Women in the Scientific search:

An American Bio-bibliography, 1724-1979

PATRICIA JOAN SIEGEL and KAY THOMAS FINLEY

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pour notre petit amour MOIRA ELIZABETH

PREFACE

When grandmother says, "I hope Moira will not want to become a chemist in a laboratory surrounded by icky smells and messy concoctions," we see to what extent is engrained the traditional prejudice against women scientists. Beyond patronizing colleagues, fearful professional societies, and discriminatory recognition practices, there runs a current of feeling even among our educated and well-intentioned contemporaries that "nice girls" do not get involved in the nitty-gritty of scientific discovery. Theodore Zeldin, a British historian, said, "Marie Curie was helped by the fact that she was of Polish origin and foreign girls could do things in France which French girls, watched over by parents with pretensions, could not."

Yet there are numerous women who have given unstintingly of their talent, their time, and their energy to the scientific community with little reward for their struggles and achievements. We discovered this glaring lacuna while we were enjoying the renewal offered by that wonderful and essential tradition known as sabbatical leave. Interested in the history of science and of women, we spent some evening hours browsing in the library until the evidence of the neglect of women's contributions became so overwhelming that we metamorphosed into nightly sleuths.

A perusal of James McKleen Cattell's American Men of Science reveals that as early as the first edition in 1906 women were included, a fact too insignificant at the time to mention in the title. In the first seven editions (1906-1943), Cattell determined the thousand leading American men of science "to secure a group for scientific study." A star was awarded in the 12 principal sciences and the symbol "means that the subject of the biographical sketch is probably among the leading thousand students of science in the United States." The number awarded in each science is "approximately proportional to the total number of workers in that science." Although the starring system has been thoughtfully criticized, it certainly was a peer evaluation and indicates who American scientists thought were the leading workers in their field at the time.

This period, representing most of the first half of the twentieth century, produced 52 women recognized by their colleagues as important contributors to their discipline. The largest current effort to provide biographic and bibliographic data on women in the United States is certainly Notable American Women 1607-1950

and the fourth volume, Notable American Women: The Modern Period, published in 1971 and 1980 respectively. Correlation between these two basic sources shows that just over half of the starred women appear in Notable American Women (29 of 52). If the fact that some were still living when the latter work was published, and thus excluded, the overlap is good except for the field of zoology where only three of 17 are found.

Other standard compilations of scientists and their works do not show the same recognition of the importance of women scientists in the first half of the twentieth century. For example, the excellent Biographical Dictionary of American Science, published in 1979, includes only four of the 19 women selected by their peers as distinguished contributors at the turn of the century. Fairness demands notice that this work does include 14 other important women scientists and doesn't include the twentieth century, when women scientists began to contribute in significant numbers. The 15-volume Dictionary of Scientific Biography published the same decade names seven American women, including three of the 52 who won stars.

The study of women in science is not a particularly recent intellectual interest. In 1869 we find Lydia Ernestine Becker writing in The Contemporary Review, "On the Study of Science by Women." An important part of this long paper is the account of examinations given at the Royal College of Science for Ireland beginning in 1855-1856 for the purpose of awarding prizes and medals in such fields as geology, botany, zoology, chemistry, pure mathematics, and laboratory work. In the thirteen years for which data are given, women are found in the first three places in each field and in numbers far out of proportion to their distribution in the group taking the examinations.

In the June 23, 1888, issue of <u>The Woman's Journal</u>, there is a small note reporting that a Belgian lady, Mme. Renoz, has been selected as the editor of <u>La Revue Scientifique des Femmes</u>. Thus, it is not surprising that M. Rebière presented a <u>Conférence</u> entitled <u>Les Femmes dans la Science</u>, published in 1894 and greatly expanded in a second edition of 1897. American women, too, were making recognized contributions to science and in <u>The Chautauquan</u> of 1898 and 1899 Mrs. M. Burton Williamson, soon to appear in the first edition of <u>American Men of Science</u>, published a three-part paper, "Some American Women in Science." Biographical sketches, photographs, and comments on the work of 44 women constitute a basic source of information as the new century dawned.

References to women scientists appeared as parts of books describing the contributions of women to the intellectual life in both the nineteenth and early twentieth centuries; for example, W. A. Newman Dorland in <u>The Sum of Feminine Achievement</u> published in 1917 devotes a chapter to "Woman's Contribution to Science."

It was 1913 when John Augustine Zahm, writing under the nom de

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plume H. J. Mozans, published <u>Woman in Science</u> treating both the struggle for acceptance and biographical information for an extensive list of women scientists.

Recently, active scholarly interest in women scientists has produced exciting results from such diverse environments as the autumn 1978 issue of Signs: Journal of Women in Culture and Society and the 1980 Symposium on Women in the History of Science at Williams College. In our opinion three publications illustrate the very best of current attempts to correct the neglect women scientists have suffered. The first is the superb study by Margaret W. Rossiter, Women Scientists in America: Struggles and Strategies to 1940. When we saw the title and began reading a review we could see three years of work going out the window. It is our sincere hope that our efforts complement hers, and that together we can stimulate the great amount of research remaining.

The second promising activity is represented by the Association for Women in Mathematics which is using its Newsletter to present solid, scholarly contributions to the history of women in science. This is especially important since mathematics is so central to the progress of science in general. Many of the papers found in this publication reach far beyond any narrow definition of mathematics and contribute to our understanding of a variety of scientific disciplines. It is a shame that collections of this valuable periodical are so difficult to find.

The third and bottom line in this or any other scholarly discipline is the short paper resulting from hours, days, weeks, months, years of digging. Finding these obscure gems, which are often hidden in the back issues of little-known and barely-read journals, such as alumnae bulletins and nonextant reviews, is pure scholarly pleasure. How glad we were to find Jeanne E. Remington's study Katharine Jeannette Bush: Peabody's Mysterious Zoologist. Perhaps others will share her and our frustration and elation in the search for truth about American women scientists.

Specifically, our purpose is that of any good bibliographer: to provide a starting point for future work. From our own backgrounds we recognize the value of Hugo Paul Thieme's La littérature française du dix-neuvième siècle and Friedrich Konrad Beilstein's Handbuch der organischen Chemie, which provided a real impetus for future work in nineteenth-century French letters and organic chemistry. We started our research with the deceased women who are found in one or more of the following sources: 1) American Men of Science (first edition or starred), 2) Notable American Women, 3) Biographical Dictionary of American Science, and 4) the small, but growing, number of biographical collections devoted to scientists of both genders practicing a particular discipline. To this last we have added the most exciting source of all, those women we discovered and are not found in any published collection. We have

evidence that our list is not exhaustive, but no one who publishes can ever wait until the job is done. The length of each biographical sketch is approximately proportional to the work left to be done if one first understands that even the longest sketches represent women for whom much remains to be learned and published. There are women in this collection who have everything that Mme. Curie had except "good press." There are also women here who represent the norm of practicing scientists; they worked hard and produced useful results that promoted new research which made their work out of date. There are also women who, for reasons that deserve study, ended their scientific career before they even made a name among their contemporaries.

The bibliography is as complete as we have been able to make it; we are certain this means it is very incomplete. It is our objective to concentrate on published studies of biography. The large and important resources of correspondence, works about careers for women in science, studies of institutions with which women scientists have been associated, and the professional bibliography of these women have been presented only when they have been published and contain direct biographical references. There are two distinct types of biographical dictionaries. We have included all references to those which, like Dictionary of American Biography, provide substantial biographical sketches and references. We have cited those which, like American Men of Science, simply list biographical facts only when we were able to find no other published information. In general these materials are well presented in Women Scientists in America and to a less satisfactory degree in Notable American Women. We have made the greatest possible effort to present accurate and complete citations and to make the nature and extent of each item clear. Those few items we have not been able to see are marked with an asterisk. Wherever we have found incorrect information of fact or of implication, we have stated it as we have found it with the sole intent of helping future scholars.

Four additional notes on style may be helpful. There are a number of instances in which more than one woman is discussed in a given work. Rather than repeat the full bibliographic citation and most of the annotation each time, such works are fully described in a general section and later referred to by item number. In those cases where a particular woman is dealt with in more detail, a supplementary annotation is included. There are instances in which a woman appears many times in a book but without a single section devoted to her biography. We employ "index" in the citation rather than repeat the list of page numbers. We have, of course, checked the accuracy of the index cited and provided any corrections needed. Many of these women made contributions in more than one scientific We have tried to place them in the section corresponding to their chief interest as reflected in American Men of Science. general we have used this source to tentatively resolve conflicts over dates, types of degrees, and professional affiliations. As

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indicated in our annotation, the entries in that basic reference are most likely to have been proofread at least once by the woman herself.

One of the most troublesome problems in this work is deciding the proper name to use for a woman. We have tried to use a common-sense approach by listing her complete name at the head of each entry and then referring to her by the name she appears to have most commonly used. We are sure there are many examples of misusage which will come to light in the course of further research. A somewhat related type of problem is that of the proper sequence in which to present the women. We have elected the chronological approach by date of birth in an attempt to place the contributors in their historical perspective.

Material for this book has come from innumerable sources, some of which were very obscure. For their patience and persistence we are grateful to Mr. Robert Gilliam and Mrs. Norma Lawrence of the Interlibrary Loan Office of State University College, Brockport, New York. In addition, we thank heartily all those librarians, archivists and alumnae directors who responded so generously to our requests and who saved us miles of unaffordable travel. Thank you, too, Mr. Paul Hart, our student who solved some impossible problems for us while we were away from all American libraries.

We have met some truly fascinating women in the course of this study; it is our sincere hope that you will join us in making their acquaintance. As for Moira, we do not hope that she will be a chemist or even a scientist, only that she may be able to choose rationally what it is she does want to be.

> P. J. S. K. T. F.

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