

Women's History **MAGAZINE**

ISSUE 48, AUTUMN 2004

ISSN 1476-6760

Themed Issue: Science, Technology and Education

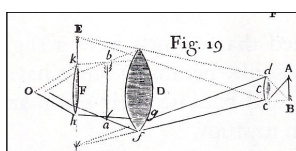
*Maria Rentetzi on
The Case of the Radium Dial Painters*

*Claire Jones on
Grace Chisholm Young in Turn-of-Nineteenth-Century Germany*

*Joyce Goodman on
Technical Education, Female Emigration and Nation Building*

Hull 2004 Conference Report

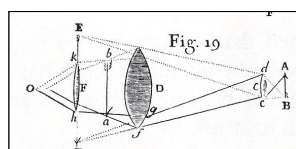
Launch of new WHN Book Prize



**Hypatia
of Alexandria**

c. 370 - 415

Mathematician
philosopher,
teacher and
inventor of
mechanical
devices.



*Clare Evans Prize
— Report on 2004
Award and
Announcement of
2005 Competition*

*Conference 2005 —
Call for Papers*

*women's
HISTORY
NETWORK*



14th Conference of the Women's History Network
**Women, Art and Culture:
Historical Perspectives**

September 2nd - 4th 2005, Southampton

Southampton Institute, Sir James Matthews Conference Centre, Southampton, Hants.



Papers are welcomed on the following themes:

Women and the visual arts; painting, sculpture, architecture, and the decorative arts.

Women and the Arts and Crafts Movement/Home Decorating.

Women and the performing arts.

Women and the literary arts.

Women as art objects/images of women.

Women as mediators of culture.

Women as collectors and benefactors.

Plenary Speakers:

Frances Borzello on 'Women Artists: Self Portraits'

Marina Vaizey on '20th Century Women Collectors'

Speakers, papers and a provisional programme will be posted at

www.womenshistorynetwork.org

as soon as they become available. Papers will be considered for special issues of:

Women's History Magazine & Women's History Review.

Abstracts of 200-300 words should be sent by **30/03/05** to: Dr Anne Anderson, FMAS, Southampton
Institute, Southampton, S014 ORF.

conference2005@womenshistorynetwork.org

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The arrival of this Autumn's *Women's History Magazine* in November, rather than October, is due to a new publishing schedule which we hope will allow us to better reflect the WHN year. The Spring issue will now be published in March/April and the Summer issue in August. This means that the Autumn issue can include a full report of our annual September conference, this year held in Kingston upon Hull with the theme 'Women, Wealth and Power'. This conference was somewhat of an innovation for the WHN as, unusually, it was held in a hotel - a venue that proved highly successful, as you will see from the conference report.

This issue, themed 'science, technology and education', results from papers presented at the 2003 WHN conference held at the University of Aberdeen. 'Women and science' is an increasingly popular research area for historians attempting to challenge the masculine frameworks that continue to inform much of the scholarship within the history of science and technology. From very different contexts, the articles in this issue examine the gendered colourings attached to science and technology and examine the tensions that arise when women enter a technical workplace, contribute research, or embark on technical education. Maria Rentetzi sheds new light on one of the most researched cases in the history of occupational diseases, that of the young women dial painters at the Radium Luminous Material Company in the 1920s. The harrowing cases she describes demonstrate how technological changes in American industry led to the subjugation of women's bodies. Claire Jones moves away from technology to 'pure' science, exploring the experiences of Girton mathematician Grace Chisholm Young at the University of Göttingen around 1900. Her analysis of the masculine configuration of mathematics at 'the Shrine of pure thought' reveals the tensions created for any woman attempting to become the peer of men accepted as the greatest mathematical minds of their age. From yet another perspective, our third contributor, Joyce Goodman, examines the nature of technical education in relation to gender, skill, and nation building. Her thoughtful analysis of early twentieth century women's emigration societies reveals the models and myths of femininity which were seen as appropriate for women leaving England's shores.

As announced at Hull, conference 2005 will be held at the Southampton Institute with the theme 'Women, Art and Culture: Historical Perspectives', interpreted as

broadly as possible. Please be sure to see the call for papers in this issue. Another important announcement made at Hull was the launch of the annual WHN Book Prize, worth £1000 to the winner. As well as offering encouragement to authors, we hope that this prize will help bring women's history to a wider audience and promote the Women's History Network. Please see the announcement on page 35 for further details.

This issue marks a significant change in the editorial team of *Women's History Magazine*: after many years of hard work, Elaine Chalus is stepping down as editor. Elaine was instrumental, with Deborah Simonton and Heloise Brown, in devising and launching the magazine (previously *Notebooks*) and her enthusiasm, commitment and expertise have been vital in making the magazine such a success. Thanks Elaine, from the editorial team and all readers of the magazine.

The WHN's editorial team:

Claire Jones, Jane Potter, Niki Pullin and Debbi Simonton.

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From Technological Change to Political Technology of the Body: The Case of Radium Dial Painters *

Maria Rentetzi

Max Planck Institute for the History of Science, Berlin

In the mid 1910s the Radium Luminous Material Company,¹ the first such luminous industry in the United States, was established in Orange, New Jersey. Young women were hired to apply radium paint to the figures on watch dials. In order to speed up their work, they 'pointed' the paintbrushes between their lips, each time swallowing some radioactive fluid. By the mid 1920s, the first deaths of young dial painters became the subject of medical disputes and political conflicts. Since then, their story has been perceived as the classic case in the history of industrial hygiene and as an example of the hazardous effects of radioactivity. Most recently, in *Radium Girls* (1997), the historian Claudia Clark focuses on the negotiations which took place among dial painters, managers, government officials, physicians and legal authorities, presenting these as political disputes over work place conditions and labour policies. As she argues, the discovery that the women suffered from radium poisoning 'is less a story of medical success than a story of political process.'² In *Deadly Glow* (1999), Ross Mullner focuses on the medical dimensions of the story and touches on issues that had previously seemed peripheral to the case; his fascinating photographic material provides ample and moving evidence of the abhorrent deaths of the women dial painters.³

Instead of treating the case of women dial painters once more as a story of medical disputes and political negotiations in the work place, this essay explores the role of technology in transforming women's bodies into part of the company's machinery. According to Foucault, 'the body becomes a useful force only if it is both a productive and a subjected body.'⁴ Its subjection is obtained not only through ideology, but also directly through other subtle techniques and mechanisms. Adopting a Foucaultian perspective, I approach the Luminous Company as a technological site where the industrial application of radium for illuminating watches and instruments for use in airplanes during wartime, enforced and supported a new political technology of the workers' bodies. I argue that the medical controversies over radium poisoning, and the court trials and publicity about women's deaths in the 1920s, provide the context for a more complex and

hidden aspect of the case. It was the technological changes in industry at the beginning of the twentieth century that led to the development of a corpus of knowledge, techniques, and scientific discourse that perceived the human body as part of industrial machines and mastered it through subtle and complex political means. One way to tackle the concept of political technology of the body is by focusing on the newly-refined techniques in industry, such as piecework, and their impact on women workers. Another is to question the novel scientific and medical discourse related to the 'magic power' of radium. A third approach involves an analysis of the architectural structures of industrial buildings and their role in subjecting women's bodies. Following each one of these different paths, what emerges is that beneath the surface of a new occupational disease (radium poisoning) and the bewilderment over its treatment, lies a whole new ideology — a political technology of the women radium dial painters' bodies.

Chronology of events

Stories concerning the painful deaths of women dial painters emerged as early as 1922. According to the US Bureau of Labour Statistics, the first case of a supposed phosphorous necrosis was reported to the State Department of Labour on 26 December 1922. The physician who reported the case had treated a 20 year-old woman who had been employed as a dial painter for at least two and a half years. Her problems began when a tooth was extracted and the area refused to heal; gradually, within a year, parts of the bone were also removed, followed by further operations and blood transfusions which all proved in vain. The patient also developed a lung condition and, since both of her parents had died from tuberculosis, the doctors granted this 'coincidence' as a possible cause of her health problems. The young woman died in 1923.

Her death was followed by several inspections by the New Jersey Department of Labour which concluded no violations of State laws. Two further deaths were reported in February 1924 and in both of these cases the symptoms and progress of the disease were similar: dental problems, necrosis of the jaw, ulcer of the gum and discharge of pus. The decisive case occurred in September 1923 when a twenty four year old woman developed the exact same symptoms. The dentist who first treated her, puzzled by the severity of her case, referred her to Theodore Blum, a New York surgeon. Blum recalled that 'A good look in her mouth and I knew I had never seen what she had before. Clinically, I couldn't diagnose a thing, but she told me where she worked, and I surmised that her jaw had been invaded-yes, and pervaded-by radioactivity.'⁵ In a paper read before the American Society of Oral Surgeons and

Exodontists in 1923, Blum referred to the above case in a footnote. Comparing the case to phosphorous necrosis, he specifically attributed it to the use of radioactive substances in the manufacturing of luminous watch dials and termed the disease 'radium jaw.'⁶ Consequently, when the dial painter died in December 1924, her death was for the first time attributed to 'occupational poisoning, necrosis of jaw and maxilla.' As a result the corporation offered free physical examinations in its studio for the dial painters.

At this point, it is worth noticing that concerns about labourers' health were closely tied to issues of productivity and exploitation. Physical examinations had been in extensive use in industry since 1910, around the same time that industrial medicine was being established as a new scientific discipline. The discipline began to acquire its own journals and physicians started to obtain full-time industrial positions as medicine was introduced and institutionalised in the work place. Workers' unions responded with scepticism and often resisted the practices of physicians. They saw the physical examinations as a threat; a way for employers to intrude into workers' private lives and an excuse for exerting more control over their work. Although women dial painters were not unionised, they did not react with welcome to the company's offer of physical examinations. Only six out of around 200 dial painters were examined and, since physical tests were limited to dental examinations and blood pressure reading, no evidence of occupational poisoning was detected.⁷

In the meantime the Consumers' League of New Jersey, an organization concerned mainly with child labour and the plight of women in industry, entered the story. Leonora Young, health officer in Orange, New Jersey, called the attention of Katherine Wiley to the radium case.⁸ Wiley, director of the League's New Jersey branch, began investigations by conducting interviews with the families of women who had died and with the dentists who had treated them. Frederick Hoffman, a well-known statistician and authority on industrial diseases with the Prudential Insurance Company, was invited to assess the situation. Writing from a statistician's point of view, Hoffman reported the number of deaths and patients, describing in detail each case. Read before the Section on Preventive and Industrial Medicine and Public Health in May 1925, and published in the *Journal of American Medical Association* in September of the same year, Hoffman's report is the first one on the nature of the disease. He concluded that doctors were dealing with a new occupational disease associated with 'the unsanitary habit of wetting the brush with the lips.'⁹ Hoffman was greatly aided in his investigation by Sabin von Sochocky, a Viennese physicist and physician who was the first to invent the radium luminous paint and establish the

Luminous Company. By 1921 von Sochocky had already left the company, which subsequently merged with others to form the United States Radium Corporation. From a comparatively small factory the Luminous Company had shifted to a big impersonal industry. The rise in production was remarkable; 8,500 luminous watches were painted in 1913 and 2,200,000 pieces during 1919.

Shortly after, newspaper publicity about the first deaths affected the productivity of the company. On 30 May 1925, *The New York Times* reported five deaths of women dial painters and focused on Hoffman's claims for the existence of a new occupational disease.¹⁰ In a follow-up article in 21 June, Andrew McBride, New Jersey State Labour Commissioner, announced that the U.S. Department of Labour had ordered a general survey of all radium plants in the country.¹¹ According to the *Monthly Labor Review* of 1929, the dial painters panicked and several of them left their jobs. While Hoffman was conducting his investigation in the plant, he noticed that the company was suffering seriously from adverse publicity and suspicions that dial painting was dangerous to human life. No women were at work during his two visits to the plant even though, as he reported, 'At one time, as many as 150 persons or more had been employed, but now only two or three remain at work.'¹²

Given the troublesome situation, the company arranged its own investigation which was carried out by experts from Harvard University who visited the plant on 16 April 1924. In a detailed report, the researchers suggested more careful ways of handling the radium powder and the use of gloves in the application of luminous paint. They also mentioned that the lip-pointing technique had been abandoned six months prior to the investigation. Despite the fact that there was no absolute proof, they concluded that occupational radium poisoning existed.

The changes in working conditions that the group suggested were vigorously rejected by Arthur Roeder, president of the company, who forbade the report to be published and threatened the researchers with litigation. The situation changed when Alice Hamilton, a distinguished toxicologist of Harvard University and officer of the National Consumer League, was appointed as special investigator for the case by the U.S. Bureau of Labour Statistics. Hamilton concluded that Roeder was trying to discredit the earlier report and alerted its authors, writing: '[The New Jersey Department of Labour] has a copy of your report and it shows that "every girl is in perfect condition". Do you suppose Roeder could do such a thing as to issue a forged report in your name?'¹³ Hamilton's letter was decisive. The original authors reacted by sending a copy of their original report to the Department of Labour and publishing it in the *Journal of Industrial Hygiene*.¹⁴

Controversies over the new occupational disease continued and were reflected in the contradictory reports of Harrison Martland, Essex County examining physician, and Frederick Flinn, assistant professor of physiology at Columbia University, who specialized in industrial hygiene and acted as consultant to the company. In May 1925 Martland inspected the plant and examined two women who had extensive jaw necrosis. They died soon after and Martland performed autopsies, the first ones in the history of the radium poisoning case. By this time nine dial painters had died. An extensive report of the symptomatology, etiology and pathology of the disease was read before the New York Pathological Society in October of that same year. As Martland claimed, 'This work was based on my investigations as chief medical examiner of Essex County and was undertaken independently of all other investigations and according to my own views of what my duties were ... These investigations were unasked and uninfluenced by any civic or other body.'¹⁵ In December 1925, with the collaboration of two other physicians, Philip Colon and Joseph Knef, Martland published a report on the case.¹⁶ It was the first time that a detailed description of the disease was given.

Not persuaded by Martland's claims, Harold Viedt, Vice president and general manager of the company, offered a powerful rhetorical argument against his assertions: 'There are a large number of men who have made the study of radioactivity, together with the production of radioactive materials their life work...In its early years of production, when little was known of its peculiarities we heard nothing of fatalities due to association with it.'¹⁷ Physiologist Frederick Flinn was hired by the company to study the case. His reports largely supported the company's rights and economic profits.¹⁸ In his first report Flinn asserts that 'an industrial hazard does not exist in the painting of luminous dials. The only evidence contrary to this conclusion rests in the fact that five employees at the plant of Orange, N.J. have died from some cause that can not be determined at this date.'¹⁹ Only in his final report in 1928 does Flinn finally agree that radium is responsible for women's deaths. He does not, however, admit that lip-pointing is the main cause of the disease.²⁰

The first law suits were settled out of court in 1926, when the company paid legal costs to the plaintiffs. In 1927 another series of litigations began when five more dial painters sued the company. By the time the law suits settled out of court in June 1928, the company was economically debilitated, having had to pay legal costs of \$20,000, all past medical expenses, and annual pensions to dial painters. The Consumers' League of New Jersey succeeded in closing down the dial painting

department of U.S. Radium Corporation by pressuring the state labour commissioner to forbid the operation of the company. In 1933 the Public Health Service, also under pressure from the Consumers' League, suggested safe practice guidelines for painting luminous watch dials.²¹

In what follows I explore three interrelated issues, arguing that a new political technology of the body accompanied the establishment of the radium luminous industry and led to the women's medical and judicial horror of the 1920s. In order to promote productivity during its first decade of operations, the Luminous Company had to subject women's bodies. The public's and scientists' craze with radium during the 1910s, and practices specific to the Luminous Company, such as piecework, made it easier for women's bodies to be neglected, mechanized, invested, and used by their employees and medical examiners. Focusing especially on the architecture of the plant, I explore the ways in which gender hierarchies were written in the plant's blueprints.

Piecework as a Political Technology of Subjugation

In 1911, Frederick Winslow Taylor published *Principles of Scientific Management*, a work that introduced scientific management into industry and which has been identified with the control and exploitation of labour. Introducing new techniques, Taylorism aimed at complete control of the workers' bodies, which now were seen as parts of a well-running machine. Assembly lines, payment by piecework, bonuses for faster work, penalties for delays and low productivity, and timing of the whole work process, were some of the elements of the new scientific management. As Judith McGaw suggests, piecework has always been a way to manage female workers.²² In Taylor's work system, traditional piecework was refined and incorporated within the new scientific management.

The corpus of industrial techniques and practices enforced by Taylorism, supported by political plans and presented as scientific and progressive, were entangled with a new 'political technology of the body.' The human body was now directly related to politics. As Foucault states, 'power relations have an immediate hold upon it [the body]; they invest it, mark it, train it, torture it to carry out tasks, to perform ceremonies, to emit signs.'²³ Through industrialization and the scientific techniques of production, workers gave control of their bodies to the scientific manager and became components of their machines. This power was exercised on human bodies in subtle ways, both physical and psychological. Intriguingly, this power was not possessed by a 'cruel manager' but was activated strategically through certain

tactics, dispositions, networks of relations and, primarily, via the architectures of working sites.

On the eve of the First World War, men were drafted in large numbers and many plants were looking for employees to fill their vacancies. Women were those who replaced them. Lacking technical education, women were assigned repetitious, semi-skilled tasks such as the production, wrapping and packing of light bulbs, the operation of semiautomatic machine tools, the winding of motor armatures, and the assembling of photographic cameras. The technological and social changes of the interwar years affected women's occupational treatment in different ways from men. As Ruth Schwartz Cowan claims, women considered themselves, and were perceived by others, as transient workers, a perception that reinforced sex role stereotypes about their abilities.²⁴ They were paid less than men for the same work and were restricted to positions designated as 'unskilled' and having a high rate of turnover.²⁵ The new electrical technology introduced at the beginning of the 20th century led to the additional deskilling and routinization of many jobs, which then became appropriate for women.²⁶ Nonetheless, women performed their tasks with care and attentiveness, qualities that have been interpreted as inherently natural female characteristics. The distinction between a 'female, natural talent' and a 'male, acquired skill' was used by employers as a justification strategy for low payments and sex segregation in the work place. Moreover, it enforced the assumption that women worked only for 'pin money.' These same assumptions accompanied the work at the Luminous Company when it opened up its doors in 1915.

Indeed, work at the Company involved mainly dexterity in handling a paintbrush and applying the luminous paint on watch dials. The fact that the job required artistic ability rather than strength and endurance made it seem natural and desirable for women. The dial painting positions were very soon occupied by teenage girls who found the work easy and advantageous, much better than other factory jobs. They could choose to work part time, only during summers as a 'vacation job,' or full time. Moreover, given that the average weekly salary for women labourers at the time was approximately \$15, dial painting was economically attractive. Payment was by piecework, usually \$1.44 for twenty-four dials,²⁷ and dial painters could obtain from \$20 to \$25 per week.

Besides painting dials on commercial watches, women used their brushes to paint the dials of instruments used in airplanes and submarines; speedometers, compasses, barometers, inclinometers and dashboard instruments were all illuminated by radium. War ideology was so pervasive that a report of the United States War Department and the Navy Department stated that 'in war

time the radium luminous dials are essential, regardless of sacrifice involved.'²⁸ Surprisingly enough, these sacrifices were made by young women dial painters whose bodies were treated as the inanimate medium for achieving political and economic goals. To improve productivity, piecework reinforced women's tendency to lip-point their brushes. The water based luminous paint separated the hairs of the brushes and women found it convenient to pencil them to a fine point with their lips. A woman who painted an average of 250 watches per day could lick her brush as many as twelve to fourteen times for each watch, and by a simple calculation she could end up swallowing a minimum of 125 mg of paint.²⁹ Adopting the practices of watercolour painters, women used the technique of lip-pointing to speed up their work. Not coincidentally, dial painting was often advertised as a position for artists. One of the dial painters remembers: 'It was a long shot. We arrived with portfolios of our drawings that we thought the employer would want to look over. Well he didn't. He just wanted youngsters who could handle brushes skilfully enough to paint dials.'³⁰ In a short time the company managers incorporated the women's habit and turned it to an instructed technique. 'We were told to lick our brushes,' recalls one of the dial painters. 'Alice took to it like a machine [emphasis mine], dipping it into her mouth and dabbing at the numerals. Dip and dab, dip and dab.'³¹

The transformation of lip-pointing as a natural, convenient practice to an institutionally-sanctioned technique, marks the decline of improvisation and freedom at the workplace, but it also marks the use of the body as an instrument, as part of the industrial machinery. Piecework was used as a 'voluntary' system of constraints, prohibitions, obligations, and subjugation. It served as a political strategy that dissolved the individualities and addressed female workers as a homogeneous productive machine. Women dial painters worked by the piece, and they adopted the lip-pointing technique not under any physical coercion but because of the urging to increase productivity. The institutionalisation of lip-pointing is an indicator of—indeed a small part of—the tendency of companies to regard the body, and specifically the female body, as their property. Inspectors and managers could discipline it, exploit it, and be indifferent to its health, setting the scene for the later development of the case.

The Radium Craze of the 1910s

The subtle exertion of power over the bodies of dial painters was not limited to piecework techniques and physical examinations. More than productivity and the establishment of the new scientific discipline of industrial medicine were at stake. The bodies of women dial painters were involved in a political field through a more

indirect mechanism, namely the trade of radium for scientific and medical research as well as for industrial use. Supply of radium, mainly from Austrian mines, was limited and its price was astronomical. When the Austrian government placed an embargo on the export of pitchblende ore, physicists, physicians, bankers and industrialists searched desperately for new sources of the valuable element. For example in 1910 in a letter to Stefan Meyer, director of the Institute for Radium Research in Vienna, the atomic physicist Ernest Rutherford expressed his worries: 'I hope you will be able to reserve a large quantity for experimental purposes, otherwise I am afraid it will all go into the doctors' hands.'³² Indeed, with the promises of radium in medicine and the cure for cancer, doctors embarked on investing in it. In 1913 Alfred Pearce Gould, a cancer specialist, argued in one of his hospital's board meetings that 'the purchase of radium is a gilt-edged investment for hospital funds and there is no more permanent way of investing money than in radium as radium purchased now would be valuable to the end of time, as far as the mind of man could carry.'³³ At the same time, a forceful debate was generated over the role of the governmental control of radium deposits in the United States. In 1914 this became an issue in one of Rutherford's letters to Meyer: 'they [companies who were separating radium from carnotite ore] have been trying to pass a law that all radium mines should be sold to the Government and hope in this way to prevent the large exportation of ore.'³⁴ Then, to refer back, the political investment of the dial painters' bodies is obviously bound up with their economic utility emphasized by the outrageous price of radium.

The radium craze went on for years. As an addition to the oddity that surrounded radium in 1914 two grams of it went on display for a week at the Public Health Exposition in Grand Central Palace, New York. Hamilton Foley, an employee of the Radium Chemical Company, made the demonstration. Medical students, physicians and nurses, as well as any curious people, were invited to see the exhibit. The radium was placed under high security by State police. The most peculiar feature of the exhibition was the contest that was taking place simultaneously. 'Contests for perfect feet and good eyes are to be held in the Public Health Exposition, with all sizes of feet and all colours of eyes eligible for the prizes...A dental clinic of the Department of Health will hunt for the perfect set of teeth.'³⁵ The incident seems less peculiar in the wider context of the eugenics movement and the Fitter Families contests that took place in the United States during the same time. The American Eugenics Society, with the help of eager sponsors and eugenics enthusiasts, organized more than forty family contests a year, setting the standards for the 'normal', 'healthy,'

and 'pure.' Any healthy family providing its eugenic history, intelligence tests of its members and medical examinations, could enter the contests.³⁶ The image of science and technology as powerful tools that could solve even social problems seemed to be undefeatable. How then could the disfiguring of the young dial painters and their jaw necrosis be attributed to radium? Being women and designated as unskilled workers, the dial painters found themselves fighting not only against the cruel employees of the Luminous Company or the sluggish judicial and medical system of the United States of the 1920s. Instead, they also found themselves fighting against the image of technology and science—and radium in particular—as vehicles for economic and social progress, which at the same time set the ideals of perfection and body image.

The Architecture of the Workplace as an Indication of the New Political Technology of the Female Body

The shift from independent inventors' tiny machine shops to the big factories of the early twentieth century signifies what has been described by historian of technology Thomas Hughes as the transformation from independent inventors to mass production.³⁷ By focusing on the architecture of technological sites one could also witness the changes in inventors' identities from 'avant-garde artists' to 'accomplished industrialists.' Sabin von Sochocky and his factory fit this model perfectly. His buildings of science and industrial research configured the identity of science practitioners and labourers and subtly but constantly reminded them of who they were and where they stood.³⁸ Socially constructed gender differences were reflected in both the internal arrangements of women's work place and in the hierarchical layout of gender tasks in the rest of the plant.

The massive new structure which housed the corporation clearly emphasized gender hierarchies via a sex division of labour within the company's different departments. Architecture therefore imposed a spatial distribution of power between genders as well as circumscribing and displaying women's roles. According to Florence Wall, the only woman chemist in the plant, the company was not only producing luminous watches and instruments but was seriously involved in extracting radium from carnotite ore.³⁹ The Luminous Company was one of the four major companies that produced radium at the time. The extraction plant operated day and night. The plant was housed in a three-story converted warehouse situated next to a railroad siding. A constant stream of cars with carnotite ore and boxes of equipment arrived from various factories throughout the country. Behind the extraction plant was a new brick building, the application plant, a work studio where the paint was applied to dials of both watches and several instruments.⁴⁰

Approximately seventy-five to one hundred women were employed to apply the radium paint. The electroscopic laboratory, a galvanized iron shed, was located in the yard isolated from other buildings as a protective measure against radioactive contamination.

Male labourers worked exclusively at the extraction plant. The work was difficult and required physical strength. Ore shipped from Placerville, Colorado had to be unloaded and processed. Most normal ores contained radium in a ratio of one part radium to 3,000,000 parts uranium. Thus, since large amounts of ore were required, each ton of ore produced only a few milligrams of radium. As Wall describes it 'One ton of ore was mixed with 60 tons of hot hydrochloric acid. This mixture was allowed to stand for a month.'⁴¹ Men who normally had shifts during day and night operated the mixing vats and large filter presses used in processing. They also worked on the process wastes department. Known as 'tailings,' the company's wastes contained radioactive elements at elevated levels and were temporarily discarded on unused areas of the facility. Obvious hazards, such as accidents during heavy duties, labelled these positions as 'male' ones.

The ore was analysed in the crystallizing laboratory. Large quantities of radium chloride solution from the plant were processed from silica tubes to smaller evaporating dishes. After conversion the crystals of radium were transferred to tiny dishes and eventually to small glass tubes restored into heavy lead repositories as a way to limit radioactivity hazards. Male chemists were employed in the laboratory and assigned to analyse and handle the samples. In the electroscopic laboratory the situation was similar. Male chemists tested electroscopically samples of ore and the results were recorded. The setting of the laboratory was unpleasantly frugal. Two small windows permitted light to come in during the day. At night there was only a single suspended light bulb. A chair, some wooden stools, broad shelves along the walls, a cabinet for supplies, and several electroscopes completed the picture. A tall cylindrical stove heated up the space during the cold New Jersey winters. Work conditions were not easy at all. In order to catch up with the work at the extraction plant, the laboratories operated day and night.

At the time women chemists in the United States were not only few in number but their experiences suggest that 'women paid a high psychological price in such "men's work" as chemistry.'⁴² Wall's recollections of her work at the company's laboratory leave no doubt about the difficulties women faced in the field:

If the doctor (Sochocky) asked me to pick up a sample at five or six p.m. it meant I

would have to be in the laboratory around the same time and next day to set up the electroscopes and also be there exactly three hours later to take the readings. This meant walking the mile home late at night—once between one and two a.m. Occasionally, I had a Saturday afternoon off because I was booked to appear on Sunday, the hour to be announced.⁴³

Wall left her job less than a year after she was hired. 'On New Year's day I cautiously took stock of my plight, and decided that perhaps the time had come to quit. It was a soul-searing decision to make, because as the only woman along the chemists, it might make me seem a sissy. On 5 January 1918, I left the radium company.'⁴⁴ Three more women with no scientific training performed ancillary tasks related to the production of the luminous paint that was also taking place in the laboratory. As historian of science Margaret Rossiter argues, the basic problem for women in industry was the impossibility for any kind of advancement and promotion to better positions.⁴⁵ Their situation was worse in industry than in academia. The industrial women scientists coped with almost everything with no one making an effort to change their work conditions. The women had to accept and adapt to the sexual stereotypes as Wall's case suggests.

Constructed gender differences continued to be built into the hierarchical layout of the plant. The company's last department, the one where the luminous paint was applied, employed exclusively women. The place where dial painters spent their workday was situated on the top floor of a studio building. As Katherine Schaub, a dial painter, recalls, 'the roof was made entirely of glass, which provided plenty of light for the tedious work.'⁴⁶ Each dial painter was given 'a tray containing forty eight watches, together with a small bottle of luminous material in powder form. All watches painted were given a dark-room inspection. Where the inspection disclosed defective luminosity, the girl who had painted the dials was called into the dark room and reprimanded for her poor work.'⁴⁷ The 'punishment' for the inadequate performance of their tasks was exercised to a dark room, symbolically connected to secrecy and closeness. Referring to Foucault, who regards punishment as a political tactic, the punishment procedure increased the effectiveness of the penalty not only by weakening the solidarity among women but also by enlarging the embarrassment of the individuals. 'The disappearance of the spectacle' was obtained by hiding the punishment procedure in a dark room and by imposing self-discipline on to women dial painters. A number of individual benches were arranged in straight lines with a considerable distance between them so that no disruption

could take place (see fig. 1). Given the configuration of their workplace and the intense work environment stimulated by piecework practices, the women were unable to socialize among each other during their shift. Dial painters were restricted to the limited space of their own small bench performing repetitious and mechanized movements. The invisible spectator of women's productivity was a wall watch. As Wall recalls, 'Among them was a formidable timepiece, called the Ingersoll Dollar Watch, nick-named the "town clock".'⁴⁸ The female bodies obeyed its rhythm, were mechanized, individualized, and offered for a facile inspection.

Through such an architectural arrangement women gave up the control over their bodies long before the first symptoms of their diseases became apparent. A quick look at a radium dial painting room operating some years later, in 1943, illustrates the complete mechanization of the female body in the radium luminous industry. Individual glass booths now separated the female workers and ascribed small, sterilized 'territories' to each of them. All operations were conducted under a hood with at least 50 feet per minute of inlet air velocity.⁴⁹ Women kept all of their tools and materials in the hood and, for safety reasons, left their personal belongings outside the workplace. As Kenneth Morse and Milton Kronenberg argue 'Girls did not like to work under the common type of glass booth. Girls in several plants in this state [Illinois] have complained of fatigue and irritability since they have been painting, due to what they think is the confined area and the position in which they must work.'⁵⁰ What women thought about their work, nonetheless, seems to have played a minor role to what was actually imposed on them. To analyse this political investment of the body in the radium industry, requires a close look at technological changes and the techniques that turn human bodies into objects of knowledge, medical experimentation and safety regulations. The dial painters of the 1920s were already perceived as objects of investment when they finally turned into objects of medical knowledge.

Conclusion

Instead of considering the case of radium dial painters as a medical and political dispute in the 1920s, in this essay I trace the impact of a number of factors from an earlier stage of women's work in the Luminous Company. I argue that technological changes that occurred in the early twentieth century embodied and reinforced a new technology of the body and, especially, of the female body. The story of radium dial painters indicates that:



figure 1

1. The body was treated as an instrument, as part of the industrial machinery. Piecework was one of the main strategies that forced women to discipline their bodies so that they became intensive timepieces, serving productivity standards. This was a political strategy, which led to the obedience of the female body and its immobility. Pictures of women working in various industrial positions at the time are revealing: women are seating or standing in the same spot during their entire shift performing the same repetitive tasks. The piecework was above all technological, if by this one means a set of tools and methods used to attain practical purposes.

2. The body and its medical condition became a property and a responsibility of the industry. The use of medical examinations in business resulted from industrialists' attempts to minimize workmen's compensation costs and to discriminate against employees with poor health and, therefore, low productivity. In 1914, industrialists in Ohio were polled about the use of physical examinations in their businesses. Their response was that the technique provided evidence against 'fraudulent claims and enabled them to select employees who were unlikely to cause industrial accidents or contract occupational disease.'⁵¹ The establishment of industrial medicine as a fully-fledged discipline added to the political technology of the body; political in the sense of control and technological in terms of the subtle techniques stamped with the authority of the 'scientific' and the 'medical' used to master bodies.

3. The body and its safety were considered as insignificant in the face of grand ideological and political goals. The use of radium in industry for the illumination of instruments useful in war time, the astronomical economic profit of its production and processing, the disputes between physicists and physicians over the study of its properties and utilization, as well as international

debates over its monopoly, illustrate the main ideological and political dimensions of the 'radium craze.' In the vortex of all these, the bodies of dial painters were treated as instruments and a medium for ideological attainments.

4. The body was finally disciplined, gendered and subjugated through the architecture of the workplace. The work studio of dial painters did not simply host some female employees but imposed an articulated and detailed control over their bodies, their desires, and their time. Architecture can transform individuals by making them vulnerable to the gaze of their employer, emphasizing the fact that they are women and capable only of performing certain tasks and not others and forcing them to alter their habits, their postures, their social behaviour. These mechanisms transformed the bodies of dial painters into parts of the production machinery and marked the beginning of their deaths.

To conclude, practices determine their future in a very strong sense. They pose constraints and restrictions. Simply, they shape their future.⁵² Specific technological practices of the 1910s in the radium luminous industry shaped the future not only of the Luminous Company but also—and importantly—the lives of the dial painters. To be more exact, it shaped their deaths.

Notes

* I would like to thank Richard Burian, Richard Hirsch, Pei Koay, and Sarah Mitchell for their decisive suggestions and critical comments on various drafts of this paper. My thanks go also to the Argonne National Laboratory, University of Chicago, US Department of Energy for the courtesy of the photo, Neg. # 25855 and the Library of Cambridge University, Manuscript Collections (hereafter CL) for permission to quote from Rutherford's papers.

1. Referred to as Luminous Company from here on.

2. Claudia Clark, *Radium Girls: Women and Industrial Health Reform, 1910-1920* (North Carolina 1997) p. 2. Clark also includes an extensive and useful bibliography on the case.

3. Ross Mullner, *Deadly Glow: The Radium Dial Worker Tragedy* (Philadelphia, 1999). See also the book review on *Deadly Glow* by Maria Rentetzi in *Science, Technology and Human Values* (2001), 26(1), pp. 106-110.

4. Michel Foucault, *Discipline and Punish: The Birth of the Prison* (New York 1995) p. 26.

5. Daniel Lang, 'A Reporter at Large: A Most Valuable Accident' *New Yorker* (May 2 1959) pp. 49-72, p. 57.

6. Theodore Blum, 'Osteomyelitis of the Mandible and Maxilla', *Journal of the American Dental Association* (11 September 1924), pp. 802-5, p. 805.

7. Clark, *Radium Girls*, p. 38. In 1919 the factory in Orange New Jersey employed about 200 women. [Clark, *Radium Girls*, p.16]

8. Katherine Schaub, 'Radium.' *Survey Graphic* 68 (1 May 1932) pp. 138-41, p. 139.

9. Frederick Hoffman, 'Radium (mesothorium) Necrosis', *Journal of American Medical Association* 85 (1925) pp. 961-65.

10. 'New Radium Disease Found; Has Killed 5', *The New York Times*, 13:1 (30 May 1925).

11. 'All Radium Plants in Federal Inquiry', *The New York Times*, 18:1 (21 June 1925).

12. Hoffman, 'Radium Necrosis', p. 963.

13. Mark Neuzil and William Kovarik. *Mass Media and Environmental Conflict: America's Green Crusades* (California, 1996) p. 38.

14. William Castle, Katherine Drinker, and Cecil Drinker, "Necrosis of the Jaw in Workers Employed in Applying a Luminous Paint Containing Radium," *Journal of Industrial Hygiene*, 7: 371-382 (August 1925). It is worth noticing that the paper was received for publication on 25 May 1925, four days before the announcement of Hoffman's report. According to Harrison Martland, ('Occupational Poisoning in Manufacture of Luminous Watch Dials,' *US Bureau of Labour Statistics, Monthly Labor Review* (28 June 1929) pp.1200-75, p. 1248). These investigators, at the request of the company, did not publish their report on account of threatened litigation until August 1925.

15. Martland, 'Occupational Poisoning', p. 1249.

16. Harrison Martland, Philip Colon and Joseph Knep, 'Some Unrecognised Dangers in the Use and Handling of Radioactive Substances,' *Journal of American Medical Association* 85 (1925) pp. 1769-76.

17. 'To Begin Two Suits Against Radium CO.' in *The New York Times*, 21:3 (24 June 1925).

18. Lang, 'A Reporter at Large', p. 59.

19. Frederick Flinn, 'Radioactive Material an Industrial Hazard?', *Journal of American Medical Association* 87 (1926) pp.2078-2081 on p. 2081.

20. Frederick Flinn, 'Some of the Newer Industrial Hazards,' *Boston Medical and Surgical Journal* 197 (12 January 1928) pp.1309-14.

21. Clark, *Radium Girls*, p. 205.

22. Judith McGaw, 'Women and the History of American Technology,' *Signs* 7 (1982) pp. 798-828, p. 812. Gender was not the only discriminatory category. Racial and ethnic groups have been treated similarly in the work place.

23. Foucault, *Discipline and Punish*, p. 25.

24. Ruth Schwartz Cowan, 'From Virginia Dare to Virginia Slims: Women and Technology in American Life' *Technology and Culture* 20, (1979) pp. 51-63.

25. See also the case study on women's and men's labour market experiences in Worcester, Massachusetts in Susan

Hunson and Geraldine Pratt, *Gender, Work and Space* (New York, 1995).

26. See David Nye, *Electrifying America: Social Meaning of a New Technology* (Massachusetts 1992).

27. William Sharpe, 'The New Jersey Radium Dial Painters: A Classic in Occupational Carcinogenesis,' *Bulletin of the History of Medicine*, 52 (1979) pp. 560-570, p. 562. Notice also that the price for a wrist luminous watch in 1921 was \$4.98 (Radium for Dials at \$120,000, *The New York Times*, 1:5 II (27 November 1921).

28. Martland, 'Occupational Poisoning', p. 1209.

29. Ibid., p. 1246. In contrast to what has been referred to in the relevant literature, the calculation was actually made by Sochocky at the request of Frederick Hoffman and not by Hoffman himself. [Hoffman, 'Radium Necrosis', 1925]

30. Lang, 'A Reporter at Large', p. 88.

31. Ibid., p. 88. Writing in 1959 when several of the dial painters were still alive, Lang did not refer to them by their real names.

32. Ernest Rutherford to Stefan Meyer, 22 October 1910, in Rutherford's Papers (CL).

33. 'Urges that Radium be Nationalized' in *The New York Times*, 4:1, III (30 November 1913).

34. Ernest Rutherford to Stefan Meyer, 11 May 1914 in Rutherford's Papers (CL). For the same debate see also 'Dr. Douglas Fears Radium Monopoly', *The New York Times*, 18:1 (20 December 1913); 'Two Routes to One Destination', *The New York Times*, 12:4 (20 December 1913); 'U.S. to Conserve Radium Deposits', *The New York Times*, 2:5 (15 January 1914).

35. '\$500,000 Radium is Exhibited Here', *The New York Times*, 9:2 (14 November 1921).

36. Daniel Kevles, *In the Name of Eugenics* (New York, 1985) p. 61.

37. Thomas Hughes, *American Genesis: History of the American Genius for Invention* (New York) 1989.

38. For more on architecture and science see Peter Galison and Emily Thompson (eds), *The Architecture of Science* (Massachusetts, 1999).

39. Florence Wall, 'Early Days of Radioactivity in Industry Part I', *Chemistry*, 42 (1969) pp.17-25, p. 17-18.

40. Unfortunately, I was unable to locate the architectural plans of the company.

41. Wall, 'Early Days of Radioactivity', p. 17.

42. Margaret Rossiter, *Women Scientists in America: Struggles and Strategies to 1940* (Baltimore, 1984) p. 258.

43. Wall, 'Early Days of Radioactivity', p. 19.

44. Ibid., p. 19.

45. Rossiter, *Women Scientists*, p. 255.

46. Schaub, 'Radium', p. 138.

47. Ibid., p. 138.

48. Wall, 'Early Days of Radioactivity', pp. 17-18.

49. Robley Evans. 'Protection of Radium Dial Workers and Radiologists From Injury by Radium.' *The Journal of Industrial Hygiene and Toxicology*, 25:7 (1943) pp. 253-269, p. 257.

50. Kenneth Morse and Milton Kronenberg 'Radium Painting: Hazards and Precautions,' *Industrial Medicine* 12 (1943) pp. 810-21, p. 818.

51. Angela Nugent, 'Fit for Work: The Introduction of Physical Examinations in Industry,' *Bulletin of the History of Medicine*, 57 (1983) pp. 578-595, p. 585.

52. I borrow this notion of practice from Joseph Rouse, *Engaging Science: How to Understand its Practices Philosophically* (Cornell, 1996). Although he focuses on scientific practices, I argue that the same holds for technological practices as well.

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'There as a mathematician, not as a woman': Grace Chisholm Young at 'the Shrine of pure thought' in Turn-of-Nineteenth-Century Germany

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For the most part, the history of mathematics, and of mathematicians, has been written as an unthinkingly gendered narrative. Even scholars who have attempted a social or cultural history of the subject have often failed to include women in their analysis. For example, a recent book on Cambridge mathematicians in the nineteenth and early-twentieth centuries carries the title *Masters of Theory*; given this gendered language it is no surprise to discover that Cambridge's female mathematicians, some of whom won high places on the pass lists and went on to contribute to research, receive just passing reference within this weighty and important contribution to the history of Cambridge mathematics.¹ Such approaches to the history of mathematics seem to rest on an assumption that mathematics is, somehow, a masculine subject – not merely because more men do it, but because mathematics is, by its very nature, intrinsically masculine. Towards the end of the nineteenth century such views were not just tacitly assumed but loudly argued. Scientists influenced by Darwinian ideas of sexual differentiation pointed to women's less evolved capacity for rationality or abstract thought; women were, it was argued, disadvantaged by their sex from grasping or manipulating the 'truths' of science or higher mathematics. In the opinion of one fellow of the Royal Society in a 1902 governmental report on higher education, women were simply not up to such work and 'education' could 'do little to modify her nature'.² One of the reasons that Emily Davies, a founder of Girton College Cambridge, encouraged her students to take the mathematics tripos was because this was the most prized degree for men and a subject generally held to be beyond the capabilities of women. When her students beat the men at mathematics, it added ammunition to her argument for intellectual equality between the sexes.

There is a growing number of books which have reclaimed female mathematicians yet few have ventured beyond a biographical approach. Alison Winter has written of the connections between mathematics and the female body in the case of Ada Lovelace in early-Victorian England;³ Margaret Wertheim has attempted a broader study encompassing Pythagoras to the twentieth century in an attempt to demonstrate the masculine, priestly nature of mathematics.⁴ Although not



(Grace Chisholm Young, by kind permission of Liverpool University, Special Collections and Archives)

disregarding biography altogether, the focus here will be on an examination of the historically and culturally specific assumptions which configured the discipline of pure mathematics at the University of Göttingen around the turn of the nineteenth century. The aim is to see how these intersected with gender and assess the way in which they were both contested and accepted by one particular female mathematician – Girton graduate Grace Chisholm Young.

In April 1895, Grace Chisholm Young was 'wonderfully happy'. She had just received an honour that she had determined to 'move heaven and earth' to achieve - a prize which had required this young, unmarried mathematics 'wrangler'⁵ from Girton to travel alone to a foreign country (against her mother's wishes) with little knowledge of the language or culture awaiting her, and without even an assurance that she would be given permission to pursue her goal when she arrived. But after much hard work Grace had finally achieved her aim. She had been awarded a doctorate in mathematics from the prestigious University of Göttingen. She had also, she was characteristically quick to claim, become the first-ever woman to receive such an honour in Prussia.⁶ Grace was now keen to lose her amateur status and prove herself a fully-fledged mathematician. Her devotion to mathematics had been 'vindicated' and she was ready to 'take my stand among mathematicians, out of the apprenticeship years, able myself to do work'.⁷ And she had already started. As well as receiving a guinea from the Home Reading Union for a paper on sound, Grace had had one of her *vortrags* (seminar papers) accepted for

publication by the Royal Astronomical Society⁸ and her doctoral thesis was being prepared for the printers right now. Yet the years ahead did not unfold in the way that this ambitious young mathematician, so confident in her intellectual abilities, had planned. During the next few years she struggled to achieve the future that she had hoped for and, finally, decided to realign her priorities - an adjustment that contributed to a major bout of depression around New Year 1900. This woman who had resolved to earn an independent living acquiesced in putting her mathematical skills at the service of her husband and absorbing her mathematical personality into his. Two decades after achieving her doctorate, Grace was arguing that a woman, 'whatever her personal ambitions, really longs for a superior male mind' and yearns for the support of 'the complete man'. As a new 'Doktor' Grace had interpreted her success as a blow for the cause of women's education. She had praised Göttingen for the freedom and equality that it offered, unlike Cambridge, to women like herself. Later she warned that any girl who, 'having been granted entry into a society of intellectual boys, lets her personality intrude itself on their feelings, is sinning against the unwritten law of womanhood'. Grace had achieved a doctorate in a subject generally held to be 'too hard' for women, yet just five years after her success she endorsed the views of Professor Max Runge of the Medical Faculty of Göttingen University, who argued from evolutionary theory for women's lesser mental capacities. How and why did such a transformation of viewpoint and behaviour come about?

An exploration of Grace's life reveals that her experiences at Göttingen – to where she returned after her student years to make her home and research base between 1900-1908 – served to create severe tensions within her self-identity. Göttingen was a university town built on the reputations of its 'great men' of mathematics, a place where the spirit of romanticism still held sway and where hero worship of male genius was one of the dynamics behind the development of the School of Pure Mathematics. Grace's natural elitist politics found their reflection within this community in which male intellectual transcendence was glorified and pure reason, in the cloak of abstract mathematics, viewed as morally superior. The structure and culture of the mathematics department, and the type of mathematics pursued there, found their counterpoint in ideals of femininity which, in Germany even more than elsewhere, were rooted in ideas of marriage and motherhood. Within this context, Grace found herself caged in by prescriptions with which she struggled to the end of her life.

At the turn of the nineteenth century, Göttingen

University was held almost in awe by mathematicians who referred to it as 'the Shrine of pure thought'. The mathematics department was a mecca for researchers and students who flocked to sit at the feet of celebrated professors whose highly-abstract style of mathematics was revolutionalising the discipline. On arrival, Grace was surprised to learn that Felix Klein, the head of the mathematics faculty, had recruited two American women to study alongside her: Mary (May) Winston and Margaret Maltby.⁹ The admission of these three women had been initiated as an experiment by Friedrich Althoff, the official in charge of higher education at the Ministry of Culture in Berlin. Althoff had charged Klein to seek out foreign women who would return home after their studies and not compete with men for university posts. There had been opposition to allowing German women to matriculate at German Universities and, although women had been admitted to lectures sporadically as auditors since the 1870s (auditors were permitted entry not by right but by special permission from the lecturer and were denied student status) the majority of these women came from abroad. It was six years after Grace and her female colleagues won student status that, in the summer of 1900, German women were for the first time entitled to become fully-registered students and sit examinations in Germany. Heidelberg University was the first to yield; Prussia (including Göttingen University) did not open its doors to German women until 1908.¹⁰

In Germany as in Britain, a war of words was being waged in the decades surrounding 1900 over women's capacities for higher education. In contrast to the mathematics faculty, other departments and the administrative authorities at Göttingen were strongly against the admission of women. Max Runge, Professor of Gynaecology, argued that women's physiology made them weak and incapable of academic study, and that their whole organism had reached a less-advanced state of evolution. Göttingen's highest official was wholly against Klein's plans to recruit female doctoral candidates and accused him of proposing 'a notion worse than social democracy, which only seeks to abolish the difference in possessions. You want to abolish the difference between the sexes'.¹¹ In fact, that was the last thing that Klein wanted to do. He argued for English-style colleges for women and believed that medicine, law and theology were not appropriate for the female mind to study. Unlike mathematics, these subjects could introduce women to unwholesome ideas, expose them to unseemly public display and take them into areas that God had ordained that they should remain absent from. The idea that women could not produce high-quality academic studies without relinquishing their femininity or harming their health was a frequently-voiced opinion in Germany. Max Planck, Director of Theoretical Physics at Berlin University, warned against eroding natural sex difference.

It could 'not be stressed enough that Nature herself assigned to women the role of mother and housewife to ignore natural laws is to invite great damage which will in this case be inflicted upon coming generations'.¹² Planck was alluding to fears during the 1890s, paralleled in England, surrounding Germany's declining birth rate and high number of infant mortalities. The finger of blame was pointed at women for threatening national well-being by neglecting their role as mothers or losing their capacity for child bearing through inappropriate (masculine) intellectual activity.

Despite these undercurrents in German society and the academic community, Althoff persisted with his 'experiment' with strong support from Klein and the other mathematics professors. Ministry officials felt that if women could succeed at mathematics, they could succeed at anything. Klein had been thwarted in an attempt to have another female mathematician admitted to his department in 1891 and the admission of Grace and her two female colleagues may have been a first victory for him in a long-running battle. American Christine Ladd-Franklin had completed all the requirements for a doctorate at John Hopkins University (only to be denied a degree because of her sex) before her journey to Göttingen. Klein was unsuccessful in his attempt to have her accepted as a matriculated student and Ladd-Franklin was admitted as an 'auditor' only.¹³ Klein's later initiatives in gaining access for women were more successful however and, by end-of-century, women were a regular, if small, contingent within the Göttingen mathematics faculty. Klein was not disappointed by his 'experiment' with Grace and her two American colleagues:

We have had the most positive experiences: our three women are not only exceptionally diligent and conscientious, but their accomplishments are in no way inferior to those of our best students; indeed, to some extent they serve as a model for them'.¹⁴

The mathematics department may have been welcoming to women, but female students were certainly a novelty and there was some anxiety about how they should be treated and what procedures should be followed. The arrival of Grace was all too much for one young professor who, Grace writes, on being required to visit her for the first time had 'had an attack of politeness through nerves'. Although Grace was impressed by the comparative freedom of life as a student at Göttingen (unlike Cambridge, the libraries, lectures and laboratories were freely available to her and she required a chaperone only when visiting one particular young, unmarried professor) female students were accorded special

treatment and placed under special strictures. The women were not permitted to mix in the corridors with the male students before lectures but were to go to the professor's private room (Grace called this 'the sanctum') and he would take them in at the appropriate moment. This could be interpreted as a strategy to prevent hostility between regular students and the foreign women in their midst; more likely it was a way to preserve distinctions of sex and give the ladies due courtesy. Grace certainly saw it as the latter and often remarked in her letters home on the kindness and gentlemanly behaviour of the students and professors. Nonetheless, Grace and her two female companions sat at the back of the lecture hall (probably because they entered at the last minute) and Grace, for one, had difficulty in seeing the blackboard. Special permission had to be sought for them to take doctoral examinations from the Ministry of Education in Berlin and the women were anxious as to whether this would be forthcoming. The sensitivity of the issue was underlined by the discretion Klein asked the women to use in talking about their studies before formal permission had been granted. They were allowed to attend lectures during this time and were assured that 'the curator will look the other way when we come in'.

Despite the sympathy to women students shown by the mathematics department, the department's structure, its masculine rituals, and the style of mathematics pursued there, were all informed by a glorification of the single, male intellect. Unlike mathematics at Cambridge University, which by the later 1880s had fallen out of touch with developments on the Continent and was seen by many as a mere training ground for passing exams, Göttingen privileged research and promoted creative mathematics. The University's celebrated professors – Felix Klein, David Hilbert, Hermann Minkowski and others – established schools around them which attracted 'disciples' from all over the world. In this, Göttingen became a model for later Cambridge and the new American universities. Within this structure individual mathematical minds were inevitably glorified – and even deified. Contemporary accounts emphasise the awe with which these individuals were viewed, an interpretation unthinkingly repeated by later accounts that present these 'mathematical heroes' within the standard narrative of eccentric male genius.¹⁵ Klein is described as 'regal', 'kingly', 'Olympian' and even 'the Divine Felix'.¹⁶ After their first meeting, Grace remarked that Klein was born to lead and that 'Cambridge has nothing to compare with him, both as a mathematician and as a man'. Apocryphal stories surrounded him such as at dinner at his house a student was sometimes so awed by his host that he stood up when he was asked a question.¹⁷ David Hilbert was also the subject of mythologizing anecdote. These centred not only on the abstraction and difficulty of his mathematics, but on his penchant for shabby clothes,

inveterate womanising, and his infamous mathematical walks during which students followed him around Göttingen while engaging in mathematical brainstorming. The celebrity of these 'great men' reached its apotheosis in 1912 when a series of postcard portraits of Göttingen mathematicians went on sale in the town.

Mathematics dominated Göttingen, both the town and the university, and students, too, enjoyed special status. One journalist recalled the lordly young men who wore 'their caps visored in the bright colours of duelling fraternities, their faces usually swathed in bandages.' They left behind them 'a nauseating odour of iodoform which penetrates everywhere in Göttingen'.¹⁸ In common with other German universities, duelling was a tradition at Göttingen. As duelling scars were regarded as badges of courage and honour, cuts on the face were left open to heal so that they would leave telltale marks. Grace echoes this account of the duelling culture at Göttingen, where students fought duels on a Saturday night before an audience, in her fictionalised autobiographical writings. Here she has the daughter of a 'delightfully patriarchal' professor's family remark that

...I never look at a student who has not yet got Schitte (cuts on face). If you look at the students on the Weender Strasse (Straße), when between 12 and 1 they parade up and down, especially on a Sunday, you will see them all bandaged up and the whole place smells of carbolic!¹⁹

By the 1890s duelling was frowned on by the authorities yet it was still a favoured activity amongst undergraduates; it was even endorsed by the Emperor in a speech at Bonn University in 1891.

Duelling can be interpreted as the German equivalent to the bodily training and exercise that accompanied preparation for the competitive mathematics tripos at Cambridge. The structure of the duel - one man's physical strength and cunning pitted against another's - was the model for interpreting the activity engaged in by mathematicians. In Göttingen, individual minds were seen as the producers of new mathematical knowledge. The professors were engaged in 'intellectual duels', using their brilliantly penetrating minds in place of swords, and the victors were those who published first and received the credit - often attaching their name to a theorem which would be remembered by generations of mathematicians to come. The professors bore their scars too. Felix Klein suffered a mental breakdown brought on by rivalry

with Henri Poincaré who was developing similar ideas at the same time. The structure of the Göttingen mathematics department also reflected the idea of competition. Access to seminars was restricted to top students who had 'won their spurs' in what has been called a 'highly competitive and unashamedly elitist approach to mathematical education'.²⁰ But for a woman to be a competitor—especially competing alongside men—was problematic. Men were prepared for competition, but ideals of femininity dictated that women (middle-class women at least) should remain in the private sphere and act as a helpmeet and complement to man. Such ideals did not endorse women engaging in public rivalry with men. Although these notions were not rigid but adapting as women negotiated demands for higher education and the vote around them, Grace was not alone in adhering (in theory at least) to such codes of female behaviour. Much opposition from men and women to the suffrage movement pivoted on the unseemliness of women speaking on public platforms and acting in an altogether 'unladylike' manner. Grace expressed similar sentiments when she explained her anti-suffrage stance on a dislike of 'the argumentum ad hominem' of the suffragists which 'degraded' the whole subject. Grace's husband engaged in a bad-tempered dispute over priority and validity with Schönflies which was played out in mathematics journals during the mid 1900s;²¹ it would have been difficult to imagine Grace able to defend her position so robustly and acrimoniously as her husband was able to. Grace's later decision to allow her husband to compete in this mathematical world, with her 'back-room' support, can be seen as a compromise that (in part) reconciled her mathematical ambitions with this sense of feminine propriety. As the years progressed, Grace became increasingly reluctant to expose herself to public view, characterising this as 'unwholesome' and believing that her 'private personality (should be) kept as much as possible in the background'.

When Grace returned to Göttingen in 1900 she was no longer a single woman. In 1896 she had married a mathematical acquaintance from Cambridge, William Henry Young, and had given birth to their first child the following year. Young, a Fellow of Peterhouse College, Cambridge, worked as a mathematics 'coach' - a freelance tutor who trained students in the speedy problem-solving and examination techniques needed to win a high place on the mathematics pass lists. Despairing at ever finding a fellowship, Grace's correspondence shows that she had planned that her marriage would allow her to pursue mathematical research, scaling the heights of creative mathematics, while her husband carried on with the more mundane task of drilling students in the tricks needed to compete successfully in the Cambridge mathematics tripos. Young remained in Cambridge for most of his time while his

wife continued her research, resuming her close connections with the Göttingen mathematics department. She became the only female member of the elite Göttingen mathematics club, and attended regular colloquiums (advanced seminars attended by professors and selected research students) as well as numerous functions at professors' homes which were part social and part mathematics. Grace's descriptions of these occasions reveal clues as to the tensions, questions of etiquette – and amusement – that could arise as to whether, and how, women could be treated as women *and* mathematicians:

After dinner, Professor Klein was dreadfully afraid we should divide up into male and female, and he very much wanted us to talk to the men. ... He took my arm and carried me into the dining room to be smoked and all the men followed suit ... The Professor offered me the cigars with his quaint smile.'

There is little doubt that being the only woman amongst such a select band of individuals appealed to Grace's vanity. However her decision to marry instead of realising earlier plans to find a teaching post at a women's college meant that Grace was remote from any community of mathematical or academic women. In this way Grace missed out on the support which may have helped her to retain her mathematical identity. Grace's comparative isolation became even more significant when it became clear that her husband was not a man to be overshadowed by his wife. Convinced that he was 'greater than the world around him', William Young was searching for a calling that would enable him to prove it. Grace presented it to him – in the words of their daughter, Cecily: 'It is as if she had been to him a mirror, in which he gradually saw himself and his real mind'. Young began to aspire to a career as a research mathematician – and a professorship. To achieve this the couple forged a mathematical collaboration, their key aim to get Young's papers published, forcing recognition and position. Grace used her connections in Göttingen to set and pursue the research agenda and keep abreast of the latest developments in mathematics, writing up the papers herself in correspondence with her husband who retained full-time teaching posts in England. The personal negotiations that this collaboration entailed brought Grace close to breakdown at New Year 1900 when she wrote to a close friend from Girton, hiding her tears from her husband, about her hopes for the future dying with the new century and the necessity of 'throwing overboard the old life' to be a wife and mother.

In experiencing tension between duty to marriage and motherhood or to a career, a female mathematician could

be seen as in much the same position as any other woman at this time who was engaged in an activity dominated by men. However, in the heady atmosphere of Göttingen, home to 'the greatest mathematical minds of the age' wifely strictures took on an even greater urgency. Was it not imperative to support husbands who were great men doing great things for the world? Grace had surmised as much when she first arrived in Germany, remarking with approval that 'If it were not for the women, the learned men would not marry and live happily and usefully in the devotion of science'. Grace was basing her comments on the wives of the professors whom she had come to know well. Klein's wife, Luise, was a particular friend. She had been well schooled in providing the quiet domestic and personal support gifted men were supposed to need, as she was the daughter of the German idealist philosopher Hegel. Kathè, the wife of David Hilbert, was expected to act as secretary to her husband, writing out his papers in her best handwriting, and ensuring the harmonious environment conducive to his work. When Hilbert published his first groundbreaking paper on number theory in 1897, his friend and fellow mathematician Hermann Minkowski wrote in congratulation, also congratulating 'your wife on the good example which she has set for all mathematicians' wives'. Hilbert's biographer adds to this praise of Kathè by remarking that she never let 'tragedy hinder her husband from functioning as a scientist. Under her skillful (sic) management, the combination of fellowship, comfort and order necessary for Hilbert to work continued to be maintained ...'.²²

These kinds of expectations placed on women were made all the more pressing in Germany by the concept of the 'eternal womanly' – a notion of immutable femininity which was predicated on woman as instinctive mother and complement to man and viewed as distinctly German. Interest in 'the woman question' was especially intense around 1900 when a new German civil code was being formulated. The side of the debate that championed equal rights with men, or offered a critique of marriage, was heard much less and there was broad consensus amongst women's groups that demands should be placed within the context of what is variously described as 'intellectual', 'organised' or 'extended' motherhood.²³ One particularly influential figure was Ellen Key whose 1898 essay, *Misused Women's Energy*, suggested that most women would not find satisfactions in their jobs equivalent to those provided by raising their own children. Grace's husband was absent for much of the time, undertaking his coaching obligations in Cambridge, and this meant that, in effect, Grace was a single woman in Germany. As such, she was taken under the wing of the wives and daughters of the Göttingen professors, especially Luise Klein who became almost a mother-figure to her. Grace was, therefore, regularly in the

company of women who located their identities within these models of feminine service. With these examples before her, and no female mathematical support network around her, it is no wonder that Grace experienced insecurities about her role.

The idea that pure mathematics, at the very highest level, was a preserve for only very special male intellects, was heightened by assumptions implicit in the new mathematics pioneered at 'the Shrine of pure thought'. This mathematics was characterised by its high degree of abstraction and removal from the 'real' world. Grace and her husband made this new mathematical analysis their research area, most of their work being developments of Georg Cantor's theory of sets. Cantor's work used powerful ideas, such as irrational numbers, complex numbers and differing powers of infinity; these new concepts opened up new areas for mathematicians to work in and enabled the discipline to progress. Although this analysis had applications to physics – especially to new areas such as electrical wave theory and the calculation of probabilities which call for numbers beyond the natural sequence 1, 2, 3 etc. – at the research level it was far removed from worldly problems. Opponents to this new analysis, not least in Cambridge, objected that the concepts it introduced (such as multidimensional space and many infinities, some greater than each other) were unreal, even occult. Supporters argued that these concepts were vital as existing mathematical methods had come to a dead end: it was as if mathematicians were using a ruler but the thing that they needed to measure went not along the ruler but behind it, above and below it, and between its markings. A pair of variables represents a point in the plane and a triple represents a point in three-dimensional space, but as the number of variables the analysts worked with increased so they found it necessary to posit spaces of a higher dimension. In 1905 David Hilbert produced his famous theory of infinitely many variables known as 'Hilbert Space Theory'. Grace and her husband presented their 1906 book, *The Theory of Set Points*, as 'the first attempt at a systematic exposition' of this new analysis and an 'attempt to further the frontier of existing knowledge'.²⁴ Within this view of mathematics, the idea of truth as some kind of correspondence to the real world was entirely jettisoned. Instead, truth lay in internal coherence and absence of contradiction; assumptions could be based on anything (not just observable facts) and they usually emerged from the creative minds of individual mathematicians. No wonder that these brilliant minds – seemingly pulling mathematical ideas out of nowhere – were revered and mythologized. One student of 'the Divine Felix' maintained that even after he came to know him well, he still felt the distance between himself and Klein 'as

between a mortal and a god'.²⁵

This flight of pure mathematics into abstraction, and the glorification of the intellects that produced it, can also be seen as a response to the growth in status and popularity of applied mathematics and engineering. In Germany as in England, there was an acute tension between pure and applied mathematics, the pure mathematicians becoming increasingly elitist as they produced mathematics that few but the initiated could read, let alone understand. At the same time mathematical physicists and the new sciences were expanding their sphere of influence, producing technology that could be seen to be changing the world and becoming popular subjects at university, threatening the status and prestige of pure mathematics. The new engineers were democratising their discipline with technical institutes to train large numbers and an increasingly 'teamwork' approach; in response, the pure mathematicians, keen to distance themselves from the applied and to assert their superiority, were shunning any reference to the 'real world' as a contamination and emphasising the ability of only special individuals to further mathematics. Grace constantly put forward the view that what was important was not the success or utility of mathematics but 'the change in the mental point of view of intellectuals'. Furthermore, it was 'not the usefulness of mathematics that constitutes its claim to be a form of expression for the beautiful' and any application to the real world was merely coincidental. This was also the view of one of the first mathematicians to take up the new continental analysis in England, G.H. Hardy, who argued that mathematics cannot be justified for its 'crude achievements' and that applied mathematics was 'dull and for dull intellects'. Furthermore, 'Real' mathematics was 'almost wholly useless' and this very remoteness from ordinary activities kept 'it gentle and clean'.²⁶

The intrinsic superiority felt by the pure mathematicians is summed up by a contemporary anecdote that David Hilbert maintained that he had taught himself physics because 'Physics is too hard for physicists'.²⁷ The implication of these arguments was that pure mathematics was the preserve of a (male) aristocracy of talent and the inexact, utility-driven mathematics of the growing band of engineers and technicians was of a completely inferior nature. This was a view that retained echoes of the ideals of a liberal education. This tradition, encapsulated in the learning of dead classical languages, was based in part on the idea that knowledge, when applied to material ends, was an impure subject unworthy of the attentions of the intellectual elite. As Klein explained to an audience of engineers, 'Mathematics' business was to formulate the fundamentals' – from where hypotheses originated, or whether they were based on observable fact, remained of no consequence.

Mathematics was 'not responsible if the consequences of deductions do not correspond to reality'.²⁸

By emphasising the genius of individual minds and basing their subject's intellectual and moral authority on its unconnectedness to the 'real world', the pure mathematicians negotiated for a position of superiority over the applied mathematicians and engineers to whom worldly concerns were central. The abstraction and moral integrity of this style of mathematics was increasingly conveyed by the use of language that was highly feminised and romantic. Proofs were 'elegant'; theorems 'beautiful'. The aesthetics of theorems – simplicity, consistency, symmetry – became viewed as an element with which to judge their success. Grace wrote of the aesthetics of mathematics and maintained it was a form of expression for the beautiful. Bertrand Russell, who concerned himself with the logical philosophy underpinning analysis, believed that 'Mathematics, rightly viewed, possesses not only truth but supreme beauty sublimely pure'.²⁹ Pure mathematics was regularly likened to Art. Grace compared great mathematicians to renaissance artists; Hardy made similar comparisons and maintained that the mathematician's 'beautiful and harmonious patterns' are more permanent than Art's because they 'are made with ideas there is no place in the world for ugly mathematics'.³⁰ This kind of language distinguished pure mathematics from its uncouth partner, the applied, and made mathematics attractive to women. Women could feel comfortable with an outwardly 'feminised' subject, plus the fact that this mathematics required no unwholesome knowledge of the real world complemented nineteenth-century ideals of morally-superior femininity. However, key to this language was its correspondence to a view of romantic genius that found its expression in feminised language, but its effect in excluding women.

A central element in the conception of romantic genius is that the principles of femininity – sensitivity, emotion, intuition, a connection with nature – are exhibited by a man. Women could not aspire to genius; only men could achieve this by utilising their feminine intuition alongside their manly nature. By using feminine language, pure mathematics referred back to a belief that had been associated with male genius in disciplines such as art, music and poetry.³¹ It is not coincidental that both Grace and G.H. Hardy liken the pure mathematician to the artist; the romantic idea of genius had particular applications to Art. Although romantic philosophy had its roots at the beginning of the nineteenth century, Victorian thinkers raised the ideal of the male genius to 'cult' status'.³² Here the genius was born with talent – endowed by Nature with a rare gift as opposed to having learned or acquired a skill. The surrounding narrative presented this rare individual as an isolated figure who used his

creativity by force of spirit alone – just as the Göttingen mathematicians seemed to, almost mystically, create new mathematical ideas out of nothing but their brilliant minds. This was a potent scenario in Germany in particular, drawing on a tradition of German idealism, through Kant, Fichte, Hegel and Nietzsche. This movement, whose 'golden age' is generally held to be the 1770s to 1840s, had connections with romanticism and was concerned with notions of 'pure thought'. Nietzsche's ideas (d.1900) were becoming increasingly popular in Germany as the nineteenth century drew to a close. That Grace was much influenced by his ideas is evidenced by the quotations and poems which appear in her personal notebooks.

Although Nietzsche's work is complex and often obscure, Grace's interest centred on his notions of 'spirit' or 'pure thought' and how 'genius' worked through the elite *Übermensch* – a master class whom the rest of humanity are here to serve. The *Übermensch*, or superman, is always characterised as male: for Nietzsche, women lacked the 'will to power' that superior human beings possessed and were, therefore, destined for servitude. Abstraction and 'purity', which was both the process and the product of the new mathematics, could be likened to the pure spirit which was held to work through the genius as nature used him as her instrument. No wonder pure mathematicians were concerned with the development of mathematical minds and not with the bodily world. The work of genius transcended normal confines and it was this abstraction that gave a piece of mathematics its moral credibility. Genius had no truck with the bodily, which is one of the reasons why it was argued that women, rooted in the material world of reproduction, cannot possess it. Although attempts to claim genius for the female sex were made by some feminists in Germany and in England, these were mostly unsuccessful and the concept refused to relinquish its strong masculine connotations. Lucy Delap has demonstrated how the idea of female genius was marginalized in the influential works of eugenicist Francis Galton and psychologist Havelock Ellis. Galton claimed that genius was inherited down the male line adding that, on the rare occasion that women did possess genius, they would become so masculinised that they would be unmarriageable and so would be unable to pass on their ability. For Ellis, male genius was closely linked to men's sexual energy or 'vital force' and exhibited in intellectual and creative spheres; women's 'vital force' was used up in reproductive duties, so any feminine genius was manifested through 'love'.³³ The message was clear: the best a woman could hope for was to give birth to genius, not to become one herself.

Control of bodily impulses as a condition of authentic manliness has been identified as a key notion at the end of the nineteenth century. At this time, chastity and

men's literature presented a struggle between 'mind' and 'body' and 'reason' and 'passion' as a key part of male experience. A distinction was made between 'manly' and 'male'; a man achieved manly status through self-mastery of his body and his sexual impulses.³⁴ It was this kind of thinking that led to the rigorous physical training that accompanied competition in the Cambridge mathematics tripos.³⁵ The Göttingen analysts, concerned as they were with pure thought, were operating within both the narratives of disembodied genius and of manliness. It is notions such as this that underpin Grace's later advice to women (specifically her daughter) thinking of entering university: 'The sensual life of a man, once awakened, eats up his powers' she warns, therefore 'it should not begin until the training of his career is over'. Furthermore, inflammatory women in academia could 'cause infinite harm to her comrades, sapping their strength and ruining their prospects. She herself is the sufferer, she herself who, whatever her personal ambitions, really longs for a superior male mind'. It is significant that Grace used the terminology 'male mind' and not 'man'. Engineering was comprised of men concerned with the material and bodily; pure mathematicians were 'superior', concerned with only the abstract and the mind.

When Grace attended a mathematical dinner held in honour of Felix Klein, her lone female presence on this elite occasion was explained by the fact that she was 'there as a mathematician, not as a woman'.³⁶ The tension between these two terms was still acute enough to require amplification. In this world of pure mathematics, where the worth of a particular piece of mathematics was based not on its success or utility but on its beauty and internal consistency, and where what constituted a 'proof' was open to debate, it was essential to situate yourself as a mathematician of high ability and gain the trust of your audience that this was so. Grace found it increasingly awkward to characterise herself as such, or to contest the undercurrents in the Göttingen mathematical community that made it difficult to see how she, as a woman, could –or should –aspire to the genius of male intellects such as Hilbert and Klein and become their peer. Overwhelmed by romantic notions of genius, and practising a pure mathematics that privileged the male intellect, she seemed to lose confidence. Grace continued to research mathematics, was in constant correspondence with leading mathematicians, and remained highly respected within the mathematical community. However, she severely compromised her personal ambitions and, instead, used her mathematical connections and skill to support her husband. Grace published only four papers under her name alone (including her PhD dissertation) up to 1915; she resumed only after 1914 when Young

was finally awarded a professorship. (Grace's later work was influential in the field of differential calculus and one of her papers won the Cambridge Gamble Prize for Mathematics in 1915.) Up to 1914, her husband published eighty-eight papers under his own name and one book. Another book was published in joint names, along with five papers and a children's geometry textbook. Such was Young's productivity that it is noted in more than one memoir as exceptional. For Graham Sutton it is 'an extraordinary thing that a man should spend so much time on the hack work of coaching and then suddenly spring into prominence as one of the most prolific and greatest analysts of his time'.³⁷ Like Sutton, G.H. Hardy refers to Young's late start but notes 'the productivity, when it did come, was so astonishing' and adds that 'the dreams were to come and the 'drudgery' to end, and the end came quickly after Young's marriage'.³⁸

Young is remembered in mathematical history books for the independent formulation of the 'Lebesgue Integral' (a mathematical tool which defined 'measure' and so greatly increased applications to physical problems). He was awarded a DSc. from Cambridge in 1907 on the basis of his published papers; honours received during his life include election as Fellow of the Royal Society in 1907, the award of the London Mathematical Society's De Morgan Medal in 1917 and the Royal Society's Sylvester Medal in 1928. Grace's name is rarely to be found on lists of honours, however she has been credited by an eminent female successor with being instrumental in the renaissance of Cambridge mathematics at the beginning of the twentieth century through her introduction of the new, continental analysis to Cambridge dons.³⁹ Again, Grace's influence was exercised vicariously, just as during her lifetime her aim became to elevate her husband (not herself) to the same level as the great Göttingen mathematicians whom she revered: a small and elite club that was open, she came to believe, only to men.

Notes

Acknowledgements: I am grateful for the comments of William Ashworth and Pat Starkey at the University of Liverpool; and for the assistance of Adrian Allan, Archivist at the University of Liverpool.

1. Andrew Warwick, *Masters of Theory, Cambridge and the rise of Mathematical Physics*, University of Chicago Press, 2003. Women's success in mathematics at Cambridge was a factor in the reform of the tripos not discussed by Warwick; it also has implications for his views on the link between manliness and mathematics. Although women were not awarded degrees at Cambridge University on the same basis as the men until 1948, from 1882 they were published on the pass lists. There were 33 female 'wranglers' (first class pass) between 1882 and 1910, when the Order of Merit was abolished. These include Philippa Fawcett of Newnham

College, Cambridge, who was placed 'above the senior wrangler' in 1890. The figures do not include Charlotte Angas Scott, who was placed equal eighth in 1881 and whose success led to women's results being published alongside the men's. Angas Scott went on to achieve a D.Sc (London) and become Professor of Mathematics at Bryn Mawr College, U.S.A., co-editor of the influential *American Journal of Mathematics*, and vice-president of the American Mathematical Society. See Patricia Kenschaft (1987) 'Charlotte Angas Scott, 1858-1931', *College Mathematics Journal*, 18, pp. 98-110. Women also rivalled the men in the elite Tripos Part II specialist exam; for example in 1899 3 men and 4 women are listed as successful.

2. Henry Armstrong, FRS, in the Mosely Report on American Higher Education, quoted in Joan Mason, 'Hertha Ayrton and the Admission of Women to the Royal Society of London', *Notes. Rec. Royal Society of London*, 45 (2), 1991, p. 212.

3. Alison Winter 'A calculus of Suffering': Ada Lovelace and the Bodily Constraints on Women's Knowledge in Early Victorian England' in Christopher Lawrence and Steven Shapin (Eds) *Science Incarnate: historical embodiments of natural knowledge*, Chicago, 1998, pp. 202-239.

4. Margaret Wertheim, *Pythagoras' Trousers, God Physics and the Gender Wars*, London, 1996.

5. A 'wrangler' was an achiever of a first-class pass in the Cambridge mathematics tripos.

6. Sophia Kovalevskaja had received a mathematics doctorate from Göttingen in 1874, but she had failed to sit the oral examination and the award had been granted 'unofficially' *in absentia*. Grace Chisholm was the first woman in Prussia to *officially* receive a doctorate.

7. Liverpool University Special Collections and Archives, *Papers of Professor William Henry Young and Grace Chisholm Young* (D140) correspondence, autobiographical writings, miscellaneous notes, mathematical notes, family records. All quotations, unless otherwise stated, are from here.

8. Grace Chisholm, 'On the curve and its connection with an astronomical problem', *Royal Astronomical Society Monthly Notices*, Vol. 57, 1895-7, pp. 397-387.

9. Mary (May) Winston, 1869-1959, was awarded a PhD in Mathematics shortly after Grace; Margaret Maltby (1860-1944) was a physicist, after her PhD she researched in theoretical physics at Clark University before moving to a teaching post at Barnard College in New York.

10. See James C. Albisetti, *Schooling German Girls and Women, Secondary and Higher Education in the Nineteenth Century*, Princeton University Press, 1988.

11. Quoted in Karen Hunger Parshall and David E. Rowe (Eds) *The Emergence of the American Mathematical Research Community, 1876-1900: J.J. Sylvester, Felix Klein and E.H. Moore*, American Mathematical Society, 1991, p. 244.

12. *Ibid.*, pp. 123-4. However, Planck could make exceptions; he eventually permitted Lise Meitner to attend his lectures at Berlin in the early 1900s 'on a trial basis and always revocably ... (but) ... I must hold fast to the idea that such a

case must always be considered as exception, and in particular that it would be a great mistake to establish special institutions to induce women into academic study, at least not into pure scientific research. Amazons are abnormal, even in intellectual fields'. See Ruth Sime, *Lise Meitner, A Life in Physics*, California, 1996, pp. 25-6.

13. *Ibid.*, p. 240.

14. *Ibid.*, p. 247.

15. See Constance Reid, *Hilbert*, Allen and Unwin, London, 1970 or Herbert Meschkowski, *Ways of Thought of Great Mathematicians*, London, 1964.

16. Reid, *Hilbert*, p. 46.

17. *Ibid.*, p. 89.

18. *Ibid.* p. 102.

19. Social prescriptions did not allow women to duel as duelling was intimately connected to masculinity. Interestingly, duelling was also popular in France from around 1860 to World War One and some French feminists demanded the right to participate as not doing so excluded women from certain cultural/political arenas. See Robert A. Nye, *Masculinity and Male Codes of Honor in Modern France*, California, 1998. (Thanks to Fiona Reid for this point.)

20. Parshall and Rowe, *American Mathematical Community*, p. 190.

21. See especially *Messenger of Mathematics*, Vol. 39 (1909); Vol. 40 (1910) and Vol. 42 (1913).

22. Reid, *Hilbert*, pp.139-140.

23. See Uta Frevert, *Women in German History, from bourgeois emancipation to sexual liberation*, Oxford (Berg) 1986. Translated by Stuart McKinnon-Evans, Terry Bond and Barbara Norden.

24. W.H. Young and Grace Chisholm Young, *The Theory of Set Points*, Cambridge University Press, 1906, preface.

25. Reid, *Hilbert*, p. 46.

26. G.H. Hardy, *A Mathematician's Apology*, Cambridge University Press, 1993, p. 19 and 121. Hardy (1877-1947) was a friend of the Youngs and held consecutive professorships at both Oxford and Cambridge.

27. Laurence Young, *Mathematicians and their times*, Amsterdam, 1981, p. 246.

28. Lewis Pyenson, *Neohumanism and the Persistence of Pure Mathematics in Wilhelmian Germany*, American Philosophical Society, 1983, p. 54.

29. Bertrand Russell, 'The Study of Mathematics' (1913) in *Mysticism and Logic*, London, 1959, pp. 60-61.

30. Hardy, *Apology*, pp. 84-5.

31. For a history of 'genius' see Christine Battersby, *Gender and Genius: Towards a Feminist Aesthetics*, London, 1989.

32. Susan P. Casteras, 'The Cult of the male genius in Victorian painting' in Linda M. Shires Ed. *Rewriting the Victorians. Theory, History and the Politics of Gender*, London, 1992, pp. 116-146.
33. Lucy Delap, 'The Superwoman: Theories of Gender and Genius in Edwardian Britain', *The Historical Journal*, 47 (1) 2004, pp. 101-126.
34. Ed Cohen, *Talk on the Wilde Side, Toward a Genealogy of Discourse on Male Sexualities*, London, 1993, p. 32.
35. Andrew Warwick 'Exercising the Student Body, Mathematics and Athleticism in Victorian Cambridge' in Christopher Lawrence and Steven Shapin Eds *Science Incarnate, Historical Embodiments of Natural Knowledge*, Chicago, 1998, pp. 287-326.
36. When Felix Klein visited Cambridge to be honoured by the University, Grace was the only woman present at the special dinner. Klein's wife and daughter were not invited although they had accompanied him from Germany.
37. Graham Sutton, 'Centenary of the birth of WH Young', *Mathematical Gazette*, 59, 1963, pp. 17-21, p. 21.
38. GH Hardy 'WH Young', *Journal of the London Mathematical Society*, 17, 1942, pp. 218-237.
39. Mary L. Cartwright, 'Grace Chisholm Young', *Girton Review*, Spring Term, 1944, p. 17-19. Dame Mary Cartwright (1900-1998) was Mistress of Girton 1946-60, she specialised in the theory of functions, producing work that lead to Chaos Theory. In 1947 she became the first female mathematician to be elected to the Royal Society; she was the first and only female President of the London Mathematical Society (LMS, 1961-63) and winner of the Royal Society's Sylvester Medal (1964) and LMS's De Morgan Medal (1968).



Technical Education, Female Emigration and Nation Building

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As increasing numbers of single English women turned to emigration, the emigration societies focussed on the issue of training for colonial life. This article examines the training provided for middle-class would-be emigrants. It explores training for colonial life in relation to gender, skill, nation building and the models and myths of femininity seen as appropriate for women leaving England's shores. It traces views about the mismatch of English training provided for women intending to settle overseas and the arguments that institutions overseas could better prepare women for life abroad than emigration societies in England.

The British Women's Emigration Association (BWEA) set up the first colonial training home for women at Leaton in Shropshire in 1890. At Leaton training courses lasted three months, with training from a farmer's wife in housewifery, cooking, baking, fruit bottling and preserving, washing and millinery, dairywork, poultry-care and bee-keeping.¹ Due to demand for places, the training home moved to larger premises at Stoke Prior, near Bromsgrove, in 1907.² In 1902, Swanley Horticultural College established a one-year colonial training course for women, with a syllabus combining horticulture, poultry-rearing, bee-keeping, carpentry, household management, sewing, cooking, laundry-work, bookkeeping, conditions of colonial life, management of 'native' labour, 'native' languages, hygiene, first aid and simple nursing.³ Demand for places led within six months to a move to larger premises and fruit, flower and vegetable growing, sanitation and hygiene, fruit packing, sale of produce, jam-making, fruit bottling, soldering tinware and harnessing and drawing horses were added to the curriculum, while horticulture was split into training for market and private gardening.⁴ Other privately-run horticultural colleges for women, combining domestic and agricultural training, followed suit. These included Viscountess Wolseley's Glynde School for Lady Gardeners, the County and Colonial Training School for Ladies at Arlesley, Studley Castle Training Home and Miss Orr's Aldborough Dairy.⁵

The provision of domestic and agricultural training for emigrants also became a feature of the training given by some county councils, such as Lancashire, Hampshire and Sussex, under the English Technical Instruction

Acts.⁶ Some county council courses included practical training at dairies and farms,⁷ while other courses, like those of the Yorkshire Ladies Council of Education, provided lessons for women in riding, driving, swimming and blacksmithing.⁸ Established schools of cookery, including those at Edinburgh and Liverpool, also offered colonial training, as did some of the polytechnics and university colleges.⁹

While polytechnics tended to attract 'respectable' working class and lower-middle class women, small colleges and individuals in private homes, providing training on an entrepreneurial basis, often marketed to those in more affluent circumstances, or to women who needed some degree of flexibility in their course of study. At her school of cookery, Mrs Marshall focused each day on a different subject so that women did not have to attend on successive days.¹⁰ Some entrepreneurial women were well qualified for the task. The Misses Palmer offered instruction in 'housewifery, house and parlour work, cooking, jam making, dress making, laundry-work, plain gardening, carpentry, upholstery, recurring feathers, etc.' at their 'pretty house with good garden at Ashburton in Devonshire' and combined this with training at their cottage on Dartmoor, where girls learned to make butter after the Devonshire method and to attend to poultry. Miss Laura Palmer was a fellow of the Royal Horticultural Society, in addition to holding a dressmaking certificate, while both Misses Palmer held laundry certificates.¹¹

Colonial vocational identities

Despite the free places offered by technical instruction committees, scholarships and the loan funds of the women's emigration societies,¹² much of the training incurred expense, which inevitably debarred working-class women. Women's emigration societies geared their training to 'the daughters of professional men, or others of good family obliged to earn their living'.¹³ At Leaton, the students were mainly lower middle-class but included some 'whose names are written in "Burke" and "Walford" and whose fathers have been sheriffs or deputy lieutenants for their counties'.¹⁴ Some of the smaller establishments catered for specific niches in classed markets in much the same way as the older private establishments that educated middle-class girls. The *Imperial Colonist* noted that Mrs Headlam's school in her Chelsea house was devoted to those who couldn't afford a long and expensive preparation but who did not care to mix with the girls who attended the classes at the polytechnics or the technical day schools.¹⁵

BWEA President, Ellen Joyce, thought the ideal emigrant was the 'useful eldest daughter of large families of the poorer clergy'.¹⁶ In 1906 she spoke reassuringly of the

life of the 'lady' emigrant:

Ranch stations of Canada, the hinterland of South Africa are little more secluded than the Yorkshire village from which Charlotte Bronte flooded the reading world of the fifties. The life described in 'Our Village' by Miss Mitford of rustic ways, of simple pleasures, of neighbourly goodwill, would fit many a Canadian township.¹⁷

Yet, she also depicted the lady emigrant as a product of the newer girls' high schools:

They have been high school girls and get used to competition in study and to being good tempered in games and on the hockey field, their education is very thorough and well grounded as far as they have gone on with it, but they do not like the monotony of teaching in a school or the precarious life of an artist, or the strenuous life of a musician.¹⁸

From the census of 1851 onwards, the 'oversupply' of women became increasingly visible, with the 'surplus' of women reaching 800,000 by the 1861 census.¹⁹ Concern was expressed in articles and the press about the financially precarious position of 'surplus' women and female emigration came to be seen as a solution. Early twentieth century emigration societies increasingly based their arguments on the representation of the unmarried gentlewoman as a 'surplus' woman, eking out a miserable existence, dependent on the largesse of a family who could ill-afford her upkeep, or reduced to the ambiguous position of governess.²⁰ The Colonial Intelligence League (CIL), half of whose executive was composed of representatives of the Association of Headmistresses working to increase employment prospects for their pupils,²¹ was concerned with 'the problem of transplanting the educated women from this country, where she feels herself too often a superfluity and an encumbrance'.²² The CIL conducted a concerted campaign to attract high school girls.²³ In her open letter, printed in Sutton High School Magazine in 1914, CIL president, Caroline Grosvenor, impressed on the girls the necessity for suitable training for emigrant life.²⁴

There was a tension in emigration literature between the liberal feminist views of societies like the Society for Promoting the Employment of Women and the Central Bureau for the Employment of Women, who were concerned with widening employment opportunities for women and the idea that Englishwomen should go to the British colonies to become the future wives of Englishmen and mothers of the British 'race'. Miss

Turner, principal of the Country and Colonial Training School for Ladies at Arlesley, Hertfordshire, noted in 1910:

The Colonies need ... still more working gentlewomen - mothers' helps who are real helps, and whom the boys (sic) we send out can marry, knowing that they can be real helps in their Colonial homes, and that they need not be ashamed to introduce them to their mothers and sisters on their return.²⁵

In contrast, the English journalist Mrs Marion Dudley Cran, who spent six months travelling across Canada at the request of dominion government officials, epitomised the view of those concerned to widen women's opportunities. In her 1910 book, *A Woman in Canada*, she wrote:

Canada wants women of breed and endurance, educated middle-class gentlewomen, and these are not the women to come out on the off chance of getting married. They may be induced to come to the country if they can farm or work in some way to secure their absolute independence. They want, every woman wants, to be free to undertake marriage as a matter of choice, not of necessity.²⁶

Concerned that 'surplus' women of uncertain health, physique and circumstances were applying as candidates for emigration, the CIL were keen not to encourage the 'middle aged, delicate failure'.²⁷ Indeed, they actively discouraged applicants thought to be unsuitable for colonial life.²⁸ Colonial training aimed to produce the capable, energetic, cheery, hardworking, adaptable and resourceful individual, who could turn her hand to anything and 'rough it' if necessary in the 'bush'.²⁹ Miss Vernon, who ran Leaton for six months, regarded the fact that there were no household conveniences as an 'unmixed advantage' in teaching the girls to be adaptable and resourceful.³⁰ Miss Fedden of St Martha's College of Housecraft noted that improvisation was an important accomplishment and that the future settler had to find substitutes for the conveniences of modern life that she would not find on a cattle ranch or fruit farm.³¹ Miss Fedden's far-reaching view of adaptability was part of the trend to deter the faint-hearted. She portrayed middle-class emigrants adopting the re-cycling skills traditionally practised by working-class women as they made cradles for wounded limbs out of milking stools, substituted rocks or stones by the river for washing

boards, lengthened short lamp wicks with strips of flannel or old stockings, and stiffened their silk blouses with gum from trees.³² In similar vein, a student at the South Western Polytechnic told how her cookery teacher had shown the colonial class how to make jelly bags and strainers by turning over a kitchen chair, fastening an ordinary kitchen cloth to the four legs and pouring boiling water through it.³³

The model of robust, physical and adaptable femininity propagated in colonial courses contrasted with contemporary notions of middle-class metropole femininities, where delicacy and refinement were prized characteristics. The production of British colonial femininities at Studley Training College was based on stereotypical views of colonial life. Alice Ravenhill, a former inspector of the Board of Education, who became a member of the Victoria committee of the CIL in British Colombia,³⁴ spent a truly miserable time when she first emigrated. She noted of her colonial training:

We learned to milk cows, churn butter and make various kinds of delicious milk cheese, only to find out later that the dense bush of our land on Vancouver demanded an indefinite period of land clearing before pasture for a cow could be dreamed of! We were advised to familiarise ourselves with heavy hand laundry work, but at Shawnigan we had from the first a washing machine and later on a heated rotating ironer. We learned to glaze windows which never broke, and to repair broken window cords. We also learned to pluck and dress poultry and game, which really did prove to be most useful. But we did not learn how to manage a kitchen stove burning wood, not coal, which would have been invaluable.³⁵

The differing conceptions of metropole and colonial femininities embodied in technical instruction in England were symbolised in the buildings. Much colonial training was separated from mainstream technical instruction into separate departments or institutions.³⁶ This physical separation demarcated boundaries between women studying domestic subjects for home life and those women for whom the meanings around domesticity were more flexible and linked to notions of a new future.

Domesticity and skill in colonial training

The production of English colonial female identities was related to particular gendered understandings of training. The requirement for adaptability led to the scientific aspects of domestic economy being downplayed in much colonial training. This contrasted with the increasing

stress on the scientific in domestic training for elementary schoolgirls and in courses for middle-class women like the household science degree course on which Alice Ravenhill taught at Kings College, London.³⁷ Miss Turner thought 'the theoretical side ... of little value for ordinary colonial life and practical capability and adaptability ... of the first importance'.³⁸ In contrast, Miss Fedden thought that if scientific processes were understood, deftness would come later with practice.³⁹ The Yorkshire Ladies Council of Education walked a middle line by emphasising 'the laws of nature and discoveries of science upon the work of every-day domestic life', while also endeavouring 'to preserve in their practical training all of the old savour that is worthy and useful'.⁴⁰ Reta Oldham, one of two high school headmistresses who had developed the test for domestic training introduced by the CIL, pronounced the tests given hitherto at Studley College 'too refined in character'.⁴¹ Much of the rhetoric and practice in colonial training conflated science and technology, as labour saving devices were eschewed. To replicate colonial life, neither the Leaton nor Stoke Prior Training Homes had the servants or household conveniences to which middle-class women were accustomed.

Downplaying scientific and technological aspects and stressing an association with feminine characteristics was particularly evident in the newer areas of training and employment, like gardening and agricultural work. Professional gardening for women was a relatively new venture at the start of the twentieth century. Women were first apprenticed at Kew Gardens in 1895 and in 1897 two women were awarded the Royal Horticultural Society's Victoria Medal of Honour.⁴² Female emigration societies regarded as pioneers women like Mary Hewetson, who obtained the Royal Horticultural Society's first class certificate at Swanley before emigrating with the South African Colonisation Society to Pietermaritzburg to supervise a garden of thirty acres with 'Kaffir labour'.⁴³ Yet, representations of gardening in women's emigration literature built on an association between femininity and nature and downplayed the skilled aspects of the work. Some aspects of gardening, like horticulture, were seen as 'especially suitable for girls and women'.⁴⁴ Some emigrant women were also successfully setting up dairy poultry and pig-rearing businesses in the British colonies. Like horticulture, poultry and bee-keeping were portrayed as 'especially suitable for girls and women' and were depicted as 'the lighter forms of agricultural work', building on a negative association between strength and skill.⁴⁵

Some of these areas in which women were being successful, like dairy-work, were becoming increasingly scientific,⁴⁶ yet agricultural work and gardening for women were also represented in emigration literature

through the image of the yeoman farmer's wife. Emigration societies envisaged a role for would-be emigrants comparable to the earlier eighteenth century farmer's wife. With their lack of water, gas, electricity, drainage and sanitation, both Leaton and Stoke Prior colonial training institutions resembled eighteenth century homes.⁴⁷ Harking back to an older 'pre-scientific' era⁴⁸ downplayed the scientific and technological aspects of the work. The 'housewifery' of early eighteenth century farmer's wives made an important contribution to the family economy. As Bridget Hill has illustrated, eighteenth-century farmers' wives played a key role in the management of the farm and generally assumed responsibility for milking, cheese and butter-making, poultry, pigs, vegetable gardens and orchards.⁴⁹ Keith Snell has argued that the eighteenth century term 'housewifery' was used in a very loose way to cover a wide range of skilled crafts.⁵⁰ Similarly, in the rhetoric of women's emigration, the most diverse training for colonial life was designated 'domestic', irrespective of the skill involved. Courses were described as indoor and outdoor domestic training,⁵¹ or as 'rural economy', a term which stressed the similarity with domestic economy. Miss Fedden's syllabus entitled colonial housecraft offered domestic training, horticulture and dairywork. But in addition, she thought courses for 'colonial housewives' should include such skills as papering and whitewashing walls, painting woodwork and staining floors, instruction in mending a pane of glass, soldering a leaky kettle, constructing a clay oven, understanding camp sanitation with reference to the direction of the winds and the flow of streams and managing 'the native races'.⁵² As with eighteenth century 'housewifery', colonial 'housewifery' operated with a diverse view of the 'domestic', in what was essentially economic activity, despite its designation as 'domesticity'.

This diversity of training in female domesticity included an understanding of domesticity that was class-based; for only middle-class women were depicted as able to view physical and 'menial' tasks 'suitably' and in a new light:

Happily most women above the servant class at home have ceased to talk about 'menial' work. ... They will learn that ... those who have hitherto been mere hewers of wood and drawers of water remain so because they rely solely on the muscles with which nature has endowed them, and forget that intelligence and thought are the first conditions of all good work ... If any work is menial, it is so because of the worker not because of the work ... The fact that well born girls do and do thoroughly much with their hands which a generation ago would have been considered unladylike may make poorer girls ashamed to

shirk every kind of disagreeable drudgery. This particular distinction is at present almost an infallible indication of class.⁵³

Applying 'intelligence' to otherwise 'menial' tasks legitimated middle-class women taking on physical work otherwise viewed as appropriate only for working-class women and girls. This was particularly the case in areas associated with agriculture, where, as Bridget Hill and Harriet Bradley argue, farmers' wives not only retreated from active labour but gained a contempt for manual labour, which separated them from their social inferiors, polarised class differentials and increased class consciousness.⁵⁴ Applying 'intelligence' to 'menial tasks' bridged such class differentials, as well as off-setting the lack of 'science' that was the hallmark of professionalized domestic training for middle-class women at this time.

The notion of 'intelligence' employed in the rhetoric of colonial training to recast manual labour as suitable for emigrant gentlewomen, drew on an educational language, which headmistresses of middle-class girls' high schools in England increasingly employed from the 1890s to differentiate 'uncultured' but 'bright' working-class schoolgirls from their 'cultured' middle-class counterparts. Headmistresses translated this representation of cultural difference into a pedagogy of 'intelligent learning', arguing that no matter how bright they were, elementary schoolgirls had not learned 'to think' and so could not learn 'intelligently'. Headmistresses related the elementary schoolgirl's lack of 'intelligent learning' to her 'want of cultivation of taste and feeling'.⁵⁵ The notion that 'hewers of wood and drawers of water remained so' because they forgot 'intelligence and thought' drew on this contemporary gendered language of 'intelligence', which conflated culture and class.

A combination of culture and class was seen as the hallmark of women, like those from Leaton, 'who from an Imperial point of view it is pre-eminently desirable to emigrate'. These women were thought to have 'a better and wider influence than an uncultured woman can ever have'.⁵⁶ Both this conflation of culture and class, and the complex inter-relations of gender, class, ethnicity and 'race', drew on discourse that had underpinned the 'civilising' mission of women within the British colonies from the early nineteenth-century.⁵⁷ The idea that those who had 'hitherto been mere hewers of wood and drawers of water' remained so because they relied 'solely on the muscles with which nature has endowed them', harked back to the Enlightenment argument that middle-class women were superior in reasoning to working-class women, developed by Locke and popularised by Maria

Edgeworth.⁵⁸ This inter-related with issues of both gender and 'race' through the contrast posed between 'brute force' and 'reason' found in early nineteenth-century evolutionary histories of women, which differentiated women and men in terms of strength and reason by comparing ill-educated English women with the 'savage' on the lowest rungs of a hierarchical ladder of societies.⁵⁹ In this view, mental powers became more important than physical strength as society advanced towards 'civilisation' and reason was equated with racial superiority as British and non-western women were located within an Enlightenment framework which depicted societies hierarchically in terms of reason, 'progress', 'improvement', and 'civilisation' and placed British society at the pinnacle.⁶⁰ The representation of physical labour in terms of its 'intelligent' practice by 'cultured' women re-configured Enlightenment ideas. It provided a rationale to enable middle-class women to turn to domestic work as genteel lady helps and colonial wives. It also enabled them to take up the physical work deemed necessary for colonial expansion, while holding on to the hierarchies through which the social relations of colonialism had historically been framed. As a result, colonial training fitted one of the CIL's aims: 'to keep the British Empire for the British race'.⁶¹

Colonial training played its part in developing race-thinking most explicitly through instruction in the 'management of the native races'. Fair and kind management was seen to lay at the heart of the race-question.⁶² Miss Fedden gave 'hints' as to the treatment of 'the West Indian negro, the Chinaman cooks of British Columbia and Australia, and the Kaffirs of South Africa'. Particularly in South Africa, she noted, many women experienced difficulty in dealing with 'the Kaffir cook or houseboy.' Novices were either too stern or too kind, with the result that they engendered resentment or invited, albeit unconsciously, familiarity.⁶³ Discourse around 'familiarity' encoded the sexual fears that Julia Bush has illustrated were integral to popular stereotypes of 'savages', fomented in the series of 'black peril' scares that swept South Africa between 1893 and 1913.⁶⁴ In colonial training, exhortations about 'familiarity' in the management of 'native races' related to the setting of sexual boundaries around fears of miscegenation.⁶⁵

Contesting training and education that was 'in accordance with the best English Traditions'

In 1909, despite the lofty rhetoric of much English colonial training, Mary Urie Watson, director of the MacDonald Institute, the women's branch of the Ontario Agricultural College in Guelph, Canada, contested the training being given in England to lady-emigrants. Watson approved of training, but thought that emigrants had to unlearn much of what they had been taught,

because their training had not taken local conditions into consideration.⁶⁶ Watson thought the solution was either to establish a training headquarters in England with two branches, one giving training suitable for South Africa and one for Canada, each run by a teacher familiar with local conditions. Alternatively, a training school might be established in the colonies to which emigrants could be sent for training before they sought situations.⁶⁷

Her proposals held currency among some British emigrants. In her 1904 account of her visit to MacDonald Institute, Miss Vernon had praised the usefulness of the Institute's professional housekeepers course for anyone wishing to earn a living in Canada. The professional courses run by the department lasted two years. One course was in domestic science for teachers and a second for professional housekeepers. The syllabus for professional housekeepers included physiology and hygiene, plain cooking, foods, sanitation, household economics, marketing, dietetics, child study, home ethics, art in the home, home nursing and emergencies, laundry, sewing, practice work. There was also a short, chiefly practical, three-month non-professional course, which Miss Vernon noted would be very useful in teaching Canadian cooking methods.⁶⁸

The *Imperial Colonist* also carried advice about the necessity of additional overseas training for teachers and nurses. Binnie Clarke noted that while English degrees and diplomas would probably be accepted for teaching in private and preparatory schools in Canada, those wishing to work in Canadian public schools would need to spend six months taking a special course in the methods of Canadian schools.⁶⁹ Nurses with two years training in England were also warned that they would do well to take a year's training in Canada to learn Canadian methods and would find themselves 'of more value than if they started nursing at once on arrival in Canada after three years training in England'.⁷⁰ However, when twelve posts were advertised in England by the CIL for girls to train as probationers in the general hospital at Winnipeg there were no takers.⁷¹

As in England, a small class of entrepreneurial women overseas set themselves up to train emigrants in their homes and on their farms. In 1902, Mrs Horsefall advertised training in her home for a number of young gentlewomen 'to undertake a course of training in house, garden and dairy work, together with the education and accomplishments befitting a lady'.⁷² In 1910, J.G. wrote of her agricultural college for emigrants in Tasmania:

I have every convenience for the College; a large comfortable house situated on 40 acres of land partly under orchard in full bearing and well suited for the growing of all kinds of

vegetables and fruit, also for poultry raising and growing food for them. I also have a 200 acre farm close by, so any who wished to go in for agriculture on a larger scale or learn general of mixed farming would have every opportunity of doing so.⁷³

The independent life of a farmer had appealed to JG, for whom the idea of becoming a companion or a clerk was an anathema and she had taken up farming to prove it could be carried on successfully by women in the state. She had gone in for mixed farming, which she viewed as having qualified her to teach others whatever branch they wish to take up, and she wanted other girls to profit by her experience. She marketed to a particular niche in the classed market: 'I fancy those who would come out to take up this kind of work would not have any large amount of money at their disposal and they would need all they have when making a start for themselves ... officers daughters are those with whom I have the greatest sympathy as I am an officer's daughter myself'.⁷⁴

Some were well-qualified former emigrants 'made good'. Eunice Watts had studied for two years at Swanley College, held a Royal Horticultural Society first class diploma and Nova Scotia School of Horticulture diploma and was on the staff of *The Canadian Horticulturist*. She wrote to the BWEA offering to take women on the family farm of 280 acres. Her course of training included horticultural, bee, fruit and mixed farming and household training. She already had one student from Swanley and was planning on extending.⁷⁵

Other English women went overseas with a view to teaching in colonial training colleges. Miss E J Gerrard, formerly a lecturer for the Royal Agricultural Society of England was responsible for tuition at Miss Bainbridge-Smith's Haliburton College for Gentlewomen. Established in 1913 on Vancouver Island, Haliburton College offered household and farm training at £85 a year to students whom Miss Bainbridge-Smith hoped would subsequently buy land in the neighbourhood, and 'carry on their own business with the friendly advice of the college teachers'.⁷⁶

Other women travelled in the other direction to market a range of overseas experience as teachers in England. Mrs Thorburn Clarke, the instructress in the colonial training department of the Lady Warwick Hostel at Reading, was colonial by birth. The farmhouse at Hoebridge Farm, Woking Surrey, established by Lady Gwendoline Guinness, was equipped under the direction of a Canadian graduate of MacDonald Institute and instruction in household work was 'as nearly as possible under the conditions obtaining in Canada'. It included general housework according to Canadian practice, laundry work,

the cooking of all dishes common in Canada, as well as bread making, butter making, and fruit bottling as practised in every Canadian household. Facilities were also available for acquiring experience with poultry and practice in milking if required.⁷⁷

The CIL's solution to the problem of gaining local experience was a policy of establishing training settlements for educated women in the colonies.⁷⁸ After much deliberation and a visit to Canada by CIL president Caroline Grosvenor, the CIL opened the Princess Patricia Ranch in 1913 on 15 acres of land near Vernon, British Columbia. The Ranch was set up as a farm settlement for women to provide occupations, experience and familiarisation for lady emigrants.⁷⁹ A farm settlement in South Africa also advertised in the *Imperial Colonist*. Here, six to eight women and girls could put into practice what they learn theoretically at the nearby School of Agriculture. Servants were kept for both indoor and outdoor labour, 'as it is essential that those who wish to understand housekeeping in South Africa should learn how to manage the natives'.⁸⁰

While English institutions like Leaton made a positive virtue of their lack of facilities, overseas institutions stressed their amenities, in much the same ways as middle-class girls' schools in England advertised their facilities.⁸¹ Mrs Horsfall's training school was 'in a very healthy and pretty part of Canada on the sea coast'.⁸² Advertisements for training schools were couched in re-assuring and very English terms.⁸³ Descriptions of Halliburton College pointed to its located 'in a most attractive part of British Columbia amidst woodland scenery close to the sea where 'good bathing' could be had and its 'delightful' climate.⁸⁴ The settlement in South Africa drew on its historic legacy as the residence of the early presidents of the Transvaal Republic, when Potchesfstrom was the capital from 1839-1865.⁸⁵

Such descriptions harked back to discourses of the sublime and the historic that had their origins in eighteenth-century European thinking and suffused both metropolitan and white settler identities through minds tutored in stories, myths, histories, poetry and music as part of cultural imperialism. As descriptions, they appealed to 'educated' English metropole and colonial sensibilities by linking pastoral landscapes, invented tradition and discourses of nature. Such descriptions frequently located middle and upper middle class female education, and in this context colonial training, in the genteel country house setting, and portrayed female educational and training spaces as the home.⁸⁶ As Ian Grosvenor argues, 'home' represented a particular place at the heart of the nation

and discourses of national identity – but the landscapes and spaces of female educational spaces articulated as homes were contradictory for women in both metropole and colony. They represented familiarity and safety while offering opportunities for self development.⁸⁷ Such contradictions were particularly the case in the colonial setting, where discourses surrounding training spaces were also contingent with European tropes of travel as 'freedom' 'concerned with self-realization in the spaces of the Other'. As Inderpal Grewal argues, European understandings of travel as 'freedom' erased or conflated mobilities that were not part of Eurocentric imperialist formations and became ways 'by which knowledge of a Self, society and nation was, within European and North American culture, to be understood and obtained'.⁸⁸

Not all overseas women involved with emigrants were convinced of such training endeavours, however. Mrs Burns, president of the Calgary women's hostel committee, Alberta, wrote:

It is difficult for us who are natives of Western Canada, and have had experience on farms and ranches, to comprehend how any person with knowledge of the conditions of life on farms in Manitoba, Alberta or British Columbia could possibly recommend such a step to any body of women ... When farming is advocated as a career for women in this country, I most positively and definitely state that it is an absolutely unpractical visionary scheme, foredoomed to failure.⁸⁹

From a desire to prevent 'unsuspecting, romantic and inexperienced women' wasting time and capital on a scheme, which, she thought, could not fail to entail bitter disappointment and disillusion, she urged woman and girls contemplating going as farm pupils to seriously reconsider.⁹⁰ Not only were women 'certain to fail as farmers', but, warned Mrs Burns, they were likely to find themselves 'looked on askance by their Canadian neighbours as women of eccentric and suspicious character.'

Conclusion

As increasing numbers of single middle-class English women turned to emigration, their training helped construct new types of middle-class femininities, which were implicated in British nation building and colonial exploitation. Institutionalising the training largely within separate establishments and buildings, colonial courses aimed to foster particular femininities for the woman who was not to be retained within the bounds of England's shores.⁹¹ Within much rhetoric surrounding colonial

courses the scientific and technological element was downplayed. But women delivering colonial training also stressed domesticity to develop newer forms of training that included subjects generally seen as the preserve of men. Stressing domesticity provided women with the language and a range of structures for opening up training and possibilities for women in the British colonies that could be accommodated within a range of liberal and difference stances. It also provided an opening for economic activity for entrepreneurial women alongside more formal county council and higher education training initiatives. But stressing domesticity was two-edged in that women's employment could be appropriated as unpaid domestic labour when colonial situations no longer required women to adopt what were in essence economic roles.

The gendering of skill, class and race-thinking in vocational training related to complex vocational identities, to the regulation of sexuality, and to the management of boundaries between peoples of different nations. These formed part of national identities and were implicated in English nation building and colonial relations. The critique of English colonial courses from Canada for their lack of knowledge of local conditions hinged around who had the right to define the content of colonial training. This, in turn, linked to who had the right to construct and foster particular vocational identities and femininities related to national identities. In this debate, constructed and imagined landscapes and terrains also played their part. Many of those running English training establishments imagined rugged landscapes and difficult terrains about to face the would-be emigrant. In contrast, depictions of rural and historic idylls by overseas training establishments spoke reassuringly to educated notions of English Sensibility that stretched back the Enlightenment and formed part of wider colonial appropriation of overseas territory and the re-fashioning of colonial landscapes. The two-way traffic of English women moving to Canada to train Englishwomen for a new future, and those making the journey in reverse, demonstrates that women's engagement in nation-building for middle-class women on the move was a complex and shifting phenomenon.

Notes

1. 'A visit to the Colonial Training College for Ladies at Stoke Prior', *Imperial Colonist* (1912), 102-5.
2. Una Monk, *New Horizons. A Hundred Years Of Women's Migration* (London, 1963), 16. It closed in 1914 when the war caused a drop in emigration, James Hammerton, *Emigrant Gentlewomen*, (London, 1979), 159.

3. 'Where to train and how to train', *Imperial Colonist* (1902), 92. Swanley had provided training women in bee-keeping, dairywork and poultry-farming since 1891.
4. 'Colonial Training Branch, Horticultural College', Swanley, Kent', *Imperial Colonist* (1903), 32.
5. Deborah Kellaway, *The Virago Book of Women Gardeners* (London, 1996), xv; 'Country and Colonial Training School for Ladies, Arlesley, Herts', *Imperial Colonist* (1910), 82; 'Practical preparation', *Imperial Colonist* (1914), 24; 'Where to train', 95; 'Overseas training school for women, Hoebridge Farm, Woking', *Imperial Colonist* (1914), 79-80.
6. Sybil Brassey, 'Technical training', *Imperial Colonist* (1902), 116. In the 1890s, technical education was defined by Bernhard Samuelson, a Victorian campaigner for technical education, as 'everything which prepares a man or woman for the walk of life which he or she intends to pursue', quoted in Penny Summerfield and Eric J Evans (eds), *Technical Education and the State Since 1850: Historical and Contemporary Perspectives* (Manchester, 1990), 2.
7. 'Where to train', 92; 'Training for women students', *Imperial Colonist* (1905), 4.
8. 'The training of women in the domestic arts for home or colonial life', *Imperial Colonist* (1902), 42,43.
9. 'Where to train', *Imperial Colonist*, 92,93; 'Domestic economy training', *Imperial Colonist* (1911), 304.
10. 'Where to train', 96.
11. 'Training home in Devonshire', *Imperial Colonist* (1904), 3.
12. 'Where to train'; Colonial Intelligence League [CIL], *Minutes*, 10 Oct., 1912; 'Colonial Branch ... Swanley', 23. CIL records were consulted at the Womens' Library.
13. Hammerton, *Emigrant Gentlewomen*, 159.
14. Ibid.
15. Ibid, 160.
16. Ellen Joyce speech at a 'private conference at HRH Princess Christian's House', *Imperial Colonist* (1904) 87.
17. Mrs Joyce, 'Opening for educated women in Canada', *Imperial Colonist* (1906), 102.
18. Ibid.
19. Susan Jacquel, *A Flannel Shirt for Liberty: British Emigrant Gentlewomen in the Canadian West, 1880-1914* (Vancouver, 1982), xv
20. Trev Broughton and Ruth Symes (eds), *The Governess: An Anthology* (London, 1997).
21. The Association of Headmistresses (AHM), interested in colonial opportunities for high schoolgirls, and the CIL agreed not to duplicate efforts. AHM representatives were given half the seats on the CIL executive and agreed to assist the CIL publicise emigration in the high schools.
22. CIL, *Annual Report*, 1911-12, 8.

23. CIL, County organisation committee minutes.
24. Caroline Grosvenor, Open Letter from the Colonial Intelligence League, *Sutton High School Magazine*, Spring 1914. With thanks to Stephanie Spencer for this reference.
25. 'Country and colonial training school for ladies, Arlesley, Herts', *Imperial Colonist* (1910), 82.
26. Marion Cran, *A Woman in Canada* (London, 1910), foreword, 22, reprinted in Jacquel, xvii.
27. CIL, *Annual Report*, 1912-13, 26.
28. Ibid., 6.
29. 'A visit to ... Stoke Prior; 'Canadian home and school for gentlewomen', *Imperial Colonist* (1902), advert; Hammerton, 157.
30. 'A visit to ... Stoke Prior', *Imperial Colonist* (1902), 104.
31. Miss Fedden, 'Colonial housecraft', *Imperial Colonist* (1913), 105-109.
32. Ibid.
33. 'Domestic economy classes', *Imperial Colonist* (1910), 147-8.
34. CIL minutes, 4 Oct. 1911.
35. Alice Ravenhill, *The Memoirs of an Educational Pioneer* (Toronto, 1951), 174.
36. 'Colonial Training Branch ... Swanley', 33.
37. Carol Dyhouse, *Girls Growing Up in Late Victorian and Edwardian England* (London, 1981), 167-9.
38. CIL, *Minutes*, 19 Oct. 1919.
39. Fedden, 105.
40. 'The training of women in the domestic arts', 43.
41. Miss Reta Oldham, head of Streatham Hill High School 1898-1923, and Miss Florence Gadesden head of Blackheath High School 1886-1919 devised the tests for applicants. For the involvement of headmistresses in the CIL see: Joyce Goodman, 'Their market value must be greater for the experience they have gained: secondary school headmistresses and empire, in Joyce Goodman and Jane Martin (eds) *Gender, Colonialism and Education: the Politics of Experience* (London, 2002).
42. Kellaway, xv.
43. 'Short biographical note of Mary Hewetson, *Imperial Colonist* (1907), 3.
44. 'Horticulture as a career for women', from *The Times*, 26 Dec. 26, reprinted in *Imperial Colonist* (1908), 8.
45. 'Overseas training school', 79.
46. 'The training of dairy teachers, memorandum issued by the Board of Agriculture, Nov. 1893', *Record of Technical and Secondary Education* (1894), 157ff.
47. Ibid., 50,77,104.
48. 'The farmer's wife, from *Canadian Impressions* by E.S.Buabridge', *Imperial Colonist* (1911), 386; Pamela Sharpe, 'Continuity and change: women's history and economic history in Britain', in Pamela Sharpe (ed.), *Women's Work: the English Experience* (London, 1998), 27
49. Bridget Hill, *Women's Work and Sexual Politics in Eighteenth Century England* (London, 1994), 30.
50. Keith Snell, *Annals of the Labouring Poor* (Cambridge, 1985), 86.
51. 'The training of women in the domestic arts', 42.
52. Fedden, 108.
53. 'Horticulture as a career', 8.
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55. Joyce Goodman, 'Constructing contradiction: the power and powerlessness of women in the giving and taking of evidence in the Bryce Commission, 1895, *History of Education*, 26/3 (1997), 187-307.
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57. Judith Simon et al, *Nga Kura Maori: the Native Schools System 1867-1969* (Auckland, 1998), 2; Niral Yuval Davis, *Gender and Nation* (London, 1997).
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62. Louise Knightley, quoted in Ibid, 116. For discussions of the South African 'race-question' with English secondary school girls, see Joyce Goodman, 'Des enseignantes du secondaire dans l'Empire Britannique: Identités professionnelles, genre et mission religieuse, *L'histoire d'Education*, 98 (May 2003), 109-132.
63. Fedden, 'Colonial Housecraft', *Imperial Colonist*, 1913, 108.
64. Julia Bush, *Edwardian Ladies and Imperial Power* (Leicester, 2000), 113.
65. Fedden, Colonial Housecraft, *Imperial Colonist* (1913), 108.

66. Ibid.
67. Ibid.
68. Miss Vernon, Macdonald Institute, Guelph, Ontario, *Imperial Colonist* (1905), 123, 125; Miss Vernon, 'A Canadian Training College', *Imperial Colonist* (1904) 15-16; Mary Urie Watson, 'MacDonald Institute, *Imperial Colonist*, 1909, 57.
69. Miss Binnie-Clarke, 'Are Educated Women Wanted in Canada?' part 111, *Imperial Colonist* (1910), 52.
70. *Imperial Colonist* (1912), 68
71. CIL, minutes, 10 Jan. 1910.
72. 'Canadian home and school for gentlewomen', *Imperial Colonist*, (1902), advert.
73. 'A Lady's Farm in Tasmania', *Imperial Colonist* (1910), 57.
74. Ibid.
75. 'Opportunities of Training for Ladies', *Imperial Colonist*, (1909), 41
76. 'Training for ladies in British Columbia, *Imperial Colonist*, (1913), 225-61; Hammerton, *Emigrant Gentlewomen*, 160.
77. 'Overseas training school for women', *Imperial Colonist* (1914), 79-80.
78. CIL minutes, 8 March 1911.
79. Initially a success, it closed in 1928 after the difficulties caused for emigration by the First World War, when the flow of emigrants dried up. CIL, *Annual Reports*, 1911-12, 9-10; 1913-14, 10-11; Hammerton, *Emigrant Gentlewomen*, 160; Monk, *New Horizons*, 142.
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88. Inderpal Grewal, *Home and Harem: Nation, Gender, Empire and the Cultures of Travel* (Leicester, 1996), 2,4,65.

89. 'Farming for women', *Imperial Colonist* (1910), 127.
90. Ibid., 128.
91. Thanks to Stephanie Spencer for this insight.

Is your WHN Membership up to date ?

Reminder - Subscriptions for the renewal of WHN membership were due in September.

If you have not renewed yet and you usually pay annually by cheque, please can you send payment to our Membership Secretary, Fiona Reid. Membership rates and a printable registration/renewal form is available on the back outside cover of this magazine, or at www.womenshistorynetwork.org (follow the link 'Join WHN').

Please send to: Fiona Reid, Membership Secretary, Women's History Network, HLASS, University of Glamorgan, Trefforest, Wales CF37 1DL. Email: membership@womenshistorynetwork.org

BOOK REVIEWS

Caroline Bland and Máire Cross (Eds.), *Gender and Politics in the Age of Letter-Writing, 1750-1850*

Ashgate Publishing Ltd: Hampshire, England and Burlington, USA, 2004. £45. 0754638510 (hardback), pp. ix + 270

Review by Fiona Reid
The University of Glamorgan

This volume aims to breathe “new life into old letters”, and succeeds by presenting us with a diverse and fascinating array of correspondence ranging from the middle of the eighteenth up to the late twentieth century. The geographical scope is broad too, featuring letters from America, Britain, France, Germany and Austria. Most, but not all of the chapters focus on women’s letters, and the range is immense, including letters from political prisoners and political militants as well as letters to officials, to the press and to family members. There are contributions from the well-recognized elite and from those who were previously unknown.

One of the most enjoyable aspects of this book lies in the way in which it demonstrates the range of letter writing available, and it allows the letters themselves to provide glimpses into the social, political and cultural worlds of the authors and their readers. Clare Brant’s exploration of eighteenth century letters and the politics of vindication reveals much of the concepts of contemporary citizenship whereas Krista Cowman’s work on letters to Eleanor Keeling Edwards reveals the diversity of organized socialism in the later nineteenth century. Letters tend to be written by an educated elite – and this is the correspondence most likely to have been preserved – yet we can hear the occasional “rare voice” from history, as when Sian Reynolds quotes from a wet nurse’s husband in nineteenth century France.

Some of these letters are personal and private whereas others were written for a public audience but all are political in that they are responses to extraordinary circumstances whether war, political turmoil or revolution. As a result, the chapters are linked by themes of power, gender and political tension. Yet to preserve a coherent structure, chapters have been arranged in a broadly chronological order, and in two sections. The first section spans the period 1750-1850, and deals with letters written during the period of enlightenment and revolution; the second section takes

us from 1850 to 2000 and deals with correspondence in times of trial. These are mainly set in very specific and well-recognised moments of turbulence such as France during the Dreyfus Affair or Nazi Germany during the Second World War.

The editors contend that epistolary studies can be advanced by examining the relationship between gender, politics and letters. This volume demonstrates the way in which political rituals work through gender relations as the letters reveal codes of behaviour and language. This is especially prominent in Christa Hämmerle’s chapter on the petitioning letters of lower-class Austrian women. Written by women to men—sometimes via a male intermediary in the form of a clerk—they demonstrate some of the rules and the cultural mores associated with definitions of both class and gender. In particular, these letters indicate the extent to which a knowledge of rhetorical rules governed social relations and the strategies of the poor.

One persistent theme which emerges from this volume concerns the way in which the epistolary form has so often been the one legitimate site for particular forms of authorship. Anne-Françoise Gilbert argues that only through her letters to Rousseau could Henriette transgress the gender boundaries of late eighteenth century France. Similarly, Edith B. Gelles’ indicates that only through the genre of letter-writing could Abigail Adams express her political ideas during the period of the American Revolution.

This volume will be of immense value to those interested in literary, cultural and historical studies. The function and the variety of the epistolary form is considered in its historical context so as to highlight the relationships between politics and private life, and also to describe the evolution of the epistolary form as a genre.

Elizabeth Harvey, *Women and the Nazi East: Agents and Witnesses of Germanization*

Yale University Press: New Haven and London, 2003. £24. 0-300-10040-X (hardback), pp. vii + 384

Review by Molly Wilkinson Johnson
Department of History
University of Alabama in Huntsville

In her new monograph, *Women and the Nazi East: Agents and Witnesses of Germanization*, Elizabeth Harvey explores the activities and experiences of German women in the “Nazi East”—territory in the newly-conquered

Poland deemed historically and ethnically “German” by the Nazis. Many historical studies have explored the Nazi efforts to reshuffle the racial order of Eastern Europe through the expulsion and eventual murder of Jews and other groups. Harvey’s analysis of women’s activities shifts attention to a less often studied aspect of this racial restructuring – the Nazi government’s efforts to resettle “ethnic Germans” in the newly vacant territories left behind in the aftermath of the expulsions. As Harvey demonstrates, German women’s efforts to support ethnic resettlement substantially contributed to the broader racial project of the Nazis.

Harvey begins by focusing on German women’s previous “civilizing missions” – in the German colonies of Africa, as well as in Poland in the Weimar and early Nazi years. She then focuses most closely on the war years between 1939 and 1945, when the Nazis occupied and controlled much of Eastern Europe. After the Nazi government began resettlement efforts in 1939, German women – mostly young, single, middle-class women – began their work as “female missionaries of Germandom”(13). Harvey demonstrates that German women travelled East for a variety of reasons, ranging from an ideological commitment to the Nazi vision, to more mundane motivations such as a quest for adventure or the pursuit of job experience to advance a career. The primary responsibilities of German women included a variety of welfare and educational tasks, including work as “settlement advisors” for newly-arrived ethnic Germans and as teachers of their children. German women were also charged with inculcating into these ethnic Germans proper German values such as order, efficiency, cleanliness, and hygiene.

Although their activities were understood as traditional “women’s work,” these women nonetheless enjoyed opportunities, status, and a sense of importance not often experienced by women at the time. In the “Old Reich” (defined as the territory within Germany’s 1937 borders), German women were considered inferior to German men, and their societal contributions were defined almost exclusively through their reproductive efforts. Yet in the East, these women, although restricted to traditionally female tasks, were on the front-line of the Nazi project. As Harvey writes, “Straightforward ‘womanly tasks’ were imbued with grand historical significance, and the German communities who were the targets of this attention could be presented as endangered, needy, and grateful”(294).

Central to Harvey’s study is the question of female complicity in the crimes of the Third Reich. Although she concedes that women rarely observed and participated in the murderous side of Nazi racial resettlement, she nonetheless demonstrates what she calls

a “specifically female type of complicity”(299). In particular, women helped prepare the homes of expellees for the arrival of ethnic Germans who would claim these homes, helped redistribute confiscated property, and sometimes helped assess ethnic status. Harvey argues that the construction of these activities as “women’s work” – as activities confined to the private, domestic, non-political sphere – functioned to mask the very real contributions these activities made to the racial ambitions of the Third Reich. Indeed, as Harvey writes, “While focused on the welfare of the ethnic Germans, this ‘womanly work’ functioned to reinforce the National Socialist hierarchy of nationality and race in which the Jews were destined to have no place and the Poles no rights”(1).

Harvey’s study is impressively researched, making use of German and Polish archives and a wide variety of published sources. The sixteen oral interviews conducted by Harvey particularly enrich the book. They provide evidence not only of the Nazi years themselves, but also of the dialogue between past and present in terms of individual and collective memory.

Elizabeth Harvey’s important, well-researched book will be invaluable reading for all professional scholars, graduate/postgraduate students, and advanced undergraduate students interested in learning not only about twentieth-century European women’s history, but also about the contours of complicity and the conceptualization of race and ethnicity in Nazi Germany.

Eleanor Gordon and Gwyneth Nair

Public Lives. Women, Family and Society in Victorian Britain.

Yale University Press: New Haven & London. 2003. £30. ISBN 0-300-10220-8 (hardback) pp. 294

Review by Sari Mäenpää

University of Liverpool

Public Lives is a much-welcomed insight into Victorian middle-class lives in late nineteenth-century Britain. Its more specific aim is to capture the roles of women who expressed the wide array of divisions within this rapidly expanding socio-economic group. Even more importantly, it seeks to examine women’s importance in shaping the increasingly public image and culture of the British middle-class.

The book breaks many stereotypes of the Victorian middle-class family. As the title implies, it aims to re-assess the separate spheres thesis, especially challenging the analytical primacy given to categories of ‘public’ and

'private'. Apart from indicating a paradigm shift in defining and interpreting middle-class women's lives as public, the book makes entertaining reading. The alternating usage of qualitative and quantitative evidence works perfectly - the method the personal accounts of middle class women being used is both elaborate and imaginative.

Public Lives is divided thematically into seven chapters, each of which aims to cast light on different aspects of Victorian middle-class women's lives. The first chapter sets the scene by portraying Glasgow as a powerful economic force in the Scottish economy in a time of urban expansion. It focuses on the period 1851-1891, drawing its evidence from the Claremont/Woodside estate, which then was in immediate proximity of Glasgow's city centre. The area comprised twelve streets and about 1,400 households. The authors claim that the sample draws from all ranges of the middle class and therefore reflects its heterogeneity in terms of the values of property and a range of occupations. Remembering the authors emphasis on the diversity of middle classes in terms of wealth, occupations and life-style, using the above method to apply to the entire British middle-class seems slightly risky. However, this criticism may more accurately be directed at publishers who often tend to generalise academic research in hope of attracting wider audiences.

The demands the authors place on the importance of social proximity of residence to workplace certainly did not apply to all members of the middle class in the period. In other cities such as Liverpool, for example, which possessed a prosperous and influential middle class, ongoing research demonstrates how the wealthiest sections of middle classes, often the commercial elite, tended to move away from urban areas and were replaced by the professionals within expanding cities. In Liverpool there was a clear tendency for merchants to move into relatively isolated, rural havens even across the river Mersey to the extent that by 1901 the vast majority of commercial elite lived outside Liverpool. This, in turn, had implications for women, who then became more isolated from the many opportunities the urban environment offered in terms of socialising, consuming and participating in public life.

The penetration of the home by the world of work and business among the Glasgow middle class is a more common incident than one might assume. The book's appreciation of the problematic nature of 'private' and 'public' is its main contribution to existing scholarship, especially to the debate of the long-prevailed separate spheres paradigm in the nineteenth-century historiography. The authors strongly criticise the usage

of 'home' and 'private'— and 'domestic' and 'private'— which are too often used interchangeably when referring to nineteenth-century home life. The authors argue instead that the 'continued symbiosis of home and work' (p.114) was the most striking attribute of the home life of middle class families in the late nineteenth century due to the central importance of home based entertaining. Therefore, home served as a symbol of success and the family became increasingly in the public gaze. Again, it could be argued that the nature of the sample -an estate located close to Glasgow city centre- might paint a too optimistic picture of the centrality of home as basis of business and social life.

By shifting its focus to single women, the book continues to break a few more stereotypes of Victorian society. It is noted that single women were seen as constituting a problem in two contradictory ways: firstly, they were considered as unable to support themselves, and secondly they chose not to marry and preferred to pursue financial independence. The prevailing gender ideologies saw spinsters as abnormal and objects of pity. In fact however, only less than half of the middle class women included in the sample were married, the rest being either never married or widowed women. The authors claim that the notion of female dependence was an integral element of the rhetoric of separate spheres. Dependence on men was regarded as a badge of respectability, the natural and proper state of womanhood. They continue by arguing that social respectability required that women lived in a state of social and economic dependence on men (p.167). What could be added to this was that in fact, men's reputation and his success in the business world often *required* female dependence. Therefore, in terms of gender relations, female dependence becomes to be seen as an ideology advantageous to men.

The authors demonstrate that the cultural convention of female dependence was untrue and that unmarried middle-class women were far from dependent on men socially and economically. Accordingly, they claim that 40 per cent of households were headed by women by 1891 and similarly, a majority of unmarried daughters and sisters lived in female headed households, and not under the male patriarch. Furthermore, women of no stated occupation as a percentage of property owners in Glasgow increased from 18.5 in 1861 to 24.9 in 1911. New opportunities in education opened up for middle class women by the end of the century at the same time as many occupations for women, such as teacher, dressmaker, shop assistant and clerical work, were formalised and professionalised.

Public Lives challenges the notion of female economic and social dependency during the period. Even if it certainly remained a prevailing element of gender ideology of the time, it was socially constructed rather

than an economic reality. The concept of female dependency was especially useful in establishing the gender and authority relations of Victorian society. Although women remained weaker in front of the law as compared to men, they fought over the vote and for their right to education. They also found ways within the existing system to support themselves. The book ends up by stressing the importance of women's public role in constituting middle-class identity and culture. Gordon and Nair remind us of the existence of a multiplicity of public spheres—such as female and male public spheres—as well as the possibility of interaction and conflict between them. However, the book might slightly overplay the access of women to public institutions since the available evidence from Liverpool in the same time period suggests the defensive nature and active resistance of middle-class male-only institutions towards the extension of female public sphere and their suffrage. Nevertheless, *Public Lives* expands and re-shapes the understanding of the discourses of private and public and the wide array of activities in both spheres that middle-class women engaged in.

BOOKS RECEIVED AND CALL FOR REVIEWERS

The books below have been received by the Book Reviews Editor. If you would like to review any of the books below—or if you would like to add your name to the list of reviewers for future reference—please send your details, including area(s) of expertise/interest to: bookreviews@womenshistorynetwork.org

THE BLACK WIDOWS OF LIVERPOOL by Angela Brabin (Palatine Books)

Mrs BROWN IS A MAN AND A BROTHER: WOMEN IN MERSEYSIDE POLITICAL ORGANISATIONS, 1890-1920 by Krista Cowman (Liverpool University Press)

SEXUALITY; THE ESSENTIAL GLOSSARY, ed. Jo Eadie (Arnold Publishers)

SYMBOLS OF THE GODDESS by Claire Gibson (Saraband)

THE BOOK OF GUINEVERE by Andrea Hopkins (Saraband)

WOMEN AT THE FRONT: HOSPITAL WORKERS IN THE AMERICAN CIVIL WAR by Jane E. Schultz (University of North Carolina Press)

NEW BOOK PRIZE FOR WHN MEMBERS

WOMEN'S HISTORY NETWORK (UK) BOOK PRIZE

The Women's History Network (UK) will award annually (until further notice) a prize of £1,000 for an author's first book which makes a significant contribution to women's history or gender history and is written in an accessible style that is rewarding to the general reader of history. The book must be written in English and be published the year prior to the award being made.

The prize will be presented for the first time at the Women's History Network (UK) Annual Conference in Southampton in September 2005. To be considered for this competition, books should have been published during the year 1st January 2004 and 31st December 2004.

To be eligible for the award, the candidate should be a member of the Women's History Network (UK) and be normally resident in the UK.

We welcome submissions from any area of women's history or gender and history. The books will be considered by a panel of judges set up by the Women's History Network (UK) and an extract/précis of the successful book will be published in Women's History Review.

Those wishing to apply for the prize should first contact: June Purvis, School of Social, Historical and Literary Studies, University of Portsmouth, Milldam, Burnaby Road, Portsmouth PO1 3AS, England. Email june.purvis@port.ac.uk

Candidates for the 2005 Prize must apply by 15th January 2005, sending a formal letter to June Purvis and enclosing a copy of their book. Publishers may be asked to verify the 'first book' status of the author and title, and asked to send further copies of titles that are shortlisted in due course.

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Women's History Network 13th Annual Conference—Women, Wealth and Power

Quality Royal Hotel, Hull 3-5 September 2004

The setting of the Conference this year was a novel experience. Rather than staying at a university campus we stayed at a hotel located next to Hull station. This meant we were treated to the spectacle of people dashing around the platform as we ate our breakfast or listened to papers in the one seminar room that faced the platform. The setting in the middle of town also meant that we had the opportunity to visit the town as well as attend the conference if we wished. Having said that the programme was bursting with interesting papers and the books stalls full of 'must buy' books, so it was difficult to tear oneself away from the Conference and enjoy Hull in the sunshine or its nightlife.

Thanks to the bursaries available, there were well over 100 delegates from countries as far apart as China, Canada, Nigeria, Russia and Singapore. The title 'Women, Wealth and Power' was, as usual, interpreted as widely as possible. Papers focussed on topics as diverse as women's struggle for self-assertion in Ancient Rome, the politics of the Scottish court in the 16th century, Russian perspectives on British Women's Suffrage, the working lives of women in Whitby, Yorkshire, through to the feminisation of poverty in the Ukraine. Given this range, the impossibility of choosing which papers to hear was confirmed and I was left dithering to the last possible moment about which session to attend.

The conference began with a plenary paper by Hilda Smith on 'Women Intellectuals and Intellectual History: their paradigmatic separation' in which Prof Smith argued strongly that women intellectuals have been excluded from the field of intellectual history and that a new paradigm that allowed for their inclusion is needed. This would mean that elite male definitions of the intellectual would be challenged and allow new ideas to be incorporated into the field. This paper was a stimulating beginning for all of us who had arrived tired from long journeys and set the tone for the whole conference.

The main part of the conference started on Saturday. There were four sessions, each consisting of around five strands throughout the day followed by the AGM, Clare Evans Essay prize and the launch for the new Palgrave Gender and History series and the conference dinner - a full day indeed. In the first session, I attended papers by Marjorie Field, June Hannam and Ellen Jacobs examining the role that middle-class women played in philanthropic and social reform work, an area

where there is still much work to be done especially at the local and individual level. In the next session, I attended a really useful workshop on the sources of women's history available at the Brynmor Jones Library at the University of Hull. Their website is definitely worth perusing before starting a new project – www.hull.ac.uk/arc/. In the third session, I heard papers by Jane Liffen on fictional representation of Scottish fishwives and a paper by Margaret Ritchie on the oral histories of such women. This paper confirmed the importance of collecting oral histories of women workers in trades that are fast disappearing. The third paper was by Anne Anderson and returned to the theme of philanthropy again, this time focusing on the work of Lady Brabazon and Lady Dulcie. I must admit by the time the fourth session arrived, I was exhausted and took some time out to have a browse of the books on display. This proved an expensive but worthwhile diversion from the day's events.

On Sunday there were three more sessions plus another plenary. The sessions I attended included papers on Scottish women's lives in the nineteenth century by Jane McDermid and Jill Powlett-Brown; a session on elite British women which included a paper on elite women's networks in Bristol by Moira Martin and a paper on the extraordinary Lady Londonderry who owned huge tracts of land around Durham by Jonathan Mood. After lunch, the final plenary by Amy Erikson on women and property law was an unexpected delight. Not only was the paper full of fascinating insights into women's relationship to property in the early Modern period but the paper was also amusing and kept our interest during the final hours of a very packed conference. I didn't make the final session of the conference as I had to make my way home but the session included papers on amongst others women and popular culture and women and Islam.

Overall, the conference was a great success. I came away revitalised by all the interesting papers I attended and the discussion that followed both at the time and after over meals or a drink. Women's History is alive and prospering despite some of the problems some of us are experiencing in teaching women's history in our institutions. Although the programme was packed, the sessions were well-spaced and there was plenty of time to network over meals and breaks. The physical space was good, the hotel was comfortable and the organisation of the conference was excellent – these are all factors that can make or break a conference no matter how good the papers are. A big thanks to Amanda, Judith and their team of workers who made the conference one of the best I have attended in recent years.

Gerry Holloway,

University of Sussex



The bookstalls generate great interest



Amy Erickson delivers one of the plenary lectures

To view other photographs taken during the Conference in Hull, visit the WHN website:
www.womenshistorynetwork.org/conference2004

Next column

Clare Evans' daughter Merlin (on the right) presents the prize to Jane Hamlett at the Hull Conference

Report on the Clare Evans Prize 2004

This year there was a relatively small entry for the prize but all contributions were of a high standard. The winning essay was "Nicely Feminine, yet learned": student rooms at Royal Holloway and the Oxbridge Colleges in the late nineteenth century', submitted by Jane Hamlett who read Modern History at Mansfield College, Oxford and did an MA in Women's History at Royal Holloway gaining a distinction in 2001. She is now working on a PhD at Royal Holloway with Amanda Vickery on 'Gender and the Domestic Interior, 1850-1910'. The essay is a most enjoyable and original work, making good use of visual sources and offering subtle, complex arguments about gender and identity. The discussion of how both men and women used their domestic spaces effectively evoked the atmosphere of late nineteenth century college life. The prize was presented to Jane by Clare's daughter Merlin at our conference in Hull in September. June Hannam, one of the judges, presided. June, and the other judges, Ann Hughes, Liz Harvey, and Elaine Chalus will be carrying on for 2005. Details of arrangements for 2005 are given elsewhere.

The judges would like to encourage more entries, from postgraduates or independent scholars. All this year's essays were on British topics from the seventeenth to the twentieth centuries. We are keen to encourage work on different areas and periods. All the 2004 essays had addressed an interesting problem and studied a good body of source material. If they had a weakness it was that too much space was devoted to general, historiographical discussions, with insufficient treatment of the specific evidence. The judges would advise future entrants to address the general context of their topic more concisely.



OBITUARY

Joan Mason (1923-2004)

We are sorry to have to announce the very sad news of the death of one of our members, Joan Mason, who died on 20 March 2004, aged 80 years. Joan gained a degree in natural sciences from Newnham College, Cambridge, in 1946 and thereafter enjoyed a notable career as a chemist.

She carried out doctoral research at the Atomic Energy Commission and later taught at various institutions. In later years, she assumed a research role with the Cambridge department of the history and philosophy of science and worked with the Open University on gender studies courses. The focus of her work was the history of women scientists, on which she published a number of articles.

Joan was instrumental in the establishment of the Association for Women in Science and Engineering (AWISE) which she chaired until her death. AWISE is planning memorial events in her memory: details can be found at www.awise.org. In 2003 Joan was awarded an MBE for services to women in science. On a personal note, despite her busy life, Joan was always ready to help new researchers who shared her interest in the history of women in the sciences with advice, information and contacts.

She was instrumental in arranging numerous events, including an international conference on Women in the History of Science at Newnham College in 1999. Joan was an inspiration to the women who met her.

NEWS

Honorary Degree for Carol Dyhouse

University College Winchester has named Professor Carol Dyhouse as one of this year's (2004) recipients of an Honorary Degree. The award ceremony at Winchester Cathedral in October applauded Carol for, amongst other things, her influential work in revealing gender patterns in the history of women's schooling and education.

Carol's first book, *Girls growing Up in Late Victorian and Edwardian England* (Routledge 1981) provided new insights into the experience of women and girls in education that led a generation of historians of education to work in new ways. Her most recent book, *No Distinction of Sex? Women in British Universities 1870-1939* (UCL 1995), was a key point of focus in important national debates about the historical patterns of higher education for women and the role of teacher training in widening access. Her current project, *Gaining Places: Stagnation and Growth in the Proportion of Women in Universities*, links historical and current trends in gendered patterns of access to higher education to look at the changing proportions of women's and men's participation in higher education. Carol has also contributed to television and radio, bringing her new perspectives on the social history of women to a wider audience.

Professor Joyce Goodman from the School of Education at University College Winchester said that Carol's work had strongly influenced work at the college over the years: 'Professor Carol Dyhouse has made a major contribution to debates about patterns of widening access to higher education and the history of teacher training, both of which relate closely to the mission of the College'.

WHN News from around the UK

Relaunch of Northern WHN

The Northern WHN held its first meeting at the Hull conference in September. Around twenty delegates from Leeds, Sunderland, Durham, Hull, Manchester, Liverpool, York and elsewhere were present. Since this first meeting, NWHN has been joined by several more people who could not be present at Hull. An email discussion list has been established (to join or find out more, please contact: maureen.meikle@sunderland.ac.uk) and a number of activities were discussed. Preparations are being made for a postgraduate day to be held in Leeds in February 2005, please email Krista Cowman for further details (K.Cowman@leedsmet.ac.uk).

Midlands WHN

Midlands WHN hold two morning conferences a year, in May and November, which each attract around forty delegates. A Sixth Form Women's History essay competition is also run; this offers a £50 prize and is attracting an increasing number of entries each year. The 2004/5 competition will be launched in November. Contact Sue Johnson for further information: s.johnson@worc.ac.uk

Scottish WHN

SWHN currently has nearly one hundred members and runs regular meetings, day conferences and other initiatives and events. SWHN's Autumn conference, 'Making Cloth(e)s: Women, Dress and Textiles in Scotland' was held in October at the Royal Scottish Academy for Music and Drama in Glasgow. For further information please contact Yvonne Brown: yvonne.brown@ntlworld.com

West of England and South West WHN

West of England and South West WHN hold study days for postgraduates and new researchers, and an annual conference, at three institutional bases: University of West of England in Bristol, University of Exeter and University of Glamorgan. The Call for Papers for the eleventh annual conference, 'Women, Faith and Spirituality', to be held in Glamorgan on June 25th 2005, is advertised in this issue of *Women's History Magazine*. Please contact Fiona Reid: Fiona.Reid@uwe.ac.uk

The Women on Ireland Research Network

WOIRN, established in London in 1997, is a network of women researchers/writers/teachers, who are working on a diverse range of topics relating to Ireland, Irishness and the Irish diaspora. We are a fairly eclectic group and include historians, sociologists, geographers, literary theorists, etc. We have organised several conferences in Britain (London 1998, Liverpool 2002, London 2003) and we are now planning a conference in Ireland (Limerick 2005).

We have members not only in Britain and Ireland but also in the USA, Canada and across Europe. To enable us to communicate with each other more efficiently we are now relaunching our e-mail discussion list with a new address. This list will provide an opportunity for us to discuss research interests, share resources and alert each other to forthcoming events, new publications, etc. Researching Irish issues outside of Ireland can be quite an isolating experience and contact with those who share our interests can be invaluable.

If you would like to subscribe to the list simply send an e-mail to the address below:

m.c.power@liv.ac.uk with WOIRN list in the subject header.

CONFERENCE NOTICES/CALLS FOR PAPERS

Women's History Network (Midlands Region) Women, Health and Medicine in 19th and 20th Century Britain

November 27th, 9.30 am - 1 pm, University College
Worcester

Abstracts should be between 300 - 500 words with a clear indication of the issues which will be addressed. Papers will be 30 minutes with time for questions. Please send submissions to Sue Johnson, Humanities Department, University College Worcester, Henwick Grove, Worcester WR2 6AJ. Email s.johnson@worc.ac.uk

"Intersecting Gender in the Academy and Beyond"

The Sixth Annual Graduate Symposium on Women's and Gender History

**University of Illinois at Urbana-Champaign
March 10-12, 2005**

Twenty years after Joan Scott's "Gender as a Useful Category of Historical Analysis," the Sixth Annual Graduate Symposium on Women's and Gender History at the University of Illinois at Urbana-Champaign announces a call for papers in order to re-evaluate gender as a category of analysis. How has your work embraced or challenged gender? How does it intersect with other categories of identity such as race, class, and sexuality? How has activism around gendered issues shaped your work? How (and should) we as scholars integrate both activism and gendered identities into our lives?

We invite submissions from graduate students from any institution on any subject within its historical context that might grow out of a variety of disciplines and engage diverse methodologies and topics. We also welcome panel submissions of three papers united by a common theme, although each of the three papers will be judged on its own merits. Finally, we encourage panels analyzing the state of the field in women's and gender history, engaging with a work or body of work that has been influential in the field, and/or dealing with the intersections of gender, race, class, and sexuality.

Inspiration for papers or panels might come from (but are not limited to) the following themes: (Re)Defining Gender; Race, Gender, Class, and Activism; The Historiography of Race and Gender; Activism in the Academy; Women Encountering Women across Boundaries of Time, Place, and Identity.

CLARE EVANS PRIZE

for a new essay in the field of GENDER AND HISTORY

In memory of Dr Clare Evans, a national prize worth £250 is awarded annually for an original essay in the field of women's history or gender and history. The essays will be considered by a panel of judges set up by the Women's History Network and the Trustees of the Clare Evans Memorial Fund. The closing date is **31 May 2005** and the prize will be presented by Clare's daughter at the Women's History Network Annual Conference at Southampton in September.



Clare Evans was an outstanding woman who tragically died of cervical cancer on 30 November 1997, aged 37. Born in Bath, she read history at the University of Manchester, graduating in 1982. She continued her studies, registering for a PhD at the University whilst preparing and delivering seminars on feminist history, creating the first feminist historiography course in collaboration with Kersten England and Ann Hughes. By examining census material gathered by Quakers, Clare saw how the changing attitudes to women's participation in the workplace were revealed through the responses to major subsistence crises in the early to mid-nineteenth century. As part of this work, Clare showed how men were constructed as sole wage-earners yet women offered sewing schools to create a new Victorian model following mass unemployment in the cotton mills (a result of the American Civil War). Focusing on textile workers in the Nelson and Colne districts of Lancashire, she uncovered the reality of women's lives to free them from contemporary ideas as dependents within family wage ideology. Clare would have approved of an award which helped women to publish for the first time, giving them the confidence to further develop their ideas.

To be eligible for the award, the candidate must be

- a) a woman who has not yet had a publication in a major academic journal,
- b) not in a permanent academic position,
- c) normally resident in the UK.

The article should be in English, of 6,000 to 8,000 words in length including footnotes.

We welcome submissions from any area of women's history or gender and history. It is anticipated that the winning essay will be published in the *Women's History Review* (subject to the normal refereeing criteria). The completed essay should be sent to Ann Hughes by **31 May 2005**. Please also include brief biographical details (education, current job or other circumstances) and include a cover sheet with title only (not name) to facilitate anonymous judging.

Those wishing to apply for the prize should first e-mail, or write for further details to, Ann Hughes (hia21@keele.ac.uk) Department of History and Classics, University of Keele, Keele, Staffs, ST5 5BG.

To submit a paper or panel in a *hard copy format*, please send five copies of a 250-word abstract AND a one-page curriculum vitae for each paper presenter, commentator, or panel chair to: Programming Committee, Graduate Symposium on Women's and Gender History, 309 Gregory Hall, MC 466, 810 South Wright Street, Urbana, Illinois 61801.

To submit *by email*, please send ONLY ONE attachment in Word format containing all abstracts and curriculum vitae. The subject line of the email must read Attn: Programming Committee and should be sent to **gendersymp@uiuc.edu**. We cannot be responsible for submissions that do not meet these conditions.

For more information please contact April Lindsey at **gendersymp@uiuc.edu**

'Sisters are doing it for themselves' Women and Informal Port Economies

Liverpool, 24th - 25th June 2005

A two-day conference to be held jointly at the School of History, University of Liverpool, and Merseyside Maritime Museum.

Ports present a particular economic situation for women. Many of the economic opportunities available for women are casual, informal or otherwise hidden from history. In many port cities much of the adult male workforce may be absent for protracted periods of time, leaving women to fend for themselves and their families. At the same time, the high influx of sailors, visitors, and pleasure-seekers present many opportunities for women in the service industries.

This conference will examine the ways in which women were both affected by, and contributed to, the port economy. Possible themes might include: the port economy, casualism, types of work and occupations, politics and protest, ethnicity, race, networking, the family, crime and leisure. Workshop and poster sessions will complement the formal papers.

Proposals are especially encouraged from post-graduates and those outside the discipline of history. Bursaries will be provided for post-graduates. Please send proposals of 500-700 words **by 31st November 2004** to: Dr Sari Mäenpää (smaenpaa@liv.ac.uk) or Dr Sheryllynne Haggerty (sheryllynne@ntlworld.com) School of History, University of Liverpool, 9 Abercromby Square, Liverpool, Merseyside L69 3BX.

VIII Nordic Women's and Gender History Conference

'Gender and Knowledge - Gendered Knowledge'
Turku, Finland, 12-14 August 2005

The conference theme addresses questions of gender and knowledge in the context of history writing from various perspectives. Special attention will be directed at the relationship between feminism, theory and the conception of history on the one hand, and at questions of colonialism on the other.

The three-day conference will consist of lectures by keynote speakers and thematic workshops, in which individual papers will be discussed. Our three main panel discussions are: Gender and Knowledge - Use, Misuse and Non-use of History in Women's Studies; Colonialism and Nordic Women's History - Postcolonial Challenges; and Women's History Now - Segregation, Integration, Reproduction.

Keynote speakers: Professor Liz Stanley (Newcastle University) who will speak on the researchers' role as a producer of knowledge and Professor Clare Midgley (London Metropolitan University) who will explore the relationship between imperialism and the origins of modern western feminism.

The conference invites proposals for individual papers addressing theoretical reflections on all aspects of gender, history writing and knowledge, and papers linked to empirical questions and ongoing research projects. Proposals should fall into one of the conference theme sessions (found at <http://qhists2005.utu.fi/>) or address the general conference theme of 'Gender and Knowledge'. Free papers, commenting from other theoretical, methodological or empirical points of view are welcome too.

Please forward abstracts not exceeding 500 words, in any Nordic language or English, by **DECEMBER 31st 2004**, via our web page proposal form: <http://qhists2005.utu.fi/>

For information please contact Anu Lahtinen, Kvinnohistorikermötet, Suomen historia, historian laitoks, 20014 TURIN YLIOPISTO, Finland. Email: qhists@utu.fi

The West of England and South Wales WHN Eleventh Annual Conference - June 25th 2005

Women, Faith and Spirituality

The West of England and South Wales Women's History Network is holding its eleventh annual conference at the

University of Glamorgan on Saturday, June 25th 2005. Individual papers or panels are invited from academics, postgraduate students and independent scholars. We encourage submissions on a wide range of themes related to women, faith, and spirituality in any place or period. All papers must have some historical context and content.

Abstracts of no more than 300 words should be sent to Ursula Masson or Fiona Reid at: School of Humanities and Social Sciences, University of Glamorgan, Pontypridd, CF37 1DL
e-mail: umasson@glam.ac.uk or freid1@glam.co.uk

The deadline for abstracts is **Friday, 25th March 2005**. When submitting your abstract, please provide your name, preferred mailing address, e-mail address and phone number.

COMMITTEE NEWS

Elections

Autumn is the time of year when Steering Committee undergoes change as members who have served their terms of office retire and new volunteers take their place. This year Amanda Capern and Judith Spicksley retired, after having completed the exhausting task of organising our conference in Hull which, if you were there or have read the conference report in this issue, you will know was a highly successful— and enjoyable— event. Amanda was also our hard-working membership secretary, a role which has now been taken over by Fiona Reid. Publicity officer and convenor Elisabeth Klaar also stepped down; Lissy made a major contribution to the work of the committee, applying her marketing expertise and incisive understanding to areas too numerous to mention. A big thank you must go to all three.

Three new members were elected to the steering committee at the AGM held in September in Hull. Gerry Holloway, lecturer in life history and women's studies in the Centre for Continuing Education at the University of Sussex, joins the committee. That should really read 'rejoins' as Gerry has already completed one term of office on the committee some years ago and it is good to know that this has not deterred her from returning! Gerry is joined by Elizabeth Foyster, lecturer and director of studies in history at Clare College, Cambridge (who has previous committee experience with the Scottish WHN) and Moira Martin, senior lecturer in history at the University of the West of England in Bristol. A big welcome to you all.

Committee members re-elected for a second term of office were Claire Jones, Maureen Meikle and June Purvis (Information about all current committee members is posted at www.womenshistorynetwork.org)

Committee roles and projects

As well as the ongoing work of managing membership, the accounts, the annual conference and publicity and the website, the committee undertakes a variety of special projects in its efforts to promote women's history as widely as possible. The announcement at Hull of the new WHN Book Prize (details on page 35) follows our grant to the National Bibliography of Scottish Women reported in a previous issue of *Women's History Magazine*. Committee members have also been undertaking initiatives to promote women's history in schools.

RAE Nomination

The committee has been successful in negotiations to have the Women's History Network appointed as a nominating body for RAE 2008. This is the sixth in a series of exercises conducted nationally to assess the quality of UK research and to inform the selective distribution of public funds for research by the four UK higher education funding bodies. (More information can be found at www.rae.ac.uk) We are delighted that Professor Penny Summerfield has agreed to be our nominated candidate to become an RAE 2008 panel member. For those of you who do not know her, Penny is Professor of Modern History and Head of the School of Arts, Histories and Cultures at the University of Manchester. Her research interests are in the theory and method of oral history and in the history of gender and war in the twentieth century. Penny's most recent publication on oral history is 'Culture and Composure: creating narratives of the gendered self in oral history interviews', *Cultural and Social History* 1 (1) 2004. She has recently completed a draft of a book with C.M. Peniston-Bird, provisionally entitled *Contesting Home Defence: Men, Women and the Home Guard in Britain in the Second World War*, to be published by Manchester University Press.

Steering Committee Meetings

All WHN members are very welcome at steering committee meetings. Our next one is scheduled to take place on November 20th 2004 at 12 noon at the Institute of Historical Research, Senate House, Malet Street, London WC1. If anyone is intending to come along, it is wise to email enquiries@womenshistorynetwork.org - just to ensure that there have been no last minute changes.

FUTURE MAGAZINE ISSUES

Given the strength of the articles submitted following the *Contested Terrains* Conference, we have agreed some themed issues as follows:

- Spring 2005 Early Modern, with emphasis on sexuality
- Summer 2005 Double issue with Empire and the American South as linked themes
- Autumn 2005 Political terrains and gender

We also expect to publish a 'Nineteenth century' issue, but may fit some of these papers into one of the others.

Please do continue to send in submissions, since there may be spaces in these issues, and it takes time for the peer review process to take place. Remember to provide one or two pictures (copyright clear) if you can—it brightens up the look of the magazine.

Authors must include their name, affiliation and email address on their papers

PUBLICITY

Our Publicity Officer

The following person should be contacted on matters relating to publicity:

Claire Jones, who concentrates on academic groups and peer reviewed material. She can be contacted by email: enquiries@womenshistorynetwork.org or at 7 Penkett Road, Wallasey, Merseyside, CH45 7QE

WHN Regional Organisers can request current and back numbers of this magazine (plus WHN T-shirts!) to sell at conferences on a sale or return basis. Please contact Joyce Walker by e-mail: (admin@womenshistorynetwork.org) or c/o History Dept., University of Aberdeen, Crombie Annexe, Meston Walk, Old Aberdeen AB24 3FX.

WHN CONTACTS

To submit articles or news for the WHN magazine, please contact any of the editors at the addresses below:

Deborah Simonton, Department of English and Danish, University of Southern Denmark, Engstein 1, 6000 Kolding, Denmark. Email: dsimonton@language.sdu.dk

Nicola Pullin, Dept. of History, Royal Holloway University of London, Egham, Surrey, TW20 0EX
Email: Nicola.Pullin@rhul.ac.uk

Claire Jones, 7 Penkett Road, Wallasey, Merseyside, CH45 7QE.
Email: enquiries@womenshistorynetwork.org

For book reviews, please contact **Jane Potter**, Wolfson College, Oxford, OX2 6UD.
Email: bookreviews@womenshistorynetwork.org

To update contact details, or for any membership inquiries (including subscriptions), please contact Fiona Reid, at the following address: HLAASS, University of Glamorgan, Trefforest, Wales, CF37 1DL.
Email: membership@womenshistorynetwork.org

What is the Women's History Network?

The WHN was founded in July 1991. It is a national association concerned with promoting women's history and encouraging women interested in history. WHN business is carried out by the National Steering Committee, which is elected by the membership and meets regularly several times each year. It organises the annual conference, manages the finance and membership, and co-ordinates activities in pursuit of the aims of the WHN.

Aims of the WHN

1. To encourage contact between all people interested in women's history—in education, the media or in private research
2. To collect and publish information relating to women's history
3. To identify and comment upon all issues relating to women's history
4. To promote research into all areas of women's history
5. To establish a database of the research, teaching and study-interests of the members and other related organisations and individuals

What does the WHN do?

Annual Conference

Each year the WHN holds a national conference for WHN members and other. The conference provides everyone interested in women's history with a chance to meet and an exciting forum where new research can be aired and recent developments in the field can be shared. The Annual General Meeting of the Network takes place at the conference. The AGM discusses issues of policy and elects the National Steering Committee.

WHN Publications

WHN members receive three copies per year of the *Magazine*, which contains: articles discussing research, sources and applications of women's history; reviews of books, conferences, meetings and exhibitions; and information on calls for papers, prizes and competitions, and publication opportunities.

Joining the WHN

Annual Membership Rates

| | | | |
|--------------------------------|-----|-----------------------|-----|
| Student/unwaged | £10 | Overseas minimum | £30 |
| Low income (*under £16,000 pa) | £15 | UK Institutions | £35 |
| High income | £30 | Institutions overseas | £40 |

Membership Application

I would like to join / renew* my subscription to the Women's History Network. I enclose a cheque payable to Women's History Network for £ _____. (* delete as applicable)

Name: _____

Address: _____

_____. Postcode: _____

Email: _____ Tel (work): _____

Tick this box if you DO NOT want your name made available to publishers/conference organisers for publicity: ☐

Detach and return this form with your cheque to **Fiona Reid, at: HLAASS, University of Glamorgan, Trefforest, Wales, CF37 1DL. Email: membership@womenshistorynetwork.org**