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WOMEN IN THE EARLY DAYS OF PHARMACY IN GREAT BRITAIN

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ABSTRACT

This paper deals with the beginnings and historical evolution of Pharmacy studies in Great Britain and on the role played by the first women who practiced the profession there, The circumstances of that time, which made very difficult for a woman to work in that area, the biography of the first English woman licensed in Pharmacy, Fanny Deacon, and the biographies of the women who followed her as graduates in Pharmacy in Great Britain are commented, detailing not only their personal data but also the impact they had on the evolution and development of Pharmacy studies in their country. These women were Alice Vickery, Isabella Skinner Clarke, Margaret Elizabeth Buchanan, Rose Coombes Minshull and Agnes Thompson Borrow man. The main objective of the paper is to reveal the figures of these first women in Pharmacy in Great Britain to society, To do this, the methodology used has been the usual in researches of this type: search of data on these women in bibliographical and computer sources, as well as in historic archives. As main results, the biographies of these pioneers pharmacist women mentioned above have been elaborated.

KEYWORDS

History of Pharmacy; first steps of Pharmacy in Great Britain; first graduates in Pharmacy in Great Britain; gender difficulties; Fanny Deacon; Alice Vickery; Isabella Skinner Clarke; Agnes Thompson

INTRODUCTION

Answering the question of who the Great Britain's first female pharmacist was depends on the exact definition given to the term "pharmacist". It is very difficult to answer this question if this term is not clearly specified and it is well determined, to know if the "wise women" of the distant past or female apothecaries can be included it not in it.

But if we understand by "pharmacist" a person who has an official degree title in this sense, then several names can be given to that question: the English Fanny Deacon, Alice Vickery, Isabella Skinner Clarke or Rose Coombes Minshull, or the Scotswoman Agnes Thompson Barrowman, for example.

This article, framed in the studies on Pharmacy in Great Britain, sets out the triple objective of recalling the beginnings of that discipline and the historical evolution of its studies in that region, showing the biography of the first English woman graduated in Pharmacy in the British Isles: Fanny Deacon and also show the biographies of the women who followed her as graduates in Pharmacy in those countries, detailing their personal aspects and the impact they had on the evolution and development of Pharmacy studies in their countries.

The article is structured in the following sections. After this Introduction, Section 1 deals with the origins of Pharmacy in Great Britain. Section 2 shows the biography of Fanny Deacon, the first female pharmacist in Great Britain, who obtained the title of Chemist and Pharmacist in 1869. The followinf sections are dedicated, respectively, to present the bographies of Alice Vickery, who obtained the title in 1873 (Section 3), Isabella Skinner Clarke, titled in 1874 (Section 4), Margaret Elizabeth Buchanan, titled in 1887 (Section 5) and Rose Coombes Minshull, also titled in 1877 (Section 6). All of these women, together with Fanny, have the honor of being the first graduates in Pharmacy in Great Britain and therefore pioneers and referents, as women, of this discipline in the Island. The biography of the Scottish woman Agnes Thompson Barrowman is is dealt with in Section 7. Section 8, devoted to Conclusions, ends the paper.

1. THE ORIGINS OF PHARMACY IN GREAT BRITAIN

In England, the profession of pharmacist has been controlled by Legal Statutes for more than 150 years. There were two profession exams: the Minor and the Major. The Pharmacy Act of 1852 allowed those who passed the Major to include their names in the Register of Pharmaceutical Chemists. The Pharmacy Act of 1864 required that successfully passing the Minor was mandatory in order to be registered as a chemist or pharmacist. Since 1868, anyone who wanted to open a pharmacy had to pass the Major exam, although those who already had it could continue in it without having to take the exam. The Great British Pharmaceutical Society (PSGB from here on), in Figure 1, was given the authority to organize the examinations, in accordance with the provisions stablished by the Acts. However, the legal administration of the examinations was quite separate from the regular activities of the Society (Rayner-Canham and Rayner-Canham, 2008).

Figure 1. The building of the Great British Pharmaceutical Society in its original (above) and current (below) location

The Pharmacy Act of 1868 established three exams: the Preliminary, the Minor and the Major. The Preliminary, which consisted of tests of skills in Latin, French and Arithmetic, allowed the candidate who passed it to register as an apprentice. Those who passed the Minor were designated as assistant to a chemist or pharmacist, while passing the Major awarded the title of Pharmaceutical Chemist. This Major exam was described as "decidedly difficult" and was focused on Advanced Chemistry, Materia Medica, and Botany issues. Those already assistant pharmacists who had been active in the profession for 3 years only had to pass a Modified Examination.

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The first woman to perform these examinations under the conditions required by the Acts was Frances (Fanny) Elizabeth Deacon (née Potter), in 1868. She was followed six months later by Katherine Hodgson Fisher. In 1873, Alice Vickery, of Camberwell, Surrey, became the first woman to pass the Minor and then, in 1875, Isabella Skinner Clarke became the first woman to pass the Major and register as a Chemical Pharmacist.

As a curiosity regarding these exams, it can be indicated that one of the women who took them was the famous writer Agatha Mary Clarissa Miller (1890-1976), better known as Agatha Christie, who passed the Apothecary Assistant Exam in 1917, thanks to his deep knowledge about poisons, knowledge that she would later use as a basis in her literary publications.

Previous paragraphs explain why in England, in the first part of the 19th century, there were already women pharmacists throughout the country. In fact, in the first mandatory registry of 1869 of all chemists and pharmacists that existed at that time, 215 women were counted out of a total of 11,638 chemists and pharmacists, representing 1.9% of the total (Holloway, 1991).

In any case, although entering the pharmaceutical profession could be considered a simple thing, admission to the professional body of the PSGB was much more complicated. This society had been founded in 1841 and graduates and students were advised to register with it. Those who had passed the Preliminary exams entered as students. Those who had approved the Minor as associates and those who had passed the Major as ex officio members. However, although by law the Society was obliged to admit women to its examinations, it acted on the premise that Pharmacy was a male profession, which the Society itself should preserve. Hence the difficulty of women to first get admitted to the exams and then, if they passed them, to be able to become part of the pharmaceutical corps, unlike male candidates, who entered society directly no more pass your exams.

Not even the fact that The Englishwoman's Review in 1868 had indicated that pharmacy was a suitable profession for women was not enough for the PSGB to take it into account. Furthermore, the Society had its own School of Pharmacy, and in 1861 the discovery that a "young lady" had obtained permission (in the form of a "ticket") to be admitted to attend the School's lectures caused great confusion among their members (all male). However, as she was already in possession of that ticket, the Society's Library, Museum and Laboratory Committee had to admit her, although adding that "*the young lady must be considered in light of her sufferings.*" The "lady" who had been admitted to attend these lectures was Elizabeth Garrett Anderson, who wished to attend them to prepare for the Apothecary Society exams the following year. The following year, the Council of the Society rejected a proposal that requested to formalize the admission of women to conferences to prevent events like this.

Making two small incised cuts before proceeding, it is worth noting, in the first place, that when the Apothecary Society received its Royal Charter in 1617, it joined the rows of the City Livery Companies, commercial and professional groups that closely watched entry into their specialized areas. The apothecaries separated from the grocery company and eventually received recognition that their medical skills set them apart from most of the latter's members. As expected, there was no formal recognition of women who worked as apothecaries, either within family businesses or individually. But a closer look at the records reveals the existence of several women who worked as medical professionals and merchants in the early period of the Society.

This Society was the first to regulate the requirements for licensing and practicing medicine. According to the Apothecaries Act of 1815, all apothecaries in England and Wales were required to undergo an examination by their Society, after having completed five years of practice, and having obtained certificates of having attended two courses in Anatomy and Physiology and two courses in medical theory and practice. In addition, the candidate must have carried out an internship in a hospital for at least six months. The Society was given powers to prosecute those who did not abide by this law, and thus the Apothecaries Act of 1815 authorized the Society to conduct examinations, and candidates were examined in the theory and practice of medicine, pharmaceutical chemistry, and medical aspects, and they had to translate parts of the pharmacopoeia. Among the additions to the syllabus in 1816 were Physiology and medical Botany. In 1827 compulsory attendance at two lecture courses on midwifery and diseases of women and children was introduced; and from 1828 the certificates of attendance to a hospital or dispensary had to be signed by all the doctors of the personnel. Later, in 1835, the study plan was further expanded to meet the development needs of science (Iglesias, 2003).

And as a second cut it is also convenient to indicate that Elizabeth Garrett Anderson (1836-1917) was a British female doctor who was denied admission to medical schools, so she had to study on her own and with doctors, inboth cases in hospitals of London, until finally, in 1865, she obtained a Bachelor's degree to practice medicine, thus becoming the first woman in Great Britain to be licensed as a doctor (formerly it was James Miranda Barry (1789-1865) who practiced medicine. He was a military surgeon of the British Navy who lived her adult life as a male. Available documentation seems to indicate that he was assigned the female gender at birth, was raised as a girl, under the name Margaret Ann Bulkley, and chose to live or see herself forced to do so as a man in order to enter university and pursue a career as a surgeon. He retired in 1864 and returned to England, where he died of dysentery on July 25, 1865. Sophia Bishop, the person in charge of preparing his remains for burial revealed after the funerals that the body was that of a woman. This information is known through several letters exchanged between Georges Graham (of the General Register Office) and Major D. R. McKinnon, James Barry's physician, who certified his death as a man).

Moving on Elizabeth Garrett (Figure 2), as no hospital could hire her because of her gender, she opened her own desk and in 1873 she was already admitted as a member of the British Medical Association.

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Figure 2. Elizabeth Garrett. Source: (Image 2)

When she was named general assistant of the Dispensary of Santa María, in 1866, she opened a medical faculty for women, which in 1918 lost its name and was renamed the New Hospital for Women. In 1871, she married James George Skelton Anderson (who died in 1907) and had three children: Louisa (1873-1943), who was also an important pioneer physician and suffragette, Margaret (1874-1875), who died of meningitis, and Alan (1877-1952). Following in the wake of her father, who had been mayor in 1889, Elizabeth was elected mayor of Aldeburgh on November 9, 1908, becoming the first female mayor in the history of England. She died in 1917 and was buried in the Aldeburgh Church of St Peter and St Paul Cemetery (Encyclopaedia Britannica).

The first woman to officially apply for membership in the PSGB was Elizabeth Leech in 1869. She had learned her pharmaceutical skills from her father, having worked in his pharmacy for 7 years. After the death of her father, she ran the pharmacy with her brother for 6 years, then went on to run it alone for another 9 years. Later, she went on to work and dispense prescriptions at the Munster House Lunatic Asylum in Fulham. In her application to join the Society, she indicated that she believed that being a member of the Society could be good for her business. Afraid that the Council might think she wanted to get him in trouble, she wrote: "*At no time do I wish to interfere with the Council or its meetings. All I want is to be a member*". However, the Council rejected his request up to 3 times, the last in 1872 (Rayner-Canham and Rayner-Canham, 2008).

Unsurprisingly, this state of affairs deeply despaired of some women in Victorian times. Isabella Skinner Clarke and Rose Minshull, who had both passed the Preliminary, Minor and Major exams, submitted repeated applications to join the Society beginning in 1875, which were always rejected.

The 1878 Annual General Assembly passed a motion, although by only two votes, that it was not desirable for women to be admitted to the Society. The following year, however, the Society's Council reluctantly agreed that Clarke and Minshull should become members. It appears that some members of the Council simply surrendered to end the debate, in order to "*avoid further agitation*", as reported.

In order to complete the above fact a bit more, it is convenient to indicate that when Rose Minshull, Louisa Stammwitz and Alice Hart asked the PSGB Council to allow women access to their laboratories, they also sent a letter to the Pharmaceutical Journal in which they stated the followingt: "*All we ask is that we be allowed the same study opportunities, the same field of competence, and the same honors, if fairly earned*". At the same time, Robert Hampson (1833-1905), member of the Council and an enthusiastic advocate of women's rights in the PSGB, presented a motion at the PSGB Council meeting in February 1873 to allow Minshull, Stammwitz and Hart to become "*registered students*", which was rejected by only one vote (Encyclopaedia Britannica). Minshull and Stammwitz, along with Isabella Clarke, studied at Dr. Muter's South London School of Pharmacy, which had opened in Kennington in 1870, allowing them to receive a comprehensive pharmacy education. In this regard, Louisa Stammwitz later recalled that (The Chemist and Druggist, 1957): "*Miss Minshull and I had great difficulty to obtain instruction in a chemical laboratory until Dr. Muter kindly opened it to women".*

As already noted, although women were never excluded from the PSGB exams, they were only allowed to attend lectures at the PSGB pharmacy school since 1872, and they were not allowed to enter its chemistry laboratories (The Chemist and Druggist, 1892). Permission for women to work in laboratories was granted in 1877, after Minshull and Stammwitz passed the PSGB Minor exam, by the way achieving the first two places on the chemistry exam (Encyclopaedia Britannica).

However, that new situation turned out to be largely symbolic at first, because in the following decades, the number of women on legal registration declined. In 1905, there were only 195 pharmaceutical women on the registry, only 1.2% of the total of 16,000. It was not until the second half of the 20th century that the pioneering women's fight for their rights of the previous century did not begin to bear real fruit.

Thus, in 1918, Margaret Buchanan became the first female member of the Council. In 1924, Agnes Borrowman joined the Society's Board of Examiners and in 1947, Jean Kennedy Irvine became the first of the after many presidents of the Pharmaceutical Society.

By then, one in 10 pharmacists were women. In 1959 that percentage grew to 18%, and by the mid-1980s more than a third of pharmacists were women. Already, since the beginning of the 21st century, there have been more women than men in the Registry (The Chemist and Druggist, 1957).

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2. FRANCES ELIZABETH DEACON (FANNY DEACON), THE FIRST FEMALE PHARMACIST IN GREAT BRITAIN

Frances Elizabeth Deacon (née Potter), also known as Frances Deacon, Fanny Deacon, Frances Potter or Frances Elizabeth Potter, was the first woman to be enrolled in the Pharmaceutical Society of Great Britain to work as a pharmacist, after the promulgation of the Pharmacy Law of 1868, which made this registration mandatory. (Holloway, 1991) and (Briony and Boylan, 2013).

Frances, whom everyone called Fanny, was born on September 17, 1837, in Kibworth (in the Harborough district of Leicestershire, England). She was the second of the three children who had the marriage formed by the father, William Potter, born in Marylebone in 1804 and the mother Elizabeth (born in Kibworth in 1805. Her two brothers were named James, the eldest, born in 1836 and Cyrus the youngest, born in 1846. His family was well off and they had the luxury of having an internal servant (Oxford Dictionary of National Biograpies).

On the occasion of the country's 1851 census 1851 (England and Wales Census), she registered as a 13-year-old "*student in her own home*" at 10 Leicester Road, Kibworth Beauchamp, Leicestershire.

Fanny Deacon obtained the title of Chemist and Pharmacist on February 5, 1869, after having passed the modified examination of the Pharmaceutical Society, which the aforementioned Pharmacy Law of 1868 required to perform in order to give that title to people who "*had been really committed and employed in the dispensing and composition of prescriptions for at least three years"* (Jordan, 1998). As a result of that Act, her father also joined the Register of Chemists and Pharmacists taking advantage of a clause that allowed those who had that business before August 1, 1868 without having to be examined for it, according to the Pharmaceutical Society Registers 1869 -1930 (Jordan, 2001).

In this way, Fanny Deacon was, as already indicated, one of the 215 female pharmacists who were included in the first mandatory Register in 1869. Many of these women had been left in charge of the businesses of their parents or husbands and others managed a pharmacy independently. It is convenient to indicate in this regard that unlike other professions, including Medicine, women were not excluded from taking the Pharmaceutical Society examinations, as were men, despite the fact that the hierarchy and male predominance of the PSGB and the profession had not taken them into account in the elaboration of the educational scheme of the Society. However, women were not allowed to be members of the PSGB. They could work as pharmacists, but could not play a role in the organization or regulation of the profession (Jordan, 2001) and (Briony and Boylan, 2013). Thus, Fanny Deacon worked as her father's assistant after registering, as she had done before. In the 1871 census, he is listed as a "chemist" still living with her parents on Leicester Road.

Her Marriage Certificate indicates that Fanny Deacon was married on September 23, 1875, in the Independent Chapel in nearby Kibworth Harcourt to Abraham Deacon (1828-1911), a 46-year-old widower (she was 37). Abraham already had three daughters, Sarah, Mary and Harriet, from his first marriage. It is known with certainty that the couple had a son, Augustine Henry, in 1877, although other sources indicate that they had 9 children, at least a woman, named Sarah Henry.

The family lived in Fleckney, where Abraham Deacon was first registered in the 1881 census as a draper and later as a postman. In 1881, he himself founded a strict and particular Baptist Church at Carmel Chapel on Wolsey Lane in town and worked there as its Minister. Local records suggest that he was self-taught and taught himself to read and write, and later became an author and poet, as well as a pastor (Page, 1964). Abraham Deacon also opened a post office on Wolsey Lane in Fleckney in the 1880s, and Fanny Deacon worked in the same office building as a chemist and pharmacist. Fanny Deacon's parents had moved to Fleckney in 1876, and some time after her father's death in 1882, her granddaughter Harriet moved in with her mother, when the latter was 87 years old. Abraham Deacon died on February 16, 1911, the year in which Fanny Deacon was still listed as a chemist and pharmacist, despite being 73 years old at the time. That 1911 census also indicates that Fanny Deacon lived with her stepdaughter Harriet.

Fanny Deacon remained on the Pharmaceutical Society Register until her death on January 15, 1930, in Fleckney, at the age of 92, nineteen years after the death of her husband. As the cause of her death, it was reported that it was due to a "*traumatic shock that occurred when she accidentally fell down the stairs on December 23, 1929"*. Figure 3 shows two of the seven women listed in the Oxford Dictionary of National Biography, Jean Kennedy Irving and Fanny Deacon.

Figure 3. Jean Kennedy Irvine left) and Fanny Deacon (right). Source: (Image 3)

Jane Kennedy Irvine (1876 - 1962), known from a young age as Jean, was born in Hawick, Scotland and was the daughter of Walter Phillips and Jane Kennedy. She did her apprenticeship in her hometown with pharmacist Thomas Maben and after registering as a Pharmaceutical Chemist with the Pharmaceutical Society in 1900, she became first assistant pharmacist and then chief pharmacist for the Glasgow Apothecaries Company. She was the first woman president of PSGB.

In the four next sections, biographies of the women who formed the group of the first women graduates in Pharmacy in Great Britain after Fanny Deacon are shown. These women were, in chronological order of obtaining the title, the following: Alice Vickery (1873), Isabella Skinner Clarke (1874), Margaret

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Elizabeth Buchanan (1887) and Rose Coombes Minshull (in 1877). All of them, together with Fanny Deacon, have the honor of being the first graduates in Pharmacy in Great Britain and therefore pioneers and referents, as women, of this discipline in the countries forming the Island.

3.ALICE VICKERY

Alice Vickery (also known as Alice Vickery Drysdale or Alice Drysdale Vickery) was an English physician, advocate for women's rights, and the first British woman to become a chemist and pharmacist. She and her life partner, Charles Robert Drysdale, also a physician, actively supported a number of causes, including free love, birth control, and the destigmatization of illegitimacy (legitimacy, in traditional Western common law, is the status of a child born to parents who are legally married to each other, and of a child conceived before the parents obtain a legal divorce. Rather, illegitimacy is the status of a child born out of wedlock, a child known as bastard, loving or illegitimate child when such a distinction has been made from other children. In Scottish law, the terminology of natural son or natural daughter has the same implications. The prefix "Fitz-" added to a surname (eg Fitzwilliam) sometimes it denoted that the child's parents were not married at the time of birth).

Alice Vickery was born in Devon on October 13, 1844. She was the second child of the five children of her father's marriage, John Vickery, of West Moor Farm, Swimbridge, Devon, pianist and organ builder (Bland, 2002), and her mother Frances Mary.

In 1861, her family moved to South London and eight years later, she began her medical career at Ladies' Medical College, in 1869. There she met Professor Charles Robert Drysdale and began a relationship with him. However, they never married (Bland, 2002) and (Royal Pharmaceutical Society, 2020) since that both agreed with the theories of Charles's brother George, who was also a neo-Malthusian physician, who affirmed that "*the marriage was legal prostitution*"". Fortunately for them, everyone around them assumed they were married. Bear in mind that due to the moral of the time, if it had been known that they were not, and that they still lived together, their careers would surely have suffered many difficulties. Alice Vickery sometimes added Drysdale's name to hers, referring to herself as "Dr. Vickery Drysdale" or as "Dr. Drysdale Vickery" (Bland, 2002).

In 1873, Alice Vickery obtained a midwife degree from the Society of Obstetrics (Bland, 2002) and in June 18 of that same year, she passed the Royal Pharmaceutical Society examination and became the first female chemist and pharmacist to be titled (Royal Pharmaceutical Society, 2020).

Later, as women were not allowed to attend any British Medical School (Bland, 2002), Alice Vickery (Figure 4) went to study Medicine at the University of Paris and there gave birth to her first child, Charles Vickery Drysdale (1874-1961) (Royal Society of Edinburgh, 2006).

Figure 4. Alice Vickery. Source: (Humanist UK, no date)

Once the United Kingdom Medical Act of 1876 already allowed women to obtain medical degrees, Alice Vickery returned to England in 1877 (Royal Pharmaceutical Society, 2020) and in 1880 she became one of the five women who qualified as doctors in that country. She earned her degree from the London School of Medicine for Women and began practicing medicine (Bland, 2002). In August 1881, George Vickery Drysdale, her second son was born (No autor indicated, 2008).

Regarding her activist side, Alice Vickery joined the Malthusian League and became a strong advocate for birth control following the trial of Annie Besant and Charles Bradlaugh, who were arrested for publishing a book on contraception in 1877.

When Alice Vickery was called in to testify at trial, she spoke about the dangers of too frequent births and using over-breastfeeding as a contraceptive method (Bland, 2002). However, the London Medical School for Women did not approve of her statements or her activities so she had to temporarily withdraw from the Medical League. She returned to practice in 1880, when she obtained her degree, and spent the next decade publishing various works on women's rights and lecturing on birth control as a key element in the emancipation of the woman (Royal Pharmaceutical Society, 2020).

Alice Vickery and her husband Charles Robert Drysdale joined the Legitimation League, created in 1893, and campaigned for equal

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rights for children born out of wedlock. She believed that the organization "wasn't going far enough" until it began advocating for free love (Bland, 2002). She was successively a member of the National Society for the Suffrage of Women, the Social and Political Union of Women and the League of Women's Freedom (Royal Pharmaceutical Society, 2020).

After Drysdale's death in 1907, Alice Vickery (Figure 5) continued to practice as a physician and succeeded him as president of the Malthusian League, while her eldest son Charles and daughter-in-law Bessie became the new editors of Malthusian magazine. Soon after, she became an early member of the Eugenics Education Society (Bland, 2002).

Figure 5. Alice Vickery. Source: (Image 5)

Alice Vickery moved to Brighton in 1923 to be close to her oldest son. There she regularly attended meetings of the local branch of the Women's Freedom League. He died of pneumonia in that city on January 12, 1929, just a few days after delivering his last speech (Royal Pharmaceutical Society, 2020). She was buried next to her life partner Charles Robert Drysdale in Brookwood Cemetery.

3. ISABELLA SKINNER CLARKE

Isabella Skinner Clarke (married Keer) was born on October 29, 1842 at 27 Skinner Street, London). It is not known for sure, although it is suspected, that his middle name was given to her by his father in reference to the street where he was born. She was the third of seven daughters in the marriage of Edward Clarke, a lawyer in the 1861 census, and his wife Elizabeth Clarke (née Pemberton), who was known as Bella (Oxford Dictionary of National Biography). Her older sisters were Elizabeth (born 1836), Ellen Victoria (in 1839), and younger sisters Alice Jane (1845), Janet (1849), Martha Elizabeth (1850), and Fanny Rebecca (1854). Annie Neve, who later worked as an apprentice at Isabella's pharmacy, described the home as "*a big family of happy and busy women*" (The Chemist and Druggist, 1926).

Clarke passed the PSGB Preliminary Examination in 1874, ranking 23 out of 355 candidates, 186 of whom failed (Lincoln, 1926). The required three years of experience was spent with Elizabeth Garrett (later Anderson) (1836–1917), at her St Mary's Dispensary for Women and Children, and part with Robert Hampson (1833–1905), member Council and enthusiastic defender of women's rights in the PSGB. Historian Ellen Jordan has proven that both Garrett Anderson and Hampson were highly committed to the Society for the Advancement of Women's Employment (Jordan, 2001).

After passing the Major Exam on December 15, 1875, Clarke enrolled in the Pharmaceutical Society as a Chemist and Pharmacist on April 22, 1875, being the first woman to do so. In that exam, she obtained the fourth best score of the 39 candidates presented, of which 16 failed (Briony and Boylan, 2013).

Isabella Skinner Clarke established his own business in 1876, in Spring Street, Paddington, London. She had several apprentices in it, including Annie Neve (known at home as "*Little Arsenic"*) and Lucy Boole (Lincoln, 1926). In the 1870s, she accepted several medical students into her dispensing course at her pharmacy and was appointed a pharmacy tutor at the London School of Medicine for Women. In 1892, the new facilities of the School of Medicine included a Museum of "Materia Medica" which was also used "*for Mrs. Clarke Keer's practical pharmacy class"* (The Pharmaceutical Journal, 2019).

She was married on January 15, 1883, in Kensington, to Thomas Henry Keer (1852-1898) (The Chemist and Druggist, 1892), whom she had met when they were both students at Dr. Muter's College of Pharmacy in that Kennington neighborhood (he and she had passed the Major Exam of the Pharmaceutical Society on the same day, with consecutive numbered certificates (Lincoln, 1926). After her marriage, she left the house, where her mother, now widowed, her sister Alice, also a pharmacist and sister Martha, an artist, lived and moved to 5 Endsleigh Street in Tavistock Square.

She had to give up hworking in her Spring Street business and become a partner with her husband at a pharmacy at 9 Bruton Street, Berkley Square, as despite her brilliant professional achievements, she and other female employees, such as Margaret Buchanan, are not allowed to work visibly in the store. Buchanan recalled that (The Pharmaceutical Journal, 2019): "*The presence of a woman would have been very detrimental to a pharmacist's business in those days, and more particularly to the kind of business that Mr. Keer conducted.*"

When Thomas Henry Keer died at the age of 46, on January 14, 1898, she began hosting guests in her home, which would later be described as a "*student home*," and she also ran a shorthand business on Victoria Street (The Pharmaceutical Journal, 2019).

During the 1870s, after long years of protracted debate about the place of women within it, the Council of the Pharmaceutical Society elected Clarke-Keer as one of its first two female members, along with Rose Minshull, on 1 October 1879. Clarke-Keer had first applied for membership in October 1877, but her application was rejected by 8 to 4 votes in Council. At the June 1878 meeting, there was a tie at 8 votes to allow their admission, but the President's casting vote against the admission of women to

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the institution was decisive. At the 1879 Annual General Assembly, the result was declared first with 66 votes in favor of women becoming members and 65 against, but after a challenge, a new vote was taken and the result was 78 in favor and 81 against (The Pharmaceutical Journal, 2019), so access was not allowed either. Finally, at the Council meeting of October 1, 1879, Miss Clarke and Miss Rose Minshull were elected members, with only one vote against, although some Council members even commented that they voted in favor to avoid further problems, but not for believing in equal rights (Briony and Boylan, 2013).

En 2019, Clarke-Keer fue incluida en el Diccionario Oxford de Biografía Nacional (Jordan, 2001).

On Thursday June 15, 1905, a group of pharmacists met at 5 Endsleigh Street to found an Association of Women Pharmacists. The objectives of this Association were to discuss issues related to the employment of women, to establish records of the residences and places of work of all qualified women, and the promotion of social relations. Fifty women joined immediately and Clarke-Keer was convinced, "*with some difficulty*" to be the first president of the Association, a position she held for two years. In fact, given the economic and logistical difficulties at the beginning, many meetings of the Association were held in her dining room (The Pharmaceutical Journal, 2019). During World War I, in her mid-70s, she went on to perform administrative jobs at the Admiralty (The Pharmaceutical Journal, 2019).

Clarke died in her bed on July 30, 1926 at 123 Waddon Park Avenue, Croydon, at age 84 from mitral heart disease. She was buried in Brookwood Cemetery, Surrey (The Pharmaceutical Journal, 2019).

In 2019, Clarke-Keer was included in the Oxford Dictionary of National Biography (Jordan, 2001).

4. ROSE COOMBES MINSHULL

Rose Coombes Minshull, born on August 3, 1845 at 19 Bradford Street, St Martin's, Birmingham, and baptized on August 22 (Oxford Dictionary of National Biography), was the second daughter of the marriage formed by her father, John Bellamy Minshull (1811-1884), turner wooden by profession, and her mother Elizabeth (1813-1878). Hier older sister was Jane (born in 1842), and the younger ones Flora (1847) and Albert (1851). Shortly before the birth of the latter, the family had moved to London and the 1871 census already indicated that they lived at 149 Mile End Road.

As a result of her research, historian Ellen Jordan discovered that Rose was one of the pioneering pharmacists who was supported to dispense drugs through the Society for the Promotion of Women's Employment, founded in 1859. The Society appears to have managed these positions for Minshull, Louisa Stammwitz and Isabella Clarke, who were guided by Elizabeth Garrett in her St Mary's dispensary for women and children in Marylebone, founded in 1866. As already indicated, they were also assisted by Robert Hampson, advocate of equality within the PSGB Council (Jordan, 1998) and (Jordan, 2001). Minshull, who was always a very good student, was ranked 166 in the PSGB Preliminary Exam in 1873, although as already mentioned, she was not admitted "*registered student*", despite Hampson's motion in her favor (Holloway, 1991) and (Lincoln, 1926).

Therefore she, along with Louise Stammwitz and Isabella Clarke, went to study at Dr. Muter's South London School of Pharmacy.Thanks to the teachings received at that institution, she and Stammwitz passed the PSGB Minor exam, achieving the first two places in the Chemistry exam (Lincoln, 1926). In this regard, Louisa Stammwitz later recalled that: "*Miss Minshull and I had great difficulty obtaining instruction in a chemical laboratory until Dr. Muter kindly opened his to women*" (No author, no date).

Rose Coombes Minshull registered as a chemist and pharmacist on October 18, 1877 and after also passing the Major exam later, she registered as a pharmaceutical chemist on February 19, 1879, after the death of her mother prevented him from taking the test with Stammwitz in 1878 (Jordan, 2001), (Briony and Boylan, 2013) and (Lincoln, 1926).

In 1881, 36-year-old Minshull was still living with her father, now a widower, her sister Flora, who worked as a dispenser and a maid. After their father's death in 1884, the two sisters continued to live together, but during that year Rose changed her address on the PSGB Register to North Eastern Hospital for Children, Goldsmith Row, Hackney Road, London (see Figure 6), where she worked as a dispenser.

Figure 6. The North Eastern Hospital for Children, in London,in Minshull times. Souece: (Image 6)

At the age of 58, Minshull died on May 9, 1905, at Brooklyn House, 11 Marine Parade, St Mary in the Castle, Hastings, due to carcinoma of the medial glands and pneumonia. His sister Flora, who in 1899, aged 52, had obtained the qualification of dispenser, was present at her sister's death, although she still resided in London. Minshull was buried on May 13, 1905 in Tower Hamlets.

In the obituary published in The Chemist and Druggist in her honor, she was described as "*not a fighter by nature, but a bright and charming little woman with a loving nature*" (The Chemist and Druggist, 1905). In 2019 she was included in the Oxford Dictionary of National Biography.

5. MARGARET ELIZABETH BUCHANAN

Margaret Elizabeth Buchanan was born on July 26, 1865, in Clerkenwell, London. Her parents were Albert Buchanan, physician, and Elizabeth Anne Blake (according to the 1839

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Register of England and Wales). She studied at the North North Collegiate School.

She enrolled as a student at the Pharmacy Society's School of Pharmacy in Bloomsbury Square in 1886 and became a pharmacist in 1887, after her apprenticeships first with her father, and later with Isabella Clarke and her husband Thomas Keer (No autor, 1918). In that same year, she passed the Minor exam and registered as a Chemist and Pharmacist and the following year she passed the Major exam, obtaining a silver medal for having achieved second place in the Pereira Competition, being the first woman to do so (No author, 1918)

She began working as a hospital pharmacist at the Westminster General Infirmary (Figure 7), being the first female registered with the Pharmaceutical Society to hold that position (The Chemist and Druggist, 1957).

Figure 7. The Westminster General Infirmary, in Chelsea, in Buchanan's time. Source: (Image 7)

When Henry Deane put his pharmacy up for sale at 16 The Pavement, Clapham Common, in October 1914, Margaret Eilizabeth Buchanan seized the opportunity to establish a business. She was one of four directors of that pharmacy, all registered pharmacists, along with Agnes Borrow man, Sophia Heywood and Margaret MacDiarmid. This also contributed to improving the position of women in the profession (Briony and Boylan, 2013). Thus, in 1923, 14 of the 15 young women in the company who were studying at the Pharmacy Faculty of the Pharmaceutical Society had received awards and scholarships.

In 1924, Margaret Elizabeth Buchanan transferred the business to her managing partner Borrow man and founded the Margaret Buchanan School of Pharmacy for Women in Gordon Hall, Gordon Square. At that school she offered a 10-month preparation course for the Apothecary Society exam that cost 21 pounds (No autor, 2016). Three students from the school worked at Clapham Pharmacy in the mornings and another three in the afternoon. She also worked as a pharmacy professor at the London School of Medicine for Women and became a member of the Teachers Guild (No author, 1918).

Margaret Elizabeth Buchanan was one of the founders of the National Association of Women Pharmacists, being its first Vice President since its creation in 1905, and its President in 1909. In 1918, she became the first woman to be elected to the PSGB Council. (Rayner-Canham and Rayner-Canham, 2008).

She traveled extensively in Canada as a Council representative in 1922, leading to a reciprocity agreement between the Society and the province of Ontario. She was also responsible for the Society's Benevolence Fund Committee (Pharmaceutical Journal, 1940).

She was also a great advocate for the creation of a pharmacy degree at the University of London, finally founded in 1924 (Briony and Boylan, 2013).

Due to health problems, she retired in 1926 to Devon, where she died on New Year's Day 1940 (webAA19). The newspaper Chemist and Druggist (1916) described her as "*the woman among British pharmacists, a guide, philosopher and friend to many of them"* and as "*the first rank among the pharmaceutical companies of the British Empire*".

Very recently, in 2019, she was included in the Oxford Dictionary of National Biography.

6. AGNES THOMSON BORROWMAN

Agnes Thomson Borrow man was born on October 7, 1881, in Penicuik, Midlothian, Scotland. Her parents were Peter Borrow man, first a pastor and then a farm manager, and Margaret Davidson.

Thanks to his father's efforts, Borrow man was able to do an internship at the D.F. John stone in Melrose, although, as a woman, she had to always stay out of the sight of customers "*so that the prestige of the business was not affected*" (The Chemist and Druggist, 1954).

After finishing her four years of internship in the pharmacy, she tried to get a job and although it was difficult at first, due to her status as a woman, she was finally able to be hired at William Lyon's pharmacy, at 7 Crichton Place, Leith Walk, Edinburgh. She herself stated much later that "*that year was the most formative of my career in pharmacy*" (The Pharmaceutical Journal, 1923) and (The Pharmaceutical Journal, 1955).

During that year, she was not yet allowed to be seen at the counter, so she was busy composing and manufacturing medicines in a separate store. She used the half day off she had a week to study, attending the Edinburgh Central School of Pharmacy, on Clyde Street, run by Mr. W.B. Cowie (The Pharmaceutical Journal, 1923). In this way, she passed the Minor Exam of the PSGB in 1903 at York Place, the headquarters of that society in the north of Great Britain (The Chemist and Druggist, 1954) and (The Pharmaceutical Journal, 1955).

After passing that exam she moved to England, going first to Runcorn, where she worked for three years running a pharmacy for J.H. Weston. At that time she presented on February 17, 1904 at the Edinburgh headquarters of the PSGB her first research work entitled "*Note on a mixture of arsenic, iron and quinine"* (The Pharmaceutical Journal, 1923) and (Shellard, 1982). She also wrote an article in the Pharmaceutical Journal on July 30, 1904 denouncing gender differences between women and men in pay.

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While she was at Runcorn, she published practical exercises for the PSGB Major Exam in the Pharmaceutical Journal, and also published an article on *'Cinchonidine and Cinchonine in a Quinine sample*' (The Pharmaceutical Journal, 1923).

Later, after having spent three years working for J. Beetham Wilson in Dorking, she had already been able to save enough to fulfill her ambition and to pay for the expenses of the PSGB Major Exam. She studied at the PSGB School of Pharmacy in Bloomsbury Square, London and graduated as Pharmaceutical Chemist on April 6, 1909 (The Chemist and Druggist, 1954).

As a graduate, Borrow man became a research assistant to Professor Greenish, at the College of Pharmacy, who also recommended her for a position with the Malaysian and Ceylon Rubber Producers Association. An article describing her career stated that (The Pharmaceutical Journal, 1923): "*Miss Borrow man acquired such a large facility in microscopic examination of fibers that she could see at a glance the proportion or percentage of different fibers in a given paper*".

Agnes Thomson Borrow man also experimented with paper to detect counterfeits and as a result of her research she submitted an article on rubber to the London Association of Chemists Assistants, becoming the first woman to read an article at an International Rubber Exhibition, presenting at the Agricultural Hall, Islington, in 1912. That article was entitled "*The Viscosity of Hevea Braziliensis Latex"* (The Pharmaceutical Journal, 1923).

During this time, she attended classes four nights a week at Borough Poytechnic, Chelsea Polytechnic, and the Cass Institute. The other nights of the week were spent reading and searching for specifications in the Patent Office library (The Pharmaceutical Journal, 1923). She also did practical work on the 1911 British Pharmaceutical Codex, and later contributed to its 1923 edition (The Pharmaceutical Journal, 1955).

When her father died in 1913, she was forced to help her family financially, which made her return to practice in a pharmacy, since research work was poorly paid (webAA23). She spent a year in Slough working for the Charles Sangster, to whom, according to (The Pharmaceutical Journal, 1923) "*Miss Borrow man expresses a special debt for his teaching of modern business knowledge and methods*".

In 1914, she became director of the pharmacy at 17 The Pavement, Clapham, along with Margaret Buchanan, Sophia J Heywood and Margaret A MacDiarmid, all Pharmaceutical Chemists, who in carrying out that direction took the opportunity to support future students. pharmacy, giving them practical experience and role models in a time when there was a shortage of offerings for women.

Herself wrote the following in the Pharmaceutical Journal on 12/10/1917 (The Pharmaceutical Journal, 1955):

> *Over the past ten years, women in pharmacy have shown in their college careers that they have enthusiasm, that they intend to come first, that nothing less will satisfy them. Unless I am wrong, that same enthusiasm and determination will carry you through the business world into which this war* [World War I] *has ushered you.*

Agnes Thomson Borrow man became the sole owner of the business after World War I. In 1923, 14 of the 15 girls to whom she had directed pharmacy internships and who were studying at the PSGB School of Pharmacy had received awards and scholarships. Under her direction, the pharmacy was made up entirely of women. Drawing on her past experiences, she had just about everything done on her own terms and her staff wore their own distinctive dress design, with sage green cuffs and collar, in an attempt to present a totally professional appearance that would allow for overcoming biases against pharmaceutical companies at the time (Briony and Boylan, 2013).

During World War II, she performed fire watch duties (The Pharmaceutical Journal, 1955). In January 1945, a V2 bomb fell near the pharmacy in Clapham and severely damaged the building. She was seriously injured (she was probably inside, in the bomb shelter she had built in the old warehouses) and had to leave London to recover (The Pharmaceutical Journal, 1955).

Returned to London, already recovered that same year, she turned the business into a limited company with Miss H.F. Wells, a former apprentice of hers in 1918, and herself as directors. The business was described in a 1954 article according to (The Chemist and Druggist, 1954): "*High pharmaceutical standards, judicious arrangement and good cleanliness make the pharmacy a pattern for others, and it remains in the traditions of its illustrious founder*".

Agnes Thomson Borrow man was a member of the (National) Association of Women Pharmacists since its founding in 1905, holding numerous positions in it (see (The Chemist and Druggist, 1954), (The Pharmaceutical Journal, 1923) and (The Pharmaceutical Journal, 1955) in this regard).

She died on August 20, 1955, aged 73, in a nursing home at 27 Lawrie Park Road, Sydenham, at the age of 73, bequeathing his effects to the PSGB. Undoubtedly, she was a brave and determined woman throughout her life. She was described in 1954 by stating that she "*had a" robust independence, accepting nothing that would wither under the beam of logic* "(The Chemist and Druggist, 1954).

In 2019, Agnes Thomson Borrow man was listed in the Oxford Dictionary of National Biography.

CONCLUSIONS

This article, which continues a line of research already started by the author some time ago, consisting of bringing to light the biographies of the first women graduates in Pharmacy in different countries, shows the biographies of the first women who practiced the pharmaceutical profession in Great Britain. The first of these was Fanny Deacon, who obtained the title of Chemist and Pharmacist in 1869 in England, seven years after the first woman with a degree in Pharmacy in history, the American of London descent Mary Corinna Putnam Jacobi, who obtained her title in Famacia from the Collegge of Pharmacy in New York in 1963, Fanny Deacon thus became the second female Pharmacy graduate in history. She was followed in Great Britain by Alice Vickery, Isabella Skinner Clarke, Margaret Elizabeth Buchanan, Rose Coombes Minshull and Agnes Thompson Borrowman, whose biohgraphies are shown in this paper.

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From the study carried out, it clearly follows that, with their strengths and weaknesses, all these women fought vigorously against the gender inequalities imposed on them by the society of the time (women did not have the same rights as men) to achieve their objectives, a university degree, in this case Pharmacy, and later, being able to run it.

Moreover, all of them performed at the time all the roles that a woman with a degree in Pharmacy can currently play, such as work in a pharmacy office, work in laboratories or in drug distribution centers, teaching, research, management, inspection, industry, etc, all of which were already put into practice by some of the women cited. All this means that they can be considered precursors of the work of women in pharmacy today.

Indeed, apart from the fact that all of them worked in pharmacy offices, Alice Vickery and Margaret Elizabeth Buchanan also practiced medicine. In fact, the last one worked in a hospital. She and Isabella Skinner Clarke also worked as instructor teachers of Pharmacy apprentices, even going so far as to found a school. Also Isabella Skinner Clarke and Margaret Elizabeth Buchanan were dedicated to management, while Agnes Thomson Borrowman, in addition to working in the pharmaceutical industry, also dedicated herself to research, publishing several articles on the results obtained. Besides, al lof them were very committed with the cause of the recognition of women in society, especially Alice Vickery and under all Margaret Elizabeth Buchanan, who founded the National Association of Women Pharmacists, being electd Vice President since its creation and President later.

Therefore, in the author's opinión and due to these reasons, all of them deserve to be considered as true references and also examples to women in the battle against gender inequalities, still present and not sufficiently defeated in many countries of the world.

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