family members. (The authors thank Mr Geoffrey Wilkinson, son of Marjory Wilkinson, nee Kidston, for permission to publish). Figure 2b. Clarendon Place, Stirling, the home, laboratory and study of Robert Kidston.

Figure 3. Medals won by Robert Kidston for his photography. (a-b) Silver medal awarded by Glasgow & West of Scotland Amateur Photographic Association in 1891. (c-d) Bronze medal awarded by the International Photographic Exhibition, Leeds, in 1891 (in the microscopic photograph section).

Figure 4. A few examples of the Kidston’s collection of fossil plants held by the British Geological Survey, Nottingham. (a) *Alethopteris serlii*, from the Carboniferous of Radstock, Somerset (Specimen number Kdst 238) (Width of specimen 83 mm). (b) *Neuropteris gigantea*, a sphenophyte from Croft Openworks, Coseley, Dudley, Worcestershire (Specimen number Kdst 4016) (Width of specimen 55 mm). (c) *Asterophyllites equisetiformis* from Cadeby Colliery, Conisborough, Yorkshire (Specimen number Kdst 1536) (Width of specimen 52 mm). (d) *Mariopteris lobatifolia* a Carboniferous pteridophyte from Bardsley Colliery, Ashton under Lyne, Lancashire (Specimen number Kdst 804) (Width of specimen 226 mm)

Figure 5a-b. Examples Kidston’s notebooks to show his meticulous and detailed artwork (held by the British Geological Survey, Nottingham).







a



b



c



d



a



b



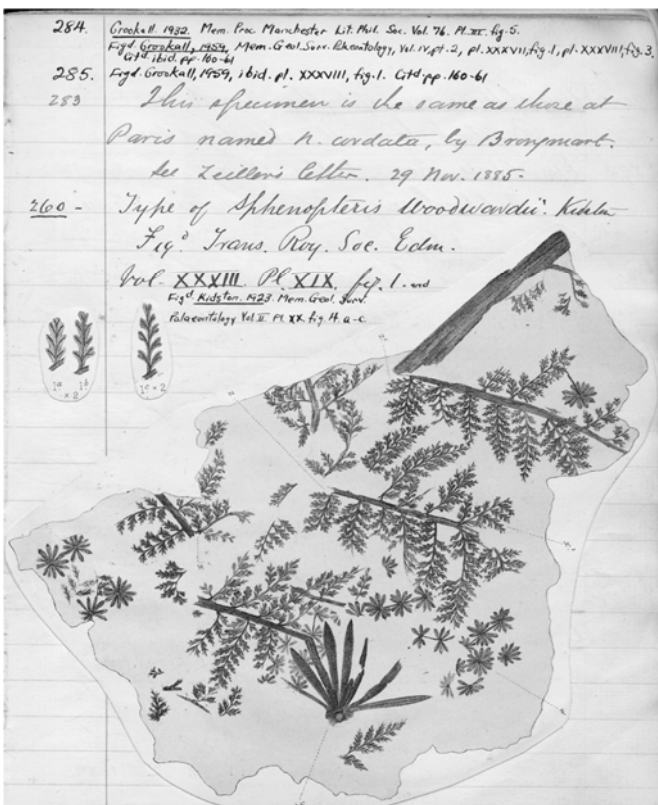
c



d



a



b