Conference to Celebrate the Centenary of the First Female Fellows of the Geological Society London

May 21st 2019

Organised by Geological Society London: History of Geology Group

History Of Geology Group

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University of Chester

A Conference to Celebrate the Centenary of the First Female Fellows of the Geological Society London

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Welcome to the conference!

We are celebrating 100 years to the day since the admission of the first female Fellows of the Geological Society - 21st May 1919.

Conference Convenors:

Prof. Cynthia Burek University of Chester c.burek@chester.ac.uk

Dr. Bettie Higgs, University College Cork b.higgs@ucc,ie

Cover photos: (from left to right)
Sedgwick Club with Gertrude Elles, Margaret Crosfield, Ethel Skeat and Ethel Wood;
Individual photographs of Maria Ogilvie Gordon; Gertrude Elles; Catherine Raisin;
Margaret Crosfield on a Geologists' Association fieldtrip to Leith Hill 1912.

SUMMARY CONFERENCE SCHEDULE

9.00-9.55 am **Registration**

<u>Session 1:</u> **Chair Prof. Cynthia Burek**

9.55-10.00 **Welcome and Introduction**

10.00-10.50 **Keynote Speaker: World War I through Affirmation Action — Women in Petroleum Geology Make a Difference** *Robbie Gries*

10.50-11.10 **Janet Watson: First female President of the Geological Society** *Glynda Easterbrook*

11.10-11.30 Coffee and Posters (see poster abstracts)

Session 2: **Chair Dr. Bettie Higgs**

11.30-11.50 **Margaret Chorley Crosfield FGS: The very first female Fellow of the Geological Society** *Cynthia Burek*

11.50-12.10 **Maria Graham and the Geological Society** *Carl Thompson*

12.10-12.30 **Ladies with hammers - exploring a social paradox in the early 19th century of Britain** *Martina Kölbl- Ebert*

12.30-12.50 **Collecting women in Geology: Opening the international case of a Scottish 'Cabinétière', Eliza Gordon Cumming (1815-1842)** *Mary Orr*

12.50-1.10 **Female students of geology in Victorian Dublin** *Susan Hegarty*

1.10-2.00 Lunch and Posters (see poster abstracts)

<u>Session 3:</u> **Chair Duncan Hawley**

2.00-2.20 **Far-flung Female (and Bone-hunting) Fellows** *Sue Turner*

2.20-2.40 **Ida Slater: a modern researcher at the beginning of the 20th century** *Consuelo Sendino*

2.40-3.00 **Women at the dawn of diamond discovery in Siberia** *Kate Kiseeva and Anna Dymshits*

3.00-3.20 **Eileen Mary Lind Hendriks (1887–1978): her determination to pursue a geological career resulted in major advances in understanding the geology of South-West England** *Jenny Bennett and John Mather*

3.20-3.40 **Gertrude Elles: the pioneering graptolite geologist in a woolly hat** *Jane Tubb and Cynthia Burek*

3.40-4.00 Coffee and Posters (see poster abstracts)

<u>Session 4</u>: **Chair Prof. John Mather**

4.00-4.20 **Two for the price of one: Doris Reynolds (1899-1985)** *Cherry Lewis*

4.20-4.40 **Dr. Dorothy Rayner (1912-2003): First President of the Yorkshire Geol Soc.** *Patrick Boylan*

4.40-5.00 **Rosemary Hutton (1925-2004): A visionary and pioneering geophysicist** *Bruce Hobbs and Alan Jones*

5.00-5.20 **Understanding the Earth: the work of Marie Tharp (1920-2006)** *Bettie Higgs*

5.20-5.45 **Discussion and Closing remarks**

6.00-7.00 Reception* **7.00-9.00 Celebratory Dinner*** *Prior booking required

LIST OF CONFERENCE POSTERS:

Being seen & heard: Archives, Women and Geology *Sandra Freshney*

Two forgotten female Fellows of the Geological Society: Mabel Tomlinson and Isobel Knaggs *Cynthia Burek*

The female Geological Society medal and Fund winners *Cynthia Burek*

"A Feminist's Guide to Dinosaurs" – reflections from an interdisciplinary arts/sciences public tour *Emma Jude and Luisa-Maria MacCormack*

"Female aristocrats in the Natural History World" *Consuelo Sendino*

A tale of two female geologists on GeoMôn Anglesey Geopark – Catherine Raisin and Annie Greenly *Cynthia Burek*

KEYNOTE Speaker

World War I through Affirmation Action—Women in Petroleum Geology Make a Difference

Robbie Gries President of the Geological Society of America (2018-2019)

Abstract: American female geologists joined the petroleum workforce as a result of the U. S. entry into WW I in 1917. Men were either conscripted or joined the military in droves and left the petroleum company staffs decimated at a time when petroleum demand was exponentially increased. Only recently had petroleum geologists gained credibility in the industry. The negative side for women in this era was that they almost always, if not always, were paid significantly less than the men. As per societal dogma of the day, they were also forced to quit their jobs when they married.

The discovery in 1921 by female geologists in Houston that foraminifera could be used to delineate complex stratigraphy enhanced the economics of petroleum exploration phenomenally. Not only did it revolutionize the industry economically, it opened a new career to women and men alike. Women, still paid less, found jobs in the 1920s and 1930s in this thriving industry and the discipline quickly expanded globally.

By the 1940's the market for economic paleontologists was saturated and hiring of females greatly declined. However, WW II turned that around and again women were in great demand in industry, not solely in paleontology, but also, again, as in WW I, as exploration geologists. Paid less, but full of patriotic enthusiasm, they again made significant contributions.

The end of the war and the onset of a post-war society that returned women to role of homemaker created the worst employment situation for women ever encountered. Only a determined and persistent few found employment and kept it in this environment, and, they continued to be paid significantly less, had little opportunity for advancement and had to quit when married.

Affirmative Action in the U.S. in the 1970's heralded new opportunities for female geologists in the petroleum industry, and, finally, with equal pay and without the restrictions on married life.

Abstracts: Oral Presentations

Janet Watson: First female President of the Geological Society

Glynda Easterbrook BSc(Hons), ARSM, MA(Ed); formerly The Open University

With two First Class degrees under her belt, Janet Watson was destined for a great career. Her admission into the Royal School of Mines at Imperial College could have been an enormous challenge for many women of her generation. However, with her brilliant mind, she become part of an important research group at an exciting time in post-war Britain, earning admiration and respect in the world-wide geological community.

Her early work with John Sutton on the Precambrian geology of Scotland is world-renowned. However, unlike many women scientists of earlier times who, of necessity, relied on connections with an illustrious father, brother or husband, she also managed to plough her own furrow. Later research collaborations included work with the Geological Survey on ore genesis and regional geochemistry.

Despite her impressive record, Janet always made time to help and advise students and fellow researchers. The book she wrote with H. H. Read became a seminal text for a generation of undergraduates. To her sorrow she never had a family of her own, but her legacy lives on in the huge number of female geoscientists who have followed in her footsteps and for whom she was an inspiration and formidable role model.

Margaret Chorley Crosfield FGS: the very first female Fellow of the Geological Society

Cynthia V. Burek University of Chester, Chester CH1 4BJ, UK, c.burek@chester.ac.uk

In May 1919 the first female Fellows of the Geological Society were elected and from then on attended meetings at the Society. The first person on the female fellow's list was Margaret Chorley Crosfield. She was born in 1859 and died in 1952. She lived all her life in Reigate in Surrey. After graduating from Cambridge, for many years she sought to join the Geological Society of London for recognition of her research work and also to use the library and attend meetings. This paper will look at her history and trace her geological achievements in both stratigraphy and palaeontology as well as highlight her extraordinary field notebooks that she left to the Geological Survey. She worked closely with two female geological colleagues, Mary Johnston and Ethel Skeat. Margaret Crosfield epitomises the educated, amateur, independent woman that wanted to be recognised for her work at a time when female contributions, especially in the field sciences, were not always acknowledged or appreciated.

Maria Graham and the Geological Society

Carl Thompson University of Surrey

In 1824, the travel writer and woman of letters Maria Graham (1785-1842) became the first woman to have an article published in the Transactions of the Geological Society, when the journal included a report of an earthquake Graham had witnessed in Chile in 1822. This report was prominently used by Charles Lyell in his Principles of Geology (1830); however, a later attack on Graham's competence as a geological observer by the President of the Geological Society, Sir George Greenough, generated considerable controversy in the geological community, both nationally and internationally. This paper will reconstruct this controversy, addressing firstly the question of Graham's geological competence; contrary to some commentaries (both at the time and more recently), it will be argued that we need to recognise Graham as in some degree a geologist herself, rather than just a conscientious, 'lay' observer. Secondarily, it will use the episode to explore the diverse forms that geological enquiry could take in this early period, the multiple networks and communities that collectively constituted the discipline, and the various hurdles yet also opportunities that women in particular faced as they sought to participate in geological research and debate.

Ladies with hammers – exploring a social paradox in the early 19th century of Britain

Martina Kölbl-Ebert SNSB-Jura-Museum Eichstätt, Willibaldsburg, 85072 Eichstätt, Germany, Koelbl-Ebert@jura-museum.de

In the early 19th century, way before the Geological Society opened its doors to female members, geology was a fashionable science in Britain and widely discussed in polite society. Numerous women collected fossils and minerals, some of them even acting as valuable helpmates to renowned pioneers of geology, acting as secretaries, draughtswomen, curators and field geologists. A unique window of opportunities, framed by a singular combination of social status, science politics, general economy and female fashion, allowed these women a certain measure of participation in the new and exciting science. Access to a full geological education via public libraries, universities or membership in scientific societies, however, was largely denied to these women. How did they think about this disadvantage? We will explore their reaction in the face of discrimination, paternalistic concern, closed doors and societal conventions and look into their desire for recognition, their frustration of being excluded, their hope for change and their strategies to achieve this transformation of society. Astonishingly, they are not the direct pathfinders for the first female members of the Geological Society. This route has been more circuitous, involving major changes in society due to suffragettes and the Great War.

Collecting Women in Geology: Opening the International Case of a Scottish 'Cabinétière', Eliza Gordon Cumming (1815 - 1842)

Mary Orr Buchanan Chair of French, University of St Andrews

The double meanings of my title play specifically to the roles of women in geology, and to their collecting in two senses. The first is to extend national rosters to include women such as Sarah Bowdich (1791-1856) who contributed to France's geological knowledge despite not being a French national. The second is the importance of women's collections and women collectors for the establishment of new fields. In returning to Eliza Gordon Cumming (collected by Creese in the *The Role of Women in the History of Geology*, 2007) my paper rethinks her importance as a 'cabinétière' (Gargam, 2009) – a collecting woman in world geology – developing the practices of French Enlightenment cabinets of curiosities, and specifically women's mineralogy collections. The actuality and metaphor of what one finds when one splits a rock or turns over a stone is the methodological exploration of this paper: world fossil fish collecting owes much more to Eliza Cumming in the 1830s than her 'connoisseurship' that allowed Cuvier's disciple Louis Agassiz to write up and disseminate *her* findings. Unpacking Cumming's work as a 'cabinétière' restores the collector to her collections. Uncovering her case provides additional frameworks for collecting other unheralded women in geology.

Female students of geology in Victorian Dublin

Susan Hegarty School of History and Geography, Dublin City University, Ireland

The science of geology began to thrive during the middle of the nineteenth century, with the expansion and consolidation of geological mapping of the Geological Survey of Great Britain and Ireland, and the foundation of geological societies across the islands of Britain and Ireland. As the desire for geological knowledge and understanding among the general public grew, so did the provision of lectures and courses open to the public. These public lecture series proved popular with a wide cross-section of men and women of Victorian Britain and Ireland.

This paper explores the provision of geological lectures by officers of the Geological Survey of Ireland through the Museum of Irish Industry in Dublin, and the women who took these courses during the 1850s and 60s and completed geological examinations for London's Science and Art Department in Dublin as a result of these lectures. It provides a glimpse into the scientific, and specifically geological interests and activities of these women at a time when it was not possible for them to become members of the geological societies in the cities in which they lived.

Far-flung Female (and Bone-hunting) Fellows

Sue Turner c/o Queenland Museum Geosciences, Kilkivan Avenue, Kenmore, Queensland 4069, Australia

Geologists roam far and wide, and no less the women who took up Fellowship of the "Geol. Soc.". In my own 50+ years of membership (Junior Associated 1966: FGS 1970), I have met many interesting women Fellows who have lived and worked far and wide across the globe conducting field and research work. Based on my own interests in "bones" and migrations, I shall consider these women Fellows. I was taught briefly by the redoubtable Phoebe Walder at Reading University and, as noted elsewhere, was inducted into the vagaries of GSL by Peigi Wallace. Women from the far colonies joined as soon as they were able. The legendary Dorothy Hill was one of the first. Other notable Fellows from Australia are Nell Ludbrook and June Phillips Ross. Elsewhere in Gondwana I shall look particularly at Englishwoman, Pamela Robinson who pioneered much research in vertebrate palaeontology in the Indian subcontinent. Another important British vertebrate palaeontologist was Dorothy Rayner who wrote one of the key geological texts of the 20th century. Contemporary with me in the 1960s were Janet Vinnicombe and Frances Mussett, both of whom did work relevant to vertebrate palaeontology. Much of my own work has been in China and it was a pleasure to meet with the women in the FGS group of Hong Kong in 2013. Another FGS Mary Welleck Garretson supported her teacher Grabau from afar when he was in China.

Ida Slater: a modern researcher at the beginning of 20th century

Consuelo Sendino Curator at the NHM, London, UK; cons@nhm.ac.uk

Ida Lilian Slater (1881-1969) was a geologist with a strong interest in palaeontology who was active from the beginning of the 1900s but retired in 1912, a few years before the Geological Society of London admitted female members. Although her career began in geomorphology with her work on the origin of U- and V-shaped valleys, she soon changed her direction towards stratigraphy and finally palaeontology. She was one of the geologists who followed Sir Roderick Impey Murchison's (1792-1871) research interest on the Silurian of Shropshire. She worked for the Natural History Museum, London, and for international exhibitions such as the Franco-British Exhibition in 1908, both partly due to her drawing skills and attention to detail.

Although her wealthy family background meant that she did not need to apply for funding for her research, she still did so as is the normal procedure nowadays. She travelled around Europe, doing fieldwork and visiting colleagues in other countries. However, there were some significant differences in her career to those encountered by researchers these days. For instance, she was not allowed to defend her work at the Geological Society of London, her male colleagues having to communicate her papers, and was also unable to obtain a degree at most universities at the time, something unthinkable today. Nevertheless, Ida Slater not only managed to travel to obtain her degree, working on foreign collections in other countries to compare to the

British specimens, but was also successful in obtaining funding to carry out her own research. Her mental approach, as with her research, was ahead of its time. She was an innovative woman who unfortunately put her career to one side in order to be married and have children.

Women at the dawn of diamond discovery in Siberia

Kate Kiseeva School of Biological, Earth and Environmental Sciences, University College Cork, Ireland **and Anna Dymshits** Sobolev Institute of Geology and Mineralogy, Novosibirsk, Russia

Diamond mining had started in the Russian Empire as far back as the 19th century, however, the production was small and up until mid-20th century the country was still importing diamonds for industrial purposes. The situation has changed in 1954, when two women: Larisa Popugaeva and Natalia Sarsadskih developed an exploration method and successfully used it to discover the first diamondiferous kimberlite pipe in Siberia, called Zarnitza. Both researchers worked in the geological institute in Leningrad (current Saint-Petersburg). Larisa was the first to do the field work and to find a diamondiferous kimberlite that she brought to one of the institutes in the Siberian branch for investigation. That ended up being her triumph and downfall. Envy among her Siberian colleagues had triggered a ruthless response: Larisa was forced to denounce her discovery, she was branded “a traitor” and eventually had lost her job. It was not until 1970 that she was rightfully recognised as the “Mineral deposit discoverer” and was finally awarded a PhD degree in geology.

In July 2004, on the 50th anniversary of Siberian diamond discovery, the Head of Yakutia opened a monument to Larisa Popugaeva that is located in the small town of Udachniy.

Eileen Mary Lind Hendriks (1887 - 1978): her determination to pursue a geological career led to major advances in understanding the geology of South-West England.

Jenny A. Bennett Geology Section, Devonshire Association **and John D. Mather** Dept. of Earth Sciences, Royal Holloway, University of London,

Hendriks was born in Edgbaston, Birmingham, the only child of a prosperous, middle-class family. In September 1914 she gained an entrance scholarship to the University College of Wales at Aberystwyth, to study geology. Her course was interrupted by the war and she did not graduate until 1919. In January 1920, she was appointed Senior Demonstrator in Geology at Queen’s University, Belfast, but resigned at the end of the year. She then became her widowed mothers’ companion, until the latter’s death in 1953, whilst pursuing geological research. She mapped Silurian rocks in Cardiganshire before moving to explore rocks of supposedly similar age in Cornwall. She found plant remains instead of graptolites, resulting in a complete reinterpretation of the stratigraphy and structure of South Cornwall. Her achievements were lauded by officers of the Geological Survey but, although she was temporarily employed to prepare a catalogue of photographs, her attempts to gain a permanent post were

unsuccessful. Her Cornish work led to the award of a PhD by Imperial College in 1932; she became a Fellow of the Geological Society in 1945, was awarded its Lyell fund in 1958 and R H Worth Prize in 1965. The Royal Geological Society of Cornwall awarded her its William Bolitho Gold Medal in 1949. She continued as the energetic doyenne of Cornish geology well into her 80s, living in a cottage on the Lizard with her Alsatian dogs.

Gertrude Elles: the pioneering graptolite geologist in a woolly hat

Jane Tubb Associate lecturer, The Open University **and Cynthia Burek** University of Chester, Chester CH1 4BJ, UK, c.burek@chester.ac.uk

Gertrude Elles gained worldwide renown for her seminal work with Ethel Wood on the Monograph of graptolites which is still in use today. She gained the MBE, pioneered female geological education, became the first female reader in Cambridge University and one of the first Fellows of the Geological Society. An eccentric with a vast array of hats, PhD students and lodgers, she was a stalwart member of the Sedgwick Club and a life member of British Federation of University Women. Obituaries she wrote for female colleagues described their achievements with humour and good nature.

Her family describe her as ‘a fabulous woman’ with a huge range of interests including archaeology, botany and music. She related her geological and botanical knowledge in showing a nephew that plants growing along the Moine Thrust reflected change in the underlying rocks. Cambridge colleagues recall her as a ‘marvellous and well-respected figure’ who caused some amusement by her big old cluttered table from which she swept material making room for new samples (and work for technicians).

She died in 1960 in her beloved Scotland. However her legacy survives in the classification of a group of fossils extinct for over 400 million years.

Two for the price of one: Doris Reynolds (1899 - 1985)

Cherry Lewis *Honorary Research Fellow, School of Earth Sciences, University of Bristol* *cherry.lewis@bristol.ac.uk*

Doris Livesey Reynolds was born in Manchester, the daughter of Alfred Reynolds, a textile manufacturer, and Lulu Livesey. She studied at Bedford College for women, part of the University of London, and gained her degree in geology in 1920. After her first degree she became a demonstrator at University College London. In 1931, when on a field trip to Ardnamurchan, she met Arthur Holmes, then Professor of Geology at the University of Durham. She subsequently took up a teaching post at Durham and, after the death of Holmes’s first wife, they married in 1939.

In 1942 Holmes became Regius Professor of Geology at the University of Edinburgh and Reynolds was appointed Honorary Research Fellow, undertaking unpaid

research and teaching in the geology department. Holmes famously remarked that the University was getting two geologists ‘for the price of one’.

During the 1940s Reynolds developed the theory of ‘granitisation’ to explain the formation of granite in the Earth’s crust. The result was a controversy that split the geological community until the 1960s. Although her theory was eventually proved incorrect, she succeeded in provoking a considerable amount of research in a little understood field of geology. In 1949 Reynolds became the first female Fellow of the Royal Society of Edinburgh, and in 1960 she, belatedly, received the Lyell medal from the Geological Society of London. Only three women had previously received the award since its establishment in 1876; only five have received it in the 60 years since.

Dr Dorothy Rayner (1912 - 2003): First woman president of the Yorkshire Geological Society

Patrick Boylan Professor Emeritus, School of Arts and Sciences, City, University of London

In 1935 Dorothy Rayner was one of the many students of Girton College over two or more generations who because of their gender were unable to graduate at Cambridge, but instead received her First in Geology from the College, not the University. By the time she was at last able to take up her MA in 1948 she had already completed a Cambridge PhD in vertebrate palaeontology and was in the ninth year of her lectureship in geology at Leeds University, where she was to stay, and be a key staff member, for the whole of her career to her retirement.

On her arrival in Leeds in 1939 she joined the Yorkshire Geological Society and remained a member to her death 64 years later. She was an outstanding Principal Editor of its Proceedings for 10 years. She also co-edited with her Leeds colleague John Hemingway the Society's encyclopaedic Geology and Mineral Resources of Yorkshire, while her Stratigraphy of the British Isles was a very highly regarded review and popular degree and postgraduate textbook. Her honours included the Sorby Medal of the YGS, the Clough Medal of the Edinburgh Geological Society and the Geological Society's Lyell Medal. However, a very special much appreciated honour was her election as President of the Yorkshire Geological Society - the first, and very regrettably, so far, the only woman president since its founding in 1837.

Dr. Rosemary Hutton (1925 - 2004): A visionary and pioneering geophysicist

Bruce Hobbs School of GeoSciences, University of Edinburgh **and Alan Jones** Senior Professor Emeritus, Dublin Institute for Advanced Studies; Currently President, Complete MT Solutions Inc., Canada.

Violet Rosemary Strachan Hutton (“Rosemary”) graduated from Dundee University and embarked upon a pioneering career in geophysics, a rare and challenging choice for a single woman at that time. Her impressive research career, starting in

1954, was largely devoted to the investigation of how geophysical methods, in particular electromagnetic methods, could reveal the structure of the Earth's continental crust and upper mantle. She spent 15 years in Africa at the Universities of Ghana, Zaria and Ibadan. Working in comparative isolation she studied the equatorial electrojet and micropulsations producing 13 high quality papers of which three, including her first, were published in Nature. This demonstrated a remarkable combination of resourcefulness and self-reliance. In 1969 she joined the Edinburgh University Geophysics Department and remained at the cutting edge of her science until retirement, investigating electrical conductivity structure, continental rift systems, geothermal regions, geomagnetic source fields and closure of the Palaeozoic Iapetus Ocean. She inaugurated the now biennial series of Electromagnetic Induction Workshops – a high point in the International Association of Geomagnetism and Aeronomy calendar. The "V.R.S Hutton Symposium" was held by the European Geophysical Society in 1992. She was elected Fellow of the Institute of Physics and the Royal Society of Edinburgh.

Understanding the Earth: the work of Marie Tharp (1920 - 2006)

Bettie Higgs School of Biological, Earth and Environmental Sciences, University College Cork, Ireland

Marie Tharp worked all her life as a geoscientist, and, for the most part, for the recognition and benefit of her male colleagues. She was employed to assist researchers in Columbia University. Here. her male colleagues readily used her ingenuity and insights without giving her recognition. Marie happily tolerated this for some time but eventually began to ask for recognition for her own work. However, it was not until she went to some extreme lengths that she began to earn some small recognition. This change led to her most influential work - producing physiographic maps of the ocean floor. During this work, in the 1950s, Marie was the first scientist to realise that there was a large Rift running the length of the Atlantic Ocean, and she eventually demonstrated that this Rift linked to the East African Rift Valley. Her male colleagues supressed this discovery for reasons of their own, and four years later presented it as their own research. The work caused some key figures in the history of Plate Tectonics to change the direction of their research.

Marie suffered in her career due to rivalries between her male colleagues. When these colleagues died, Marie's own work was carved up and given to other researchers along with funding. It was not until the 1990s that Marie began to be recognised nationally and internationally and receive awards for her work. It is only with the persistence of her followers that the history of Plate Tectonics is being re-written with Marie's name included.

Abstracts: Posters

Being seen & heard: Archives, Women and Geology

Sandra Freshney Archivist, Sedgwick Museum of Earth Sciences, University of Cambridge.

This poster will shed further light on some of the women who have contributed to Geological Science and can be seen and heard in the Archive Collections at the Sedgwick Museum of Earth Sciences, University of Cambridge, including:
- participation in meetings and talks, recorded in volumes of minutes.
- participation in fieldwork, depicted in photographs and sketches, and written accounts.
- geological observations documented in notebooks and diaries.

The Sedgwick Museum Archive includes the papers of the Sedgwick Club. This is the oldest student geological club in the world, and is still active today. Several early members of the Club would become the very first female fellows of the Geological Society. They included Ethel Wood and Gertrude Elles. Elles was the first female university lecturer in the Department of Geology (1926) and the first female reader (1936). Both these women, and others, will feature in the poster.
Another two women will also feature:
Mary Caroline Hughes attended Sedgwick Club field trips, but also accompanied her husband (Professor McKenny Hughes) to International Geological Congress (IGC) meetings. She took photographs and made sketches of her visits, adding to our understanding of geology (and its dissemination) in the late nineteenth century.
Elizabeth Harland accompanied her husband Brian on 13 trips to Svalbard in the 1970s. She was awarded the Polar Medal for her services in 1998. She appears in many photographs in the Svalbard Archive. Mention will also be made of Brian's secretary, Phoebe Henning (nee Edmiston) who was involved in the administration of the Svalbard Expeditions during the 1950s.
Sandra Freshney, Archivist, Sedgwick Museum of Earth Sciences, Sjm259@cam.ac.uk 01223 765717

Two forgotten female fellows of the Geological Society: Mabel Tomlinson and Isobel Knaggs

Cynthia V. Burek, University of Chester, Chester CH1 4BJ, UK, c.burek@chester.ac.uk

The first female Fellows of the Geological Society of London were elected in May 1919. In 2009 I wrote a paper on them as part of the celebrations for the bicentenary of the founding of the Geological Society (Lewis & Knell, 2009). While some of those ladies were well known to many people, such as Elles and Wood, there were others who had been forgotten. In the decade since that publication, more information has come to light about those we knew so little about. However, there are still some female Fellows who are evading researchers. From 1919 until Marie Stopes joined in

1922, 20 women were elected FGS. By the end of 1925 this had increased to 33 including Isobel Knaggs (FGS 1922) and Mabel Tomlinson (FGS 1924), both extraordinary women. Their contributions will be examined. More generally did any particular discipline, status or location dominate these female FGSs? This poster shows that they researched a broad range of subjects and locations. Some early female FGSs moved away from geology and are remembered for their contributions in different fields. What drove them away or was it just serendipity? An interesting question to reflect on.

The female Geological Society medal and Fund winners

Cynthia V. Burek, University of Chester, Chester CH1 4BJ, UK, c.burek@chester.ac.uk

The Geological Society historically awards medals and funds to early career geologists and for career achievement recognition. Mid-career and outreach awards were added later as separate categories.

Only two women received recognition by the Geological Society for their work in the 19th Century through early career funds rather than career achievement medals. This was because women had not had the time since graduating to achieve the status of career achievement necessary for a medal. Catherine Raisin was awarded the Lyell Fund in 1893 and Jane MacDonald the Murchison Fund in 1898. At the turn of the 20th century until the admission of women into the Geological Society as Fellows, no woman received a medal but several Lyell, Murchison, Wollaston and Daniel Pigeon funds were distributed to Gertrude Elles, Elizabeth Gray, Ethel Wood, Helen Drew, Ida Slater and Ethel Skeat. The first woman to collect her own Fund was Ethel Skeat in 1908.

Pre-World War II only four women received career recognition in the form of a medal. Gertrude Elles in 1919 received the Murchison Medal. The following year Ethel Shakespear was awarded the same medal, a result of the joint publication of the Monograph on graptolites. No further medals were awarded to women until the Lyell medal was received by Maria Ogilvie Gordon in 1932 and Eleanor Mary Reid in 1936. During the late 1950s, 1960s and 1970s a few women were recognised. However, it wasn't really until the end of the 1990s and into the 21st century that more women received medals. Two further points worth noting are the date of initiation of the medals (on average it takes women 20 years to receive recognition) and the William Smith Medal has never been received by a woman.

“A Feminist’s Guide to Dinosaurs” – reflections from an interdisciplinary arts/sciences public tour

Emma Jude http://emmatheresajude.wixsite.com/website, emmatheresajude@gmail.com **and Luisa-Maria MacCormack** London Drawing Group/Big Art Herstory Project, www.bigartherstoryproject.com, londondrawinggroup@gmail.com

Supported by the art education collective London Drawing Group/Big Art Herstory Project, we undertook a series of group private tours of the Natural History Museum, London, specifically focused on the history of women in palaeontology and on sharing this with the public. LDG classes comprise a tour element, with short thematic ~10-minute talks at a range of exhibits. Generally these are focused on feminism, art history and anthropology, reflecting the expertise of the LDG founders. In this case talks were led by an expert collaborator (Emma Jude, MEarthSci Oxon, MSci). These were interspersed with responsive drawing exercises led by Luisa-Maria MacCormack which solidify engagement with the material and themes as well as improve recreational drawing skills. This poster will detail specific topics covered in the tour, focus on the methods and practicalities of leading such a class and metrics of the success of the enterprise, and reflect on responses of the attendees. The response, and corresponding ticket sales, have been significantly above expectations and as a result a forward plan is presented for expanding the scheme into educational sessions for school-age children and a new method for public science engagement.https://www.eventbrite.co.uk/e/a-feminists-guide-to-dinosaurs-tickets-53482648040

Female aristocrats in the Natural History World

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Fascination with Natural History does not recognize class, as is shown through the work of fossil collectors such as Mary Anning (1799-1847) and the female aristocrats who, during the 18th and 19th centuries, also contributed significantly by increasing the number of collections at natural history museums. These women were not members of the Geological Society of London because, at that time, women were not even allowed to be members but they still left their impressive legacy in museums. This manuscript will focus on three women who made extensive collections that now are incorporated into British museums of natural history. The first of these was Margaret Cavendish Bentinck, Duchess of Portland (1715-1785), who made one of the finest collections in England and possibly the best collection of shells and fossils in Europe of her time, which was later sold to private collectors and subsequently much of it bought by the Natural History Museum, London. She was followed by another aristocrat, Louise Countess of Aylesford (1760-1832), who collected minerals which are now kept at the Natural History Museum, London. Finally, Anne Allnutt, Baroness Brassey (1839-1887), who collected geological samples as well as ethnographic items and photographs during her trips. Her collections were used to establish the Brassey Institute in Hastings. All of these

aristocratic women had in common their love for nature and used their income and influence to build their collections.

A tale of two female geologists on GeoMôn Anglesey Geopark – Catherine Raisin and Annie Greenly

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Two female geologists contributed in different ways to the development of the understanding of the GeoMôn Anglesey Geopark's diverse geology. One was an eminent academic and the other a gifted amateur. However, both ladies, in their own way, progressed the geological knowledge and the public understanding today of the geopark.

Annie Greenly acted as a research wife assistant to her husband Edward when he undertook the geological mapping of the island. This work was published exactly a 100 years ago, another centenary. She assisted with fieldwork but more importantly with the publications her husband produced. Catherine Raisin worked with Professor Bonney from University College London, researching the serpentinites of the island. Frequently, as the professor got older, she did the fieldwork while he did the microscopy.