Female students of geology in Victorian Dublin

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Abstract: 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 1860s, 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.

In the middle of the nineteenth century, the Museum of Irish Industry provided an opportunity for education in the physical sciences, including geology, to the general public in Dublin and in regional towns around the island of Ireland. All lecture series were open to both male and female students, and all students were permitted access to the examinations at the end of each of the lecture series. The completed examinations of the highest scoring students were sent to London for consideration for a medal from the Science and Art Department, under which both the Museum of Irish Industry in Dublin and the Museum of Economic Geology in London sat. While the history of the Museum of Irish Industry has been documented elsewhere (Cullen 2009, 2011; Jarrell 1983), and Cullen (2011) has written about its role in educating women, the identities and motivations of the women who studied geology from 1854, when the lecture series began in Dublin, to its close in 1867 has not been sufficiently investigated. This chapter goes some way to filling this lacuna in the literature.

The difficulties in researching the lives of women in the nineteenth century are well acknowledged (Burek and Higgs 2007; Raftery et al. 2010 among others). These challenges pertain also to this present study. However, the existence of lists of prize winners for many of the years allows us to trace, to some degree, some of the females who studied geology in Victorian Dublin, and indeed excelled in this study, as well as allowing us to suggest reasons for their studying of the emerging science. This chapter will begin with an overview of the educational context in which the classes took place, including examining the curriculum, before looking at some of the women who studied geology in Dublin in the 1850s and 1860s.

Background to lecture series

The Museum of Irish Industry (MII) was set up in 1845 as the Museum of Economic Geology, along with the Irish branch of the Geological Survey, with Dr Robert Kane at the helm of the former and Captain Henry James of the latter. While the two institutions were separate, they were two elements of a common goal of the forwarding of geological knowledge in Ireland, and the wider mission of the development of geology within the Kingdom of Great Britain and Ireland. The original goal of the MII was to show ‘the application of geology to the useful purposes of life’, according to the model set up in London on the opening of the School of Mines in Jermyn Street, London, in 1851 (letter from Earl of Lincoln to Dr Robert Kane, 29 March 1845, GSI Archive). The various specimens collected by the Geological Survey, according to Lincoln, could, through the Museum of Economic Geology, be placed:

Before the public in such an intelligible and popular form, as shall best accord with the objects of such an Institution. It is in fact this portion of [the museum’s] labour that the public attention will be necessarily directed

(Lincoln to Kane, 29 March 1845, GSI Archive).


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The Museum’s role as a bridge between the Geological Survey and the public became even more concrete with the creation of the public lecture series and courses. These provided interested members of the public with a knowledge of geology, and ‘would ultimately enable them to appreciate and utilise the results of the Survey’ (Jukes 1867, p. 8). The Survey’s building in Dublin, as in London, was designed with a lecture theatre seating approximately 500 to provide a space for the provision of classes (Jukes 1867, p. 7). The lecture series was also a means to illicit information from people who worked with the rocks that the officers of the Survey were to map ‘in terms which [would] be mutually intelligible’ (Jukes 1867, p. 25), while others saw the lecture series as a means to ‘withdraw the Irish mind from political and polemical disputes through acquiring accurate scientific information’ (Haughton 1854, p. 4) – a view that was shared by Robert Kane (Kane 1845, p. 426).

The creation of the lecture series was part of a wider environment of the availability of education for the Irish population. A system of national schools, providing free primary education for all, was established in Ireland in 1831 and began to roll out across the island during the following years (Coolahan 1981, Raftery et al. 2010). The increase in printed press at this time added to the rise in the level of general education of the Irish public (Kelly 2017). This, in turn, increased the level of literacy across the population – the level of female illiteracy reduced from 35.9% in 1871 to 26.5% in 1881 (Jordan 2000), and the preceding two decades saw the beginning of this trend. While primary education was accessible, it was more difficult for females to access education beyond the primary level until intermediate schools for girls opened in the 1860s, generally under the patronage of either a Catholic religious order or an Anglican society (Raftery et al. 2010).

Against this backdrop of an increased desire for education beyond the primary level for both males and females and the lack of provision within a state system, some of the knowledgeable societies in Irish cities began to run lecture series which were open to the public. Kane, who had a strong belief in popular education, had been instrumental in organizing public lecture courses on scientific topics in the Royal Dublin Society (RDS) in the 1830s (Cullen 2009, p. 103) and was anxious that the staff of the MII would also be involved in education. In 1854, the opportunity arose. The Department of Art and Science, which had been set up the previous year, informed the RDS that the grant which paid the salaries of the lecturers was to be transferred to the MII as the main institution for industrial education. After some negotiations with London, a compromise was agreed between the RDS and the MII, whereby the two bodies shared resources, with each running a series of lectures organized through a Committee of Lectures which was centrally based (Cullen 2009, p. 106). In Kane’s address before those attending the annual prize giving in 1859, he remarked that:

Before all, therefore, the object for which this institution is founded is educational, and not merely the education directly of the number necessarily limited, who receive instruction within its walls, but also that each individual here instructed may become in his own turn a centre of educational light and progress, so that the confines beyond which are the dark and dismal realms of ignorance, prejudice and error may yearly be further removed

(Freeman’s Journal, 21 October 1859, p. 2).

The geology lecture series of the MII began in November 1854 with Professor Joseph Beete Jukes, local director of the Geological Survey of Ireland, delivering the first introductory lecture in geology to a full audience (Freeman’s Journal, 17 November 1854, p. 4). At the dawn of the new science, it was recognized that, even if large numbers of students attended the lecture series, there would not be a demand for the services of so many geologists (Jukes 1867, p. 23). Nonetheless, the number of participants at these lectures was considerable, with the lecture theatre initially frequently being reported as full. From 1855, participants had to pay a small fee for attending the lectures, and the number of attendees was recorded. In Dublin, the lectures ran both in the afternoons and in the evenings, to cater for the different audiences who wished to participate in the lectures. From the outset, females were admitted to the lecture series. From 1856, the students at the lecture series could present themselves at examinations, and the highest scoring candidates were forwarded to London for consideration for the prize from the Department of Art and Science. There was always a minority of students who registered for the examination. As their names were recorded in a number of places, we can get some type of insight into the audience through these prizes.

Lecture audience and examinations

The audience at the lecture series was made up of a cross-section of Dublin’s population. Jukes had ‘great reason to be satisfied with the general attention and assiduity displayed by the class, and with the amount of proficiency displayed by those who passed the examination’, of whom there were six (out of 11 who presented themselves) in 1857 (Jukes to Kane, 14 December 1857). Frederick Sidney of the RDS, and a member of the Lecture Committee, in his evidence before the parliamentary committee examining the scientific instruction in
Dublin mentioned that the audience at the lectures in general was:

[\text{P}]retty largely attended by females, by boys from the schools, and by the middle classes; scarcely at all by those who are able to procure instruction in these subjects in the other place where it is to be obtained – I mean the universities

(Sidney in Anon. 1863, p. 71).

Kane’s evidence to the same inquiry reported that:

[\text{T}]he audience is a full representation of society in Dublin, the families of the members (of the RDS), governesses, clerks in offices, persons attending public schools, and in some case, students of college

(Kane in Anon. 1863, p. 97).

As mentioned previously, the class of persons who attended these lectures was different for the day and the evening courses. The day-time lectures were not as well attended as the evening lectures. Kane reported that:

[\text{T}]he attendance at the day courses consists, as might be expected, entirely of the upper and middle classes – members of the Royal Dublin Society, young ladies qualifying themselves to be governesses, school-boys &c. That at the evening courses consists of the middle classes – clerks, &c. who are occupied with their own business during the day – with a proportion of the arti- zan class

(Kane in Anon. 1863, p. 97).

Curriculum

While the curriculum of the geology lecture series has not been recovered, we can gain some idea of what the students were learning through the writings of Jukes, who was the main lecturer involved in delivering the lectures in Dublin and also in some of the regional locations. Jukes was of the opinion that the most important question to be asked of the lecture series was that ‘the instruction given [is] sound and real, and is it adapted to answer a worthy and legitimate end’ (Jukes 1867, p. 23).

Past experience having shewn me that it was impossible to go completely over the subject of Geology, so long as the lectures were divided into separate and independent courses, I have adopted this session the plan of making all the lectures parts of one continuous course, divided as much as possible into three groups, but all equally necessary for those who may intend to come into the final special examination on geology in the general examination at the close of the session

(Jukes to Kane, 19 November 1857, GSI Archive).

Jukes also concluded regional lectures with a lecture on the geology of the area in which he was lecturing (Carlow Post, 24 October 1857, p. 3).

We can gain some idea of Jukes’ curriculum from the textbooks which he wrote. His objective in writing these texts, and particularly his first Student’s Manual of Geology (see Fig. 1), was to lead students up to the study of works such as Lyell’s Principles of Geology (Jukes 1857, p. vi). In the preface, he mentioned the need he felt in his own lectures at the MII for a textbook on the subject ‘that would treat the subject of Geology more systematically and more succinctly than any yet published’ (Jukes 1857, p. v). For his first textbook on the subject, Jukes divided the subject into three sections he called: ‘Geognosy’ (‘the study of the structure of rocks independently of their arrangement into a chronological series’ – which he divided into lithology and petrology: Jukes 1857, p. 9); ‘Palaeontology’ and ‘The History of the Formation of the Series of Stratified Rocks’. The examination questions, as reported in 1862, included questions such as: ‘What are the chief subdivisions of the Carboniferous rocks in Ireland and how do they differ from the corresponding rocks in England and Wales?’, and the examinations

Fig. 1. Title page of Jukes’ Student’s Manual of Geology (1857: Jukes 1857), from a copy that was held in the library of the Museum of Irish Industry. The image from an original in the University College Dublin (UCD) Special Collections.
reflected the regional nature of the lectures: ‘Give a generalized section from the River Lee to the sea, and point out the position and age of the rocks in the neighbourhood of Bandon’ (Anon. 1863, p. 87). The lecture series also included classes in the field, with Jukes commenting to Kane in 1859 that ‘I gave 54 lectures in the theatre and three or four in the field’ (Jukes to Kane, 9 June 1859, GSI Archive).

While the curriculum initially depended on the lecturer, who also set the examinations and corrected them, there was an attempt in 1861 to standardize the examinations between all lecture series throughout the United Kingdom to ensure consistency, particularly when presenting prizes. This attempt was strongly resisted by the lecturers in Dublin, who wrote to the Lord Chancellor of Ireland that:

[A] class instructed in geology with special reference to the local formations of the district so as to give a practical value to the course, would have to answer on a paper intended for all parts of the United Kingdom, and therefore without practical reference to any particular location

(Minute book of the MII Lecture Committee, 1860ff, 18 February 1861).

The attempt at standardization failed as a compromise was reached between the Science and Art Department and the Lecture Committee, with the department saying that, if local examinations were to be conducted, they had to be supported locally as it felt that it:

[W]ould not be justified in continuing a separate system of examinations merely dependent upon short courses of accidental lectures which are applicable not even universally throughout Ireland, but only in those few places which may happen to have had provincial lectures

(Minute book of the MII Lecture Committee, 1860ff, reply from Department of Art and Science to letter of 18 February 1861).

Women students of geology

From the outset in 1854, women were welcomed at the geology lectures at the MII and to the examinations in 1856, just as 2 years later, at the foundation of the Geological Association, female members were also welcomed (Davies 2007, p. 135). Indeed, Kane reported to the Commission of Inquiry in 1862, when asked what subjects were most suited to the female genius, that:

Their greater sensitiveness and power of appreciating differences secure to them a proficiency in zoology and botany; but their success is not confined to these sciences. In natural philosophy, chemistry, and geology, some of the highest prizes have been taken by ladies

(Kane in Anon. 1863, p. 97).

As the records for students are not available, the most accurate way of identifying how many women were attending the geology lectures is by examining the lists of students who took part in the examination that Jukes reported to Kane on an annual basis. The number of students presenting at the examinations was always smaller than those attending the lectures but, as all students were eligible to take the examination, we can assume that the percentages of females there are representative of the overall numbers. Figure 2 shows the numbers of males and

![Fig. 2. The numbers of female and male prize winners at the examinations between 1860 and 1866. Source: Letters from Jukes to Kane, GSI Archives.](http://sp.lyellcollection.org/)

by guest on March 28, 2021
females receiving prizes (certificates or book prizes) in the geology examination in the years 1860–66. While females were never in the majority, they were visibly present and often scored among the highest points.

The newspaper reports of the prize giving in 1856 already mentioned the participation and achievements of women at the examinations linked to the MII lecture series. At his speech on that occasion, Kane said:

Hitherto it had been the practice not to include the female portion of the community in their educational arrangements, and, generally speaking, the whole scheme of the educational system had been to supply scientific education to gentlemen only; but in the formation of the classes of the present institution they recognised no distinction of sex. Consequently, several ladies had been students, and in the competition for prizes distinguished themselves in a very high degree. It was a fact worthy of attention that precisely those qualities of the female mind which it might be expected would be most characteristically developed, manifested their influence in the examination. The lady students, though they filled high positions and merited the reward which they would receive, did not occupy the first place; but in the natural sciences, which required accuracy and observation, clearness of perception, great power of comparison, and delicacy of touch, he should, perhaps feel somewhat humiliated in saying the gentleman were very deficient. The commencement which had been made that session in developing female talent in the pursuits of industry could not but be productive of the most beneficial results.

(Freeman's Journal, 29 May 1856, p. 3).

From the outset, Kane’s vision of education for all was realized. In 1856, Miss Frances Elizabeth Armstrong, daughter of a builder, with an address at 55 Baggot St, to the south of Dublin city centre, received the first certificate in geology, and was loudly applauded as she received her award at the prize-giving ceremony. She also received the second prize for Natural History at the same ceremony (Freeman's Journal, 29 May 1856, p. 3). Some students attended the lecture series and sat the examination more than once. Miss K.H. Egan, of 11 Pembroke Quay in Dublin city, received the second certificate in geology, with a score of 560, in 1857 and the following year received the third certificate in geology and the first certificate in zoology (Saunders’s News-Letter, 15 June 1858, p. 2). She had previously received a certificate in Natural History in 1856 (Freeman’s Journal, 29 May 1856, p. 3). Indeed, the Lord Lieutenant of Ireland, the Earl of Carlisle, who frequently presented the prizes to the award winners at the annual ceremonies, commented in 1861 that:

It is always a pleasing feature in the proceedings here, that whereas in almost every other quarter where we hear of classes and lectures and competitive examinations, the actors in those operations are exclusively of the rougher sex; in this institution, without any departure from the rigid rule of impartiality, the lists are entered, and the palm, as we have seen frequently, carried off by the gentler aspirants (applause). And, indeed, it seems only right and becoming in a country where an Illustrious Lady fills the very highest place in the realm, that all classes of our women should have the opportunity of showing that they can excel in the accomplishments and attainments which are consistent with the grace and modesty of the female character (applause).

(Saunders’s News-Letter, 4 October 1861, p. 3).

It is noteworthy that both Kane and Jukes believed in the equal opportunities that were afforded by the lecture series and the examinations. In 1862, Jukes comments in his letter to Kane that 10 presented themselves for examination, ‘three ladies and seven gentlemen […] of whom two gentlemen only did not answer a sufficient number of questions to entitle them to a certificate of competency’ (Jukes to Kane, 18 February 1862, GSI Archive). In 1862, the first prize was taken by W.E. Dudley (who scored 688 marks out of 1000), with second prize achieved by Miss S.G. Keough (665 marks). While generally Jukes sent the top paper to the Science and Arts Department in London if he deemed it to be of sufficient quality, where the paper would then be examined with a view to awarding a Medal, this year Jukes begged:

[L]eave to send in the papers of the two first candidates for examination at the Department of Science and Art, and to recommend that a medal should be given to whichever may appear to their examiner the most deserving

(Jukes to Kane, 18 February 1862, GSI Archive) thus including Miss Keogh’s paper and allowing her the possibility of achieving the medal from London.

The achievements of the female students continued to be a source of pride for the MII throughout the 1860s. At the 1866 prize giving, Kane, in his introductory speech, mentioned that the lectures were attended by:

[A] number of ladies, many of whom were qualifying themselves most usefully and effectively for the position of governesses and teachers of a superior class; many others who attended the lectures were animated by a love of science; and some of the highest honours were taken by ladies, whose proficiency was chiefly in the natural sciences

(Dublin Evening Mail, 22 December 1866, p. 4). Such a statement was met by applause from the audience. In response, the Lord Lieutenant commented again on his satisfaction at seeing the numbers of females present, adding that:

[T]he fairer sex is vindicating its rights – not perhaps in the same way that our American female friends might
do the absolute mastery over man, but yet to compete with him in science and intellect.

(Dublin Evening Mail, 22 December 1866, p. 4).

This was at a time when, in the USA, figures such as Lucretia Mott and Elizabeth Cady Stanton were forming the American Equal Rights Association, and Stanton penned the ‘Petition for Universal Suffrage’, both with a view to securing voting rights for all women. Evidently, from the perception of the authorities, the women in Dublin were acting within the safe area of education.

Many of the female students took other courses as well as geology at the MII – an indication that the women wanted a broad scientific education which was only being provided at the time through the Lecture Series of the MII and the RDS. Table 1 shows the names of the female students who gained prizes in geology and another science at the MII. It is noteworthy that many of the women also studied botany and zoology with geology.

The women competed equally with the men, and often outshone them in their achievements. Margaret Swan, who received the top prize in geology in 1861, achieved a remarkable score of 956/1000 – the highest grade recorded by any student in any year (Jukes to Kane, 18 February 1862, GSI Archive).

### Reasons for studying geology

From Tables 1 and 2, it can be seen that the focus of the female prize winners was varied, with some women focusing solely on geology ‘for the love of the science’, as Kane had commented, while others combined the study of geology with other disciplines. One of the principal reasons highlighted both in the reports of Kane and in the contemporary

### Table 1. Women who studied geology and another science at the Museum of Irish Industry, 1856–66

<table>
<thead>
<tr>
<th>Name</th>
<th>Year of geology prize</th>
<th>Other Museum of Irish Industry prizes</th>
<th>Other prize</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miss Frances Elizabeth Armstrong</td>
<td>1856</td>
<td>Natural history (1856)</td>
<td></td>
</tr>
<tr>
<td>Miss K.H. Egan</td>
<td>1857 and 1858</td>
<td></td>
<td>Royal Dublin Society Drawing 1856–57; 1861–62; 1863–64</td>
</tr>
<tr>
<td>Miss Hester Harman</td>
<td>1860</td>
<td>Botany (1860), Zoology (1860)</td>
<td>Royal Dublin Society Drawing, 1870</td>
</tr>
<tr>
<td>Mrs J.F. Murray</td>
<td>1860</td>
<td>Physical Science (1860)</td>
<td></td>
</tr>
<tr>
<td>Miss Eleanor Cope</td>
<td>1861</td>
<td>Zoology (1861)</td>
<td></td>
</tr>
<tr>
<td>Miss M.E. Quinlan</td>
<td>1864</td>
<td>unidentified subject (1865)</td>
<td></td>
</tr>
<tr>
<td>Miss Jane Ann Leeper</td>
<td>1863 and 1864</td>
<td>Botany (1864), unidentified subject (1865)</td>
<td></td>
</tr>
<tr>
<td>Miss M.A. Smyth</td>
<td>1865</td>
<td>Botany (1865)</td>
<td></td>
</tr>
<tr>
<td>Miss Marian Searight</td>
<td>1866</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: letters from Jukes to Kane, and newspaper reports.

### Table 2. Women who studied geology only at the Museum of Irish Industry, 1856–66, with other prizes won by the students outside of science

<table>
<thead>
<tr>
<th>Name</th>
<th>Year of geology prize</th>
<th>Other prizes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miss Jane Underwood</td>
<td>1860</td>
<td>Royal Dublin Society Drawing 1860–61; 1861–62; 1863–64</td>
</tr>
<tr>
<td>Miss Hare</td>
<td>1860</td>
<td></td>
</tr>
<tr>
<td>Miss S.G. Keogh</td>
<td>1862</td>
<td></td>
</tr>
<tr>
<td>Miss A. Clarke</td>
<td>1862</td>
<td></td>
</tr>
<tr>
<td>Miss M. Sibthorpe</td>
<td>1862</td>
<td></td>
</tr>
<tr>
<td>Miss Dunlop</td>
<td>1863</td>
<td></td>
</tr>
<tr>
<td>Miss R.K. McKay</td>
<td>1863 and 1864</td>
<td></td>
</tr>
<tr>
<td>Miss A.M. Smyth</td>
<td>1864</td>
<td></td>
</tr>
<tr>
<td>Miss Margaret Swan</td>
<td>1865</td>
<td></td>
</tr>
<tr>
<td>Miss Rowena Hutchinson</td>
<td>1866</td>
<td></td>
</tr>
</tbody>
</table>

Source: letters from Jukes to Kane, and newspaper reports.
newspapers as to why women took the classes in geology was their desire to become teachers, in an environment where education beyond primary level was out of bounds for most women. The lecture series of the MII enabled women to achieve an education in the natural sciences, equipping women with skills which made them more employable as governesses or in the national school system. Kane highlighted this fact to the Lord Chancellor at the annual prize giving in 1859:

>'Your Excellency will find among our successful students and in the highest rank several young ladies. I need not dilate in your Excellency's presence upon the important evidence thereby afforded of the improvement, by the agency of this institution, of female education. I believe that many of the young ladies who will on this occasion receive from your Excellency's hands the rewards of their sedulous studies are themselves more or less connected with education, and will go forth to diffuse through society, by the most powerful and favourable influence, sound scientific truth

(Freeman's Journal, 21 October 1859, p. 3).

Kane reported to the Commission of Inquiry that:

>'One portion of this audience is a number of young ladies intended to be governesses, and who by attendance at these lectures acquire a taste for and a knowledge of the sciences, which they are afterwards able to impart to their pupils, instead of confining their teaching to the limits of Music and French

(Kane in Anon. 1863, p. 97).

While some of the women went on to become governesses in families, which was more usual for females in the nineteenth century, a small number of them went on to become teachers in more formal school settings. Among the women who took the geology classes as a means to become educators was Margaret Swan, the woman who received the highest points recorded in 1866. She was at the time training at the Kildare Place schools, and was appointed later that year to Swords School, with one of her attributes mentioned on this appointment being her achievements in geology, which made her stand out above the field of 87 candidates for the post (Saunders's News-Letter, 11 May 1866). She unfortunately passed away at the age of 33 in 1875 (Irish Times, 21 October 1875, p. 3). Eleanor Cope (prizes in geology and zoology in 1861) also went on to become a teacher, recording herself in the Irish 1901 census as a ‘teacher of English, French, drawing and painting’ (NAI Census 1901).

The need for competent illustrators grew in proportion to the popularity and the professionalization of the disciplines of geology and botany in the middle of the nineteenth century. Women were well positioned to fulfill the role of illustrator and many took up this position, although their work was often not accredited (Burek and Higgs 2007). In 1859 alone, 541 pages on geology were published in learned journals, accompanied by 41 lithographic plates (Saunders's News-Letter, 9 February 1860, p. 2). Similar numbers of illustrations would have been required in books on botany. With this source of employment open to females, many women strived to gain the necessary skills to enable them to excel in this field. The numbers of female students of geology and botany who also studied, and received prizes, in the Royal Dublin Society (RDS) School of Art, as seen in Tables 1 and 2, would indicate that some of the women were studying geology to get a better understanding of the discipline in order to be better able to portray it visually.

The Harman sisters, Harriett and Hester, are a case in point. Hester received prizes in drawing from the RDS in 1856–57, 1861–62 and 1863–64. In 1858, Harriett achieved the second prize in zoology (Saunders's News-Letter, 15 June 1858, p. 2). In 1859, both Hester and Harriett had received a medal at the examinations. The following year, in 1860, Hester A. Harman received the first prize for botany, second prize for practical zoology and second geology certificate. In the prize-giving ceremony that year, the Lord Lieutenant of Ireland singled Hester Harman out, saying that she:

>'Has received the highest number of marks at the examination in two such arduous and interesting branches of study as botany and practical zoology; and she is surrounded by those who do not grudge, but who emulate her success

(Freeman's Journal, 26 June 1860, p. 3).

Harriett had received the National Medallion for Art in 1862 (Irish Times, 28 January 1862, p. 3). The sisters then moved to England, where they were recorded in the 1871 census as having a residence at Kilburn, Middlesex, recording their profession as artists. In the 1911 census, they remain in the same location and, again, record their profession as artists and painters.

Conclusion

After struggling with costs for some years, the Museum of Irish Industry (MII) was closed in 1867, and its educational functions were transferred to the Royal College of Science in Ireland, which provided a university-level education for those interested. This new system of lectures suited those who wanted to specialize in the sciences but the public element of the lecture series was lost. It was 1901 before the first female associate student was registered on the books of the new institution. Thus, the possibility of women exploring geology in Dublin was halted. Although Kane did open the lecture
halls to women in the Royal College of Science (Cullen 2009), there is no evidence that this was taken up as much as the MII lectures had been. As with the MII, lists of occasional attendees at the lectures of the Royal College of Science of Ireland were not retained. Grenville J.A. Cole (1859–1924), Professor of Geology at the Royal College of Science who had been appointed in 1890, married one of his students in 1895 (Jackson 2007, p. 137) – thus indicating that females were present at the lectures. Cole had arrived in Dublin in 1890 after a time as Head of Geology at Bedford College for Ladies, and would have welcomed female students at his lectures in Dublin. The first female associate student (students who enrolled at the college to pursue a course of study for 3 years, and received a diploma on successful completion of this) was Aileen Georgina Frazer, who began in the Royal College of Science in Ireland in 1901 and received a diploma in Natural Science in 1905 (University College Dublin Archive, RCSI/63), and later went on to become a teacher of Natural Sciences (National Archives of Ireland, 1911 census).

The engagement of women with the subject of geology in Victorian Dublin during the years 1856–66 was one of equal opportunities for education, although the women subsequently entered professions that were more traditional for females at the time – teachers, governesses and illustrators. Many, on getting married and changing their name, are lost to our best attempts to discover their stories. The problem of reconstructing the history of females studying geology in the nineteenth century shares the same difficulties of researching any aspect of women’s history of that century but what has been uncovered shines some light on who these women were, what it was they were learning and how some were using their knowledge. At a time of the development of the discipline of geology, and of the admittance of women into science classes, these women were pioneers.

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Archives

Geological Survey Ireland Archive:
- Outgoing letter books 1856–61 and 1862–78

National Archives:
- Census of England and Wales 1871
- Census of England and Wales 1911

National Archives of Ireland:
- Census of Ireland 1901
- Census of Ireland 1911

University College Dublin Archives:
- Museum of Irish Industry Minute books of the lecture committees and letter books (MII/1, MII/2 and MII/3)
- Royal College of Science of Ireland Register of Associate Students and their Successes from Session 1867–8 to Session 1904–5 (RCSI/63)

Newspaper Archives:
- Carlow Post
- Dublin Evening Mail
- Freeman’s Journal
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