Rachel Littler Bodley: A Charter Member of the American Chemical Society and Revolutionizer of Chemical and Medical Education for Women

Cassandra T. Eagle* and Jennifer Sloan

Department of Chemistry, Appalachian State University, Boone, NC 28608, eaglect@appstate.edu

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Abstract: Rachel Littler Bodley was an important contributor to the study of chemistry and the work of women in science. In 1862, she undertook the cataloging of an extensive plant collection at Cincinnati Female Seminary. Her work was praised by many eminent botanists of that time. In 1865, Bodley became a professor of chemistry at Woman's Medical College. While at that college, her work and student addresses revealed her belief in the possibilities of synthetically made "cures." In 1874, Rachel became dean of Woman's Medical College. During 1874, Bodley proposed that American chemists meet at Joseph Priestley's birthplace to celebrate his discovery of oxygen. Her suggestion led to the formation of the American Chemical Society. She was elected as a charter member of the society and was its only female member until the 1890s. In 1880, Bodley became a member of the Franklin Institute and lectured there on household chemistry. In 1881, she wrote and published *The College Story*, a survey on the lives of women in the medical profession. It was the first survey of its kind done by a woman. Rachel was a devoted Christian and promoter of foreign medical mission work among students, colleagues, and others. Her leadership and foresight allowed Woman's Medical College to become one of the foremost women's medical institutions in America. Her diligence and encouragement made the work of single women as Christian missionaries both possible and extremely productive. Her achievements helped to better the possibilities for women in the medical field and in the world. Finally, the American Chemical Society had its birth from an idea that Rachel Bodley proposed.

Introduction

In the mid-1800s, Cinncinnati, Ohio was bubbling over with new ideas and great causes. It was known then as the "Athens of the West." Transcendentalism was thriving along with its great advocates, Emerson and Thoreau. Abolition and Women's Rights were also gaining support. The Lyceum, named for the garden in Athens where Aristotle taught, constantly featured lectures by many of the great New England reformers, such as Oliver Wendell Holmes, Wendell Phillips, and the Harriet Beecher and Elizabeth Blackwell families [1]. It was at this exciting time and place in history that Rachel Littler Bodley was born. Many great accomplishments in chemistry and for women in science were made through this single lady of delicate health. Rachel Littler Bodley made significant contributions to the study of chemistry, the education of women, the work of missions around the world, and the foundations of the American Chemical Society.

Childhood

Rachel was born on December 7, 1831, in Cincinnati, Ohio to Anthony P. Bodley and Rebecca W. Talbott Bodley [2]. Rachel was named after her grandmother Rachel Littler Talbott, who was part of one of the first families to emigrate from Virginia to the "new west"—Pennsylvania, in 1806. Rachel was the middle child of five children and the oldest girl in her family [3]. Anthony Bodley was a carpenter and pattern maker, who had come from Pennsylvania to Ohio. Rachel's mother, Rebecca, was a Quaker, and her family had also come to Ohio from Pennsylvania. Religion played a major role in the Bodley family; thus, they were very active in the Presbyterian Church [2]. Rebecca Bodley wanted her children to grow up in "the nurture and admonition of the Lord"; therefore, on one of Rachel's birthdays, her mother wrote the following in Rachel's birthday album, "Make every subservient to the high aim of pleasing the great I AM, lean on Him, lean on no earthly stay: your strength, your sufficiency is in Jesus alone." This advice was taken to heart by Rachel, and as a result, she found her strength and goals deeply rooted in her faith in God [4]. When Rachel was a young girl, a missionary gave a report at her church. Rachel was so moved by the missionary's presentation that she decided that she too would one day become a missionary, and she remembered this early ambition when she grew older [2].

Early Education

Rachel's formal education began in a private school that her mother operated [5]. Rachel's family valued education and considered it essential to one's livelihood and usefulness to society and to God. Furthermore, Rachel grew up in Cincinnati during a time when the value of women's education was being realized and encouraged [1]. Rachel studied at the private school until she was twelve years old, then she enrolled in Wesleyan Female College in Cincinnati. She graduated from Wesleyan Female College in 1849 with a classical diploma [6].

Figure 1. Rachel Littler Bodley 1831-1888. (Reprinted with permission from the American Medical Women's Association, Inc.)

The Wesleyan Female College, founded in 1844, was the first chartered college for women in the world and was dedicated to providing a better, more holistic education for women [4]. While at Wesleyan Female College, it was noticed that Rachel had the "gift of writing." Rachel achieved high success while in college and was well liked by her professors and especially her peers. In fact, she was known to be a comforter to many home-sick and discouraged classmates [7].

Early Career

After graduation, Rachel taught at Wesleyan Female College for eleven years [2]. Rachel was considered a great teacher by many. Sarah K. Bolton said the following regarding what many thought of Rachel's teaching ability, "To say she was a good teacher were [*sic*] too tame and spiritless an expression to use in referring to one so thoroughly prepared, so in love with her work" [8]. Rachel was not content in teaching her students only about the natural sciences. She felt compelled to also teach them "moral development"; therefore, she ended each week's class with religious instruction. Bolton [8] commented on this "special instruction" given by Bodley, "It is the testimony of many of her pupils of those early years that these lessons given in such unobtrusive manner made a lasting impression, and that the example of Christian character before them daily became their highest model in maturer years." Obviously, Rachel's profession as teacher was her life. Her dedication to her calling made a significant impact on her students.

Introduction to Woman's Medical College

While teaching at the Wesleyan Female College, Rachel took a summer tour of the Great Lakes that opened up new opportunities for her to consider and pursue. In 1856, on the tour of the Great Lakes with one of her brothers, Rachel met Dr. Isaac Barton, who was a corporator and early board member of the Female Medical College (later renamed to Woman's Medical College), in Philadelphia, Pennsylvania [2]. Mr. Barton met Rachel on the prow of the ship one afternoon and a friendship began [1]. Bodley said the following about her first meeting with Barton [9]:

> It was in the summer of 1856, when making a tour of the Northern Lakes with a brother, that I first met Mr. Barton. It was the second week of our voyage and we sat, a little party of four, on the forward deck, enjoying the breeze as our steamer ploughed the crystal waters of Lake Superior. The subject of conversation, changing frequently, changed at length to education for young women. The words of our reticent friend were few but to the purpose, revealing careful thought on the subject. After a time, rising, he excused himself from the party and went below. In a few minutes he returned with a pamphlet in his hand which he quietly handed to me, requesting the favor of a perusal. The pamphlet was the Seventh Annual Announcement of this (the Woman's Medical College) College, and conveyed to me, a western woman, my first definite knowledge of this institution. Its perusal brought me here, some years after, as a student.

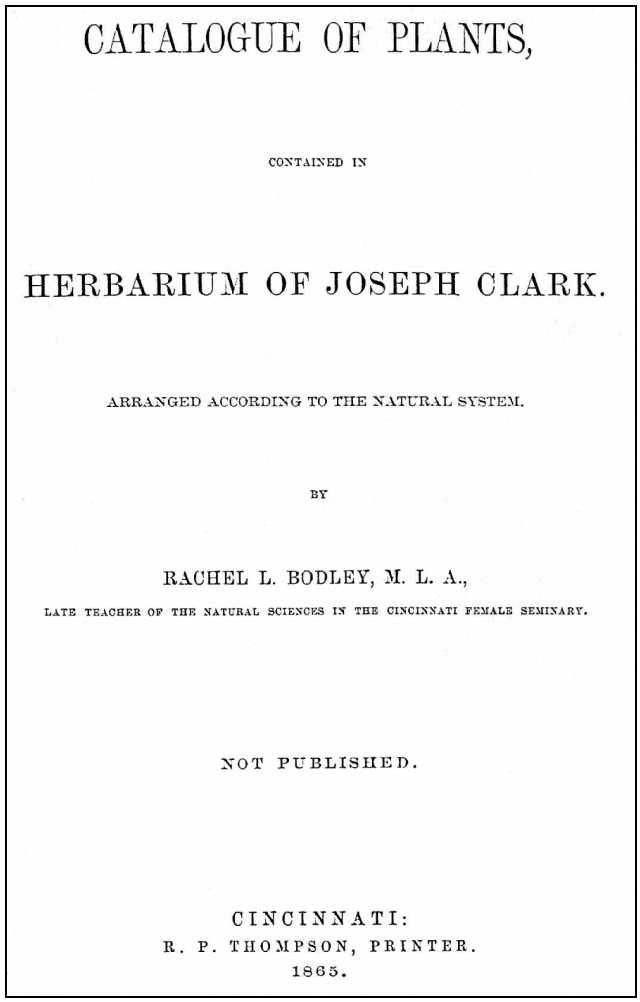
After the Great Lakes tour, Rachel returned to Cincinnati and Barton to Pennsylvania, but neither forgot the other nor their conversations regarding Female Medical College. Barton had deep hopes for Rachel's coming to the college and becoming a doctor. Barton and Rachel kept in contact through letter writing. Rachel returned home and to her first dream of being a foreign missionary; however, when she applied for foreign mission work, she was denied because of her frail health.

Further Education

As a result of being turned away from foreign mission work, Rachel decided to enroll in Polytechnic College of Philadelphia, Pennsylvania in 1860 and pursue her interest in the areas of chemistry and physics [2]. During this time, the Polytechnic College was the leading college for the study of the applied sciences [10]. While studying in Philadelphia, Isaac Barton made sure that Rachel was introduced to many of the faculty members and students of the Female Medical College. She met Dr. Ann Preston, who had just opened up a woman's hospital. Barton had hoped that this meeting would encourage Rachel to become a doctor herself; however, as Gulielma Alsop said [11], "science held her," and she decided that simply the "career of a woman in science is a great one."

Career and Work in Cincinnati

After she completed her studies at the Polytechnic College in 1862, Rachel excitedly returned to Ohio where she took a position at Cincinnati Female Seminary teaching the natural sciences [2]. In February of that year, she took on the enormous task of classifying and mounting an extensive plant collection that was willed to the institution by a deceased Cincinnati resident named Joseph Clark. Her wonderful work cataloging the plant collection was noticed and commended by the leading botanist of the time, Asa Gray [12]. Rachel created a forty-eight-page catalog of the plants she classified from the



CATALOGUE OF PLANTS,

CONTAINED IN

HERBARIUM OF JOSEPH CLARK.

ARRANGED ACCORDING TO THE NATURAL SYSTEM.

BY

RACHEL L. BODLEY, M. L. A.,

LATE TEACHER OF THE NATURAL SCIENCES IN THE CINCINNATI FEMALE SEMINARY.

NOT PUBLISHED.

CINCINNATI:
R. P. THOMPSON, PRINTER.
1865.

Figure 2. Title page from the Catalog of Plants classified by Rachel Littler Bodley.

collection (Figure 2). Bodley said the following regarding her work in the preface of the catalog [12]:

> When I entered the seminary in 1862, I found chaos reigning in the domain of science. In the midst of abounding wealth, famine was inevitable through lack of classification. With a resolute will I entered single-handed upon the Herculean task of making these treasures available to science. No attempt at classification according to the natural system had been made. The plants for the most part had been named, but named according the nomenclature of thirty years ago. Hence the necessity for a careful study of synonyms and a critical and laborious examination of individual specimens for the purpose of effecting the numerous nomenclature changes which the advance of science rendered necessary.

Rachel classified the plants according to newly revised systems of naming by Dr. Gray and Dr. Chapman and further by the place where the plants were found. She arranged the plants onto neatly labeled sheets and placed them in a herbarium case so that they could be easily accessed for study and reference. Rachel worked diligently on the collection for four years during her leisure time and summer vacations [13]. Many of Rachel's papers on the botanical collection were published in the *Philadelphia Ledger*. Her paper on seaweeds collected in Longport was printed in the *Ledger* and received much favorable attention [14].

Life in Cincinnati

Bodley's work-filled vacations demonstrated that she had found another love in her work with botanical specimens—personal study and research. Research and study of science, however, were not the only activities that captured Rachel's attention during this time. Rachel met Emeline Horton Cleveland while visiting Female Medical College in 1862. Cleveland, who was a Quaker, established the very active Woman's Union Missionary Society (WUMS) in 1860. In this society, Rachel found an avenue for involvement in foreign missions other than active service. The WUMS encouraged Rachel to motivate her students to consider working on the foreign mission field [15].

Rachel continued her education by taking private lessons in French and German as well as in higher mathematics, drawing, music, and microscopy. Her study of French and German allowed her to translate textbooks and new articles on scientific topics with ease and speed; thus, she was abreast of current topics and issues being presented in the scientific world [16]. While in Cincinnati, Rachel joined the Wisconsin History Society. Her membership in this society is just one example of how Rachel was concerned and interested in areas other than science [17].

Arrival at Woman's Medical College

In 1865, Rachel received a letter from the corporators of the Female Medical College of Pennsylvania that changed her life. The letter, written by T. Morris Perot, Esq., President of the college, offered Rachel a position as chair of chemistry at the college. Cincinnati Female Seminary, which was Rachel's current post, was well-established and growing, whereas Female Medical College had only three graduates that year. Yet, Rachel accepted the position with great excitement [17]. Rachel became the first woman chemist on staff at the Female Medical College as well as the first staff member from outside the Philadelphia area. Wyndham D. Miles explained [5] that although Rachel was not the first woman to teach chemistry in a medical school, she was "the first woman to hold the title of professor of chemistry in a medical school and the first to excel as a teacher of the science."

When Rachel first arrived at the institution, the college's course of study was five months with an optional two-week progressive course for extended study. Rachel was proficient in chemistry, physics, and botany, all of which were becoming important subjects at the college. Rachel's arrival breathed new life into the college, not only because of her unique chemistry background, but also because of her devoted interest in the work of female medical missionaries. As Isaac Barton had hoped, Rachel became an immediate champion for women in the medical field and the Female Medical College. Rachel's first class was made up of only four students, and her laboratory exercises were conducted in a small room on the first floor of the Woman's Hospital operated by Ann Preston. Rachel was quickly and warmly welcomed by all. Many of the male professors seemed eager to see the results of a woman teaching chemistry [18].

Early Work at Woman's Medical College

Rachel continued to study plants and to be "an ardent lover of nature" [19]. Rachel began an original study of sea plants shortly after arriving at Female Medical College. She continued to use much of her vacation time to conduct her personal plant research and study. She collected many specimens from all over the United States. In order to adequately care for her specimens, she always carried "a trunk containing specimen sheets and drying paper" [20]. She continued to accept opportunities to lecture during her vacations. For example, in 1866, she lectured during a large part of her vacation in Flushing, Long Island. In 1867 and 1868, she spent much of her summer vacation teaching in Philadelphia. During the five seasons between 1870 and 1874, Rachel taught at Howland School in Cayuga Lake, New York [19]. During the springs of 1867 and 1868, Rachel lectured on her studies of cryptogamous plants of land and sea [21].

While Rachel was a professor at Female Medical College, her mother moved from Cincinnati, Ohio to live with her; therefore, Rachel purchased a home with many rooms. Later, Rachel used these many rooms to board medical students and missionaries on furlough. Isaac Barton died in 1868, leaving Rachel sad at the loss of a good friend and the first person to encourage her to come to Female Medical College. Also, in 1868, Female Medical College changed its name to Woman's Medical College. Both Rachel and Ann Preston felt the name change provided "real and intrinsic dignity to women's work and study." Because Preston's hospital was called Woman's Hospital, the name change also provided "uniformity in nomenclature for these two institutions that were housed under one roof for fifteen years" [22]. Many other changes occurred at Woman's Medical College in the late 1860s. For example, in 1869, Rachel's class size grew from her first class of four to a class of fifteen, all of whom studied chemistry for a degree [22]. Also in 1868, after Barton's death, Rachel gave the opening memorial address for Woman's Medical College's Ninth Annual Session [23]. During the same year, Wesleyan Female College, Rachel's alma mater, awarded her with the degree of A. M. (Masters of Arts degree). Rachel was the first alumnus to ever receive such an honor by Wesleyan Female College [24].

Philosophy on Education and Future Science

Rachel lead the way for women with a scientific interest. Women in her classes were expected to "win their way (in academics) by learning more than simply 'womanliness.'" As Alsop said [23], "Knowledge itself was the keystone to achievement."

In the 1870s, methods of research became more practical and there were many new discoveries in medical science. Rachel noted and used these methods and discoveries. During the 1870s, "health would be found to rest on facts; disease would be cured by facts" [23]. The "hygienic" necessity of "proper food, fresh air, and sunlight" was finally understood and applied [27]. Medicines were beginning to be used as sedatives and pain killers, not just curative drugs. For example, it was discovered that chloral hydrate, previously known only as a "chemical entity," could be used as a sedative. In 1873, one of Rachel's students, Anna E. Broomall, found that chloroform could be used in obstetrics. In the 1870s, Rachel studied quinine and morphine. Rachel predicted that quinine, morphine, and similar compounds would, in the future, be made synthetically in the laboratory. In 1875, Rachel spoke of the progress in chemistry and said [27]:

> To the young physician there is inspiration in the consciousness of the broad fields of enquiry which lie before her just here in the almost endless lists of new chemicals which daily grow yet longer; what potent remedies may not lie concealed awaiting the touch of her skilled hand, and the wings of her faith, to awake to a life of larger activity.

Rachel believed there were many useful drugs waiting to be discovered and understood. She encouraged her students to make these discoveries through laboratory research. Rachel had a "prophetic grasp of the possibilities of chemisty, especially of synthetic work" [27]. For example, as Alsop notes [25], the use of atabrine in World War II showed Rachel's prophecy to be correct. Atabrine was made synthetically in the laboratory and used to save many soldiers from malaria during World War II. Though at this time many had not yet fully accepted the idea of the "germ theory of diseases" [26], other methods besides just sympathy and kindness were being used as cures. As mentioned earlier, Rachel saw the future use of the chemistry laboratory as the home of synthetically manufactured cures.

After reading a pamphlet about arsenical wallpaper called "Shadows from the Walls of Death," Rachel made this comment to her students [27]:

> A knowledge of these toxic possibilities lurking on every hand in our pampered and luxurious lives—such as can only be gained from a chemical standpoint and by a chemical student, will be a power for good in your hands in the near future….Many obscure symptoms of disease (lead poisoning) may, with the clue this knowledge affords, be traced to their true source, but only as the result of original research, for here we tread on ground quite new.

Indeed, Rachel was aware of the power that chemistry and medical research held for the future. During these years, new laboratory equipment was being introduced into science and, thus, the college. For instance, the compound microscope and the chemical test tube had found their use in the laboratory. As a result of the many advances occurring in chemistry and medicine, the laboratory was becoming a focal point in teaching science [25].

Rachel promoted the sciences and women's education at every possible opportunity. In 1871, she was elected a member of the Academy of Natural Sciences in Philadelphia. In 1873, she was elected a corresponding member of the Cincinnati Society of Natural Sciences [24]. In the spring of 1869, Rachel accepted an opportunity to teach a course on her research to doctors and teachers in Cincinnati. In 1876, she was elected a corresponding member of the New York Academy of Sciences [19].

Charter Member of the American Chemical Society

In 1874, the *American Chemist* magazine was filled with discussion about how to celebrate the centennial of chemistry [28]. Rachel proposed that chemists in America conduct a meeting [29] at Joseph Priestley's former home and burial place in Northumberland, Pennsylvania [12]. Rachel's idea was embraced by the participants, and they decided to honor

Bodley by electing her as one of the vice presidents of the committee. This recognition is even more significant because Rachel was busy doing botany research in Denver during the time of the meeting. In fact, Rachel was the only woman so honored as a vice president prior to the 1970s [28]. This celebration has been referred to as the Priestley Centennial, and it is the meeting to which the American Chemical Society traces its origin [30]. The establishment of the American Chemical Society was, as Martha Bailey states [29], "a direct result of the meeting" that Rachel proposed. Thus, Rachel was honored by being elected as a charter member of the newly formed American Chemical Society. She was, in fact, the first and only woman honored as a member of the society prior to 1891.

The American Chemical Society was a very male-dominated society when it first began, and it appears that the society was quite uninterested in having women in its "club." For example, at their first meeting in Pennsylvania, women in attendance were Ellen Swallow Richards, Lydia Shattuck, and Bessie Capen; however, the official photo did not include them because it seemed that the society felt it would look more professional if it projected a totally masculine image. Furthermore, at their meeting held in Boston in August of 1880, "the proceedings were recorded by a male stenographer, privately printed, and distributed to members as *The Misogynist Dinner of the American Chemical Society*" [31]. After this meeting, Rachel, the only female member of the society at the time, resigned. There were no female members until 1891 when Rachel Lloyd, an assistant professor of analytical chemistry at the University of Nebraska, was elected into membership [31].

Dean of Woman's Medical College

Ann Preston, dean of Woman's Medical College, died in 1872 and was succeeded by Emeline Horton Cleveland [25]. After Cleveland's retirement in 1874, Rachel was appointed dean of the college [32]. Rachel used funds bequeathed to the school at Isaac Barton's death for construction of a new building. This building was "the first erected in the name of a woman and her advancement in the science and practice of medicine." Rachel oversaw the construction of this brick building that included a central hall, a museum, and two lecture rooms. The lecture rooms had theater-like seats so students could more easily observe any demonstrations or specimens shown by the professors. The day of the groundbreaking ceremony for the building was very exciting for the college. Many prominent scientists and women of the time attended. Mrs. Hale, editor of the *Godey's Lady's Book* and active member of the Woman's Union Missionary Society, was present for this "milestone in women's education." The day after the laying of the cornerstone of the new Woman's Medical College building, *the Evening Bulletin* in Philadelphia printed this article concerning the event [33]:

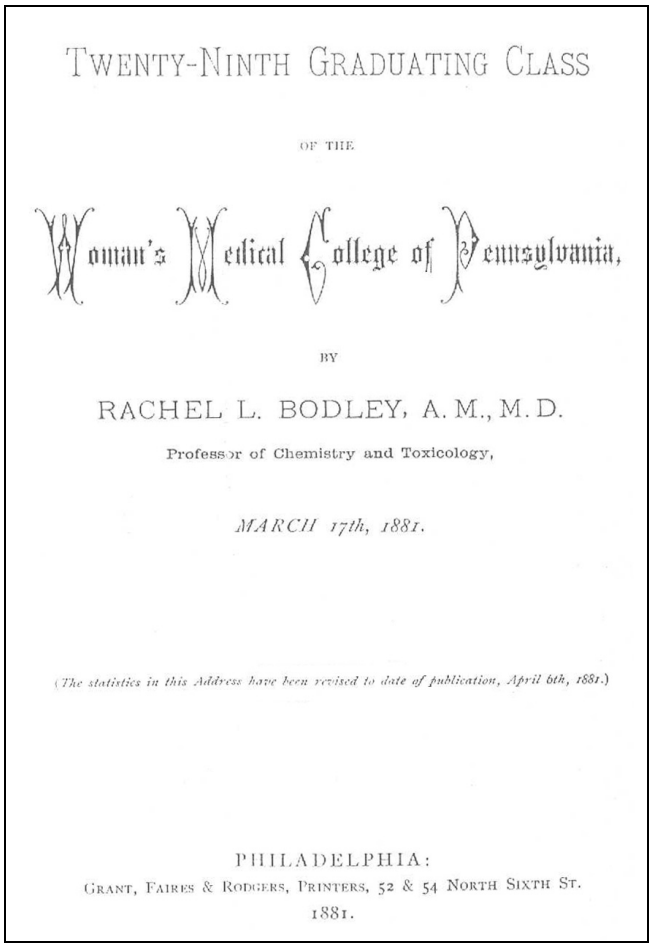
> The faculty of the Woman's Medical College includes physicians of both sexes who have won much distinction in their several specialties, and it possesses the rare virtue of having persevered in dignified silence, year after year, conquering the prejudice and winning confidence, not by assertion but by achievement. We congratulate these earnest men and women on their great success. The finishing of this handsome college building is, in one sense, the crown, and in another, the beginning of their great work: we do not doubt that the future will show that the Woman's College was essential to give full expression to some women to teach scientific truth, and to some women, to acquire and practice.

Work and Changes at Woman's Medical College

Rachel continued "striving to elevate her sex and to secure for woman and her work respect and recognition" [24]. In 1880, Rachel became a member of the Franklin Institute [32]. She gave six lectures at the Franklin Institute on "household chemistry" [20]. Furthermore, she was the first woman to present any "extended course of lectures" at the Franklin Institute [24]. In January of 1882, Rachel was chosen as a member of the Public Education Society of Philadelphia. In February of the same year, she became the school director of the 29th School Section of Philadelphia. In 1883, she was also appointed to the State Board of Public Charity for Pennsylvania. As a member of this board, Rachel visited and inspected institutions under their jurisdiction [34].

Rachel continued to better Woman's Medical College. While she was dean, Rachel lengthened the course of study to three years. She also "expanded opportunities for clinical training" by recommending and overseeing the use of a surgical amphitheater by the college [12]. The special seating in the amphitheater allowed "the painstaking work of anatomy and dissection to come to life on the operating table" [35]. Furthermore, she appointed many excellent faculty members, such as Dr. Anna E. Broomall, Dr. Clara Marshall, Dr. Emily White, and Mary Putnam Jacobi, all of whom were her former students [25]. When Rachel became dean of the college, there were six professors on staff. She increased the number to nineteen during her tenure as dean. Dean Bodley also allowed faculty members to create their own departments and to form new policies. This allowance enabled Dr. Emily White, who had taken Ann Preston's position, to create an experimental physiologic laboratory at the college. In 1888, under Rachel's deanship, Dr. Anna E. Broomall founded the Out-Patient Department for Prenatal Care at Woman's Hospital. Furthermore, with the involvement of Bodley and White, the college began to offer regular gymnastics classes for the women. This was a major step for women, because, as Alsop says [36], "Legs, in those days, were still limbs, and the very simple ideas of women having two legs, as men do, was a wicked thing." Rachel worked tirelessly to make Woman's Medical College better and highly respected as an institution of higher learning for women in science and medicine. In order to show their honor and esteem for her, Woman's Medical College presented Rachel with an honorary MD (Doctor of Medicine) in 1879 [37].

Rachel helped the college become "an institution of renown" and one with "reputation for attainment" [38]. Rachel was interested in more than just the education of her students; she also wanted to know them personally. In fact, Alsop says, "[Rachel] actually initiated the idea that the faculty, including the dean, should know the students personally." Rachel was known for her "open houses" where students were invited to come to her home during the evenings to talk about their families, their studies, and their future dreams and goals [38]. Furthermore, while dean, she held a reception each fall in her home to welcome the incoming class [39].



TWENTY-NINTH GRADUATING CLASS

OF THE

Woman's Medical College of Pennsylvania,

BY

RACHEL L. BODLEY, A. M., M. D.

Professor of Chemistry and Toxicology,

MARCH 17th, 1881.

(The statistics in this Address have been revised to date of publication, April 6th, 1881.)

PHILADELPHIA:

GRANT, FAIRES & RODGERS, PRINTERS, 52 & 54 NORTH SIXTH ST.

1881.

Figure 3. Title page from the College Story–presented as the Valedictory Address in 1881.

Because Rachel was the first scientist to be dean of the college, her speeches to the students were always characterized by her scientific perspective. For example, Rachel always advised students to be involved not only in medical practice, but also in study and research. In her first speech as dean of the college in the new building, Rachel told students: "Another duty incumbent upon you after the faithful ministration to the sick and afflicted, is the continued cultivation of scientific knowledge." Finally, in Rachel's last years as dean, she instituted entrance exams as did many other medical institutions [38].

The College Story

One of Rachel's most important activities while at Woman's Medical College was the survey that she conducted and compiled in 1881. She published her findings in a pamphlet entitled *The College Story*. The pamphlet was a collection of facts about women with a degree in science or medicine and their professions (Figure 3) [32]. Rachel presented her work with the survey in her address to the graduates at the commencement exercises in March of 1881. Her report was the first of its kind conducted by a woman; therefore, it received much attention. Thomas Wentworth Higginson, of the *Woman's Journal*, commented on Rachel's *The College Story* as [40]:

> the first really good and careful collection of facts I have ever seen bearing on the professional life of woman. It relates to the medical profession, the only one yet open to women on a sufficiently large scale to make facts of much value, except the profession of teaching which involves in some respects a different set of conditions, and need not now be considered. But medical practice is essentially professional life, and Dr. Rachel L. Bodley, Dean of the Woman's medical College of Pennsylvania, has lately instituted, among the two hundred and seventy-six graduates, a series of inquiries bearing on their whole public life for the thirty years since the first class graduated. The care with which the facts were obtained, and the clearness with which they are stated, give them a value almost unique.

Rachel began this study by sending all the living graduates of Woman's Medical College a questionnaire. She addressed this questionnaire, in longhand, to each of the 244 graduates. Of these 244 graduates, 78 of them had been her students at Woman's Medical College [41]. In *The College Story*, Rachel tells of the anticipation and anxiety that she felt when she sent the questionnaires out, and she mentions the dates and order in which the responses were received. she said [42]:

> Why should I deny that my heart failed me before the mailbags had received their entire burden. Would these earnest women permit the searching scrutiny of Alma Mater? Might they not resent the inquiry as unwarranted, and give no sign in return? I waited; on Thursday night the mailing was completed, and on Saturday following the papers began to flit back; steadily by night and by day they came, until on March 1st, 134 had been received. Nor did the answers then cease; on March 2nd, Utah responded, and on March 4th, California; but not until March 10th did was snow-bound Manitoba heard from. India and China and European lands could not respond in season, although thither also the inquiries were sent. These answers so prompt in their coming and so complete in their details, have in a manner which quite remarkable gathered these College Alumnae about me….

In the questionnaires, Rachel asked the graduates to indicate what type of work they were engaged in, what their "social and financial status" was, as well as "the influence of the study and practice of medicine upon a woman's holiest relations, as wife and mother." One hundred and eighty-nine women responded to the questionnaire. Rachel discovered that of the 189, 166 of the women were engaged in active medical practice, mostly in areas dealing with women. The following are the results of the survey [43]:

35 in gynecology with medicine of surgery
32 in gynecology
23 in gynecology with obstetrics
10 in obstetrics
9 in obstetrics with general medicine
10 in internal medicine
7 in internal medicine with surgery
3 in surgery
37 in "general practice without discrimination"

Rachel believed that this survey and study of women actually working in the medical field was essential. She stated the following concerning her study [42]:

> In the chemical laboratory we are accustomed to demonstrate each truth as taught, by recourse to test tube, reagent and balance; the same method applied to the subject of the medical education of women, would demand the crucial test of actual living applied to those who voluntarily have become exponents of a grand social and educational reform.

The survey found that twenty-three of the women who responded were not actively engaged in medical practice. The majority of the inactive women cited the following reasons for their inactivity: domestic duties, ill health, and retirement. Only five said that marriage had caused them to end their medical careers. The third question on the survey dealt with the reception of the women into the medical profession. One hundred and fifty of the women reported that they had received "cordial social recognition," while only seven said that they had not. The fifth question asked about the salaries of the women. Rachel found that the average income of the seventy-six women who answered this question was $2,907.30 per year. Four women, who were well-established practitioners, reported making exceptionally large salaries. In addition, "three alumnae report having accumulated sums sufficient to permit them to retire from active service." The sixth question asked how many women were involved in "the work for which woman is preeminently fitted, that of a medical teacher." Fifty-five women reported that they were presently involved in teaching at a medical college or lecturing about their specific field of study. The next question, which sixty-eight of the women answered affirmatively, questioned their membership in medical societies.

The last question was, "What influence has the study and practice of medicine had upon your domestic relations as wife and mother?" Rachel reported the following responses to this question [42]:

> The answers of fifty-two married ladies who responded to this question tabulate as follows: Influence, favorable, forty-five; not entirely favorable, six, and unfavorable, one.
>
> Eleven unmarried ladies reply to this question after striking out from the line, the words "wife and mother." Of these, three state that the study and practice of medicine have prevented marriage, while a fourth states definitely that she has "remained single for reasons entirely distinct from her profession."
>
> Returning to the answers of married women, because these possess the greater interest, I remark that the song of domestic life as I have listened with ear attent, has been sung in no minor key. In melody (as the tabulated statement shows) are a few discordant notes, but these are such as a master might throw in to enhance the harmonies of the strain….

Rachel was excited with the results of her questionnaire. She was especially happy to find that "the practice of medicine made happy women, marked by cheerful contentment" [44]. Rachel ended her *College Story* by saying [42]:

> The impression made is that of a congenial work, which, with pecuniary returns or social recognition, is considered wholly satisfactory. The physician who sends her record in is not debating in her won mind whether she shall next turn her attention to the study of music or of literature, or it may be of telegraphy. She has found her calling in life. It is soul satisfying. She is attending faithfully to its demands without thought of change. That this is a great gain for man or woman none will deny but that it is a dominant characteristic of the professional life of women physicians, as shown by actual statistics, is a matter of sincere congratulation.

Rachel presented *The College Story* as the commencement address at Woman's Medical College in 1881, because, as she said, "I will show these young women graduates the work accomplished by Alma Mater in the person of her daughters throughout the thirty years gone. This shall be my parting lesson to them" [41]. The faculty and corporators of the college listened to the commencement address as intensely, and with maybe more excitement and pride, than the graduates did, because the report discussed the result of the faculty's and corporators' hard work, hope, and prayers [41].

Mission Work on Foreign Fields

Rachel's special interest in medical missions, which was born in her earlier years, greatly affected her life and work at the college. while at Woman's Medical College, Rachel began "world-wide correspondence" to encourage active foreign missionaries, as well as encouraging female foreign students to come and study medicine at the college [5]. In her years at Woman's Medical College, Rachel encouraged her students to enter the field of foreign medical work. Rachel decided that if she was unable to go to the foreign field herself, then she would do the next best thing—prepare and encourage other women to go. Rachel helped to change the focus of the medical college from only the acquisition of a medical education for women to both the acquisition and responsible use of a medical education for women. Rachel believed the greatest need for medical doctors was found on the foreign mission field. In fact, in one of her speeches as dean in 1875, Rachel asked students to volunteer to go to the foreign field and relieve two of the women presently working there. Rachel also made the following remarks to the students about mission work that day [45]:

> Not only from these two localities have urgent appeals come to us but two other missionary societies are soliciting suitable women for other fields. It is no exaggeration to say that, were twenty-five women entering upon study of medicine today with a view to foreign service, work ready at hand would be clamoring for every one of them long before they could be adequately prepared to enter thereupon....Women of piety, of good education, and of social culture are those needed. I appeal therefore, not alone to the professional ladies present or even to the members of the class, but to all ladies in the audience, in the hope that either they themselves may be moved to action by this recital of facts or that they may, by personal influence, be able, through successive years, to induce suitable young persons to undertake medical studies with special reference to missionary work.

Rachel invited young missionaries on furlough to stay in her home [20]. She also set aside the first Sunday in May as a day of remembrance and prayer for foreign missionaries. All who were going to the foreign fields that year were invited. The ladies shared letters from those missionaries in service, and then prayed for them. As a result of Woman's Medical College's constant influx of missionaries to India, the Principal of the Church of England Mission in Delhi requested a director for the mission from the Women's Medical College instead of one in England [45].

Bodley's Students on the Foreign Mission Field

Rachel's passion for mission work was contagious, and many of the college's graduates dedicated their lives to this worthy calling. Rachel followed with great interest and pride the foreign mission careers of some of her former students, including Doctors Clara Swain, Anna S. Kugler, Mary H. Fulton, and Elizabeth Reifsnyder. Dr. Swain was the second woman medical doctor to apply to the foreign field and the first to be accepted. Dr. Kugler left the United States with only $200 to start her medical work in India and later built a Lutheran Hospital in Guntur, India.

Dr. Mary H. Fulton practiced in the Orient. She organized "one of the most complete medical centers in China." Furthermore, Dr. Fulton founded the David Gregg Hospital, the Hackett Medical School, and the Julia M. Turner School of Nurses in Canton. Alsop said that Fulton, "...lived through the persecutions and the hostilities to which missionaries in China are so often subjected, fleeing from a hostile province in Canton, with a price on her head" [46, 47].

Dr. Elizabeth Reifsnyder, along with other former students of Rachel Bodley, founded the Reifsnyder Women's Hospital in Shanghi, now known as the Margaret Williamson Hospital. These students undoubtedly prospered, at least partly, by following Bodley's "methods of accuracy and precision" [25]. Reifsynder claimed Bodley's missionary zeal as her own. The following [47] is said of Reifsynder's hospital in Shanghai: "In St. Elizabeth's hospital for Women and Children in Shanghai, in 1911, the Bible woman (Reifsnyder), with her knitting in her hands, sat in the clinic room as soon as the doors were open, and from the treatment room her voice could be heard speaking to the people who came in to crowd around her: 'The God who is in Heaven is like a father.' The idea of a beneficent God, instead of devils, made a profound change in the feeling of the Chinese people toward life." Drs. Swain, Kugler, Fulton, and Reifsynder all were truly devoted to the cause that Rachel Bodley had first introduced—the call to meet the medical and spiritual needs of the women and children in foreign lands.

Foreign Students to Woman's Medical College

Dean Bodley not only encouraged American students to go to the foreign field, but she also encouraged foreign students to come and study medicine at Woman's Medical College. When the first foreign student, Mrs. Annandibai Joshee, came to Woman's Medical College, Bodley gladly opened the doors of her home to Joshee while she attended the college [24]. Joshee was a Brahmin from India who was well educated prior to pursuing her three-year medical degree from the college. When Joshee's graduation drew near, Rachel wanted to do something to further commemorate her success; therefore, Rachel invited Pundita Ramabai Sarasvati, a scholar, lecturer, and poet of India, who was visiting in England, to attend the graduation ceremony. Sarasvati and her five-year-old daughter attended the graduation, held at the American Academy of Music in Philadelphia, with pride. The day after graduation a reception was held for the two Hindu women in the parlor of the Association Hall. Rachel invited women from all areas of woman's work in Philadelphia to attend the formal reception [40]. At the reception, Rachel gave the opening welcome to Sarasvati. Later, the guests were excited to here Sarasvati speak on "The Women of India." The following April, Rachel published a small pamphlet entitled *The Welcome to Pundita Ramabai*, which was a complete description of Sarasvati's two-day visit at Woman's Medical College. Bodley took the initiative to send a copy of the pamphlet to people in India, England, and the United States. Bolton says, "Contact with Western civilization on the part of both (Joshee and Sarasvati) and Christian baptism by Sarasvati had made them outcasts among their own kindred, but it was desired that in the land of their birth it might be known that American women cherished and loved them." achel wanted to ensure that all knew that these Brahmin women were welcomed and honored in the United States. Rachel also made sure that Queen Victoria of England, Empress of India, received a copy of the pamphlet. The Queen quickly responded to the pamphlet and thanked Bodley for sending it. The letter also said, "the Queen has read the paper with much interest." The Queen's interest and response proved to be a great step for woman's medical work in India. Rachel later wrote the preface for Dr. Joshee's cousin's book about the horrible plight of Hindu women in India. Hundreds of American mission hospitals and clinics in India now exist directly from the interest in foreign missions by Bodley [48].

Christian Influence at Woman's Medical College

Although Rachel affected the foreign field greatly, she never forgot that Woman's Medical College was the "home base of the missionary doctors" [49]. Alsop said Rachel believed that: "On its (Woman's Medical College) life and welfare, and on its consecration and devotion, the missionary calling depended. She used every means in her power to foster a Christian spirit in students and faculty" [49]. Thus, when Rachel discovered that Woman's Medical College's chapter of the Women's Christian Association was in need of a permanent meeting place, she and a friend, Miss Susanna Brinton, found a house near the college for the group to meet. Miss Brinton made the first down payment on the building. Bodley and Brinton believed that the college's Christian Association, "helped to nourish and foster the Christian ideals of the founders of the College, ideals that have made the graduates of the Woman's Medical College different from many co-educationally trained women doctors in universities not avowedly Christian."

Finally, many who met Rachel noted that her Christian kindness was not in words alone, but thriving in every aspect of her life. For example, Dr. Sophia Johnson said that she was immediately impressed by Rachel's kind and helpful attitude. Rachel opened her heart and her home to all who were in need of encouragement and comfort. "Dr. Bodley's house was a centre of hospitality, and she was crippled in her financial resources because of her generous habit of entertaining strangers, attracted by her many points of contact with the religious and educational world" [49].

Rachel Bodley evinced a Christian influence until her death in 1888 at the age of fifty-six. She died suddenly in her home in Philadelphia of heart failure. She is buried in her hometown of Cincinnati, Ohio, in the Spring Grove Cemetery [24].

Conclusion

Rachel Littler Bodley was a selfless lover and promoter of chemistry, Christian missionary work, and women's education. She devoted her time and efforts to these causes. Her work led to many advances in the science of chemistry. Bodley's long lasting contributions include the genesis of the American Chemical Society, research and publication of "The College Story", and her meticulous detail in the cataloging of plants. Her good leadership and foresight allowed for Woman's Medical College to become one of the foremost women's medical institutions in the United States. Her diligence and encouragement made the work of women as Christian missionaries both possible and extremely productive. Furthermore, her achievements helped improve opportunities for women in the medical field. As Samuel Pennypacker of the Philadelphia Board of Education correctly stated concerning Rachel's life [50]:

> In view of her achievements, it can never be said that women are incapable of reaching the higher places of science like medicine or that they are without the executive ability that would enable them to provide for the educational needs of a community.

Finally, the impact of Rachel's life can be described well by the following statement made by the Woman's Board of State Charities at Rachel's death [50]:

> We shall miss from our councils that kindly greeting, that dignified presence, which have been ours so long; and the wisdom which was of such inestimable value in the delicate work which falls to our committee to do. It was a constraining love, a belief in the all-pervading power of human kinship, that made it impossible for any cry of human need to come to her unheeded.

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