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"Preliminary draft for Mrs. Richard's Criticism", n.d.

Preliminary draft for Mrs. Richards's
criticism.

Title- ?

Previous to the year 1867 women may be said to have had no opportunities for the study of chemistry at any public institution. In that year, among the Lowell Free Lecture courses given by instructors of the Massachusetts Institute of Technology were two courses in chemistry open to both sexes. In 1868, laboratory exercises were substituted for the lectures, upon the same conditions, and were continued each year with but one exception until 1877. The laboratories at the Girls' High School, West Newton Street, Boston, were put in working order in 1869 with funds raised by the Womans Education Association, and in 1870 Vassar College began to give laboratory instruction in chemistry.

A break in the Lowell Free Laboratory Exercises in 1873 led to the establishment of a class at the GirlsHigh School under the direction of Professor Crafts of the Massachusetts Institute of Technology. Sixteen students entered the class and Mrs. Richards and Miss Capen became instructors. In 1874 the Lowell Free Laboratory Course were resumed and in 1875 Harvard opened its summer school for teachers in which laboratory instruction was given.

General interest was increasing to such an extent that the attention of many educators was called to the fact that not a few women wished instruction in chemistry and related subjects, especially mineralogy. Frequent applications were

received at the Massachusetts Institute of Technology for instruction for a limited time to meet a special need. Most of these applications came in the fall and winter when the summer schools were not open. The winter of 1876 brought so many applications for instruction in quantitative analysis that it was thought best to separate the subject from the Lowell courses, and changes were made in Professor Wing's private laboratory to accommodate eight students. These students were all women whose ability had been proven. Thus it was made evident that the professors and officers of the Institute were ready to meet the demands of the time so far as circumstances would permit, but it became evident to all that the demands were increasing so fast that they could not be properly met in the Institute building. While it was thought a desirable thing to aid a teacher to fit herself in one or two months to take a position for which she was not qualified without this aid, yet all true educators felt that such makeshift instruction ought to be superceded by a regular course of instruction which should make the women who took positions as teachers of science fully qualified, well-balanced instructors. At this juncture Mrs. Richards presented the matter to the Womans Education Association in the following words:

"You are all doubtless aware of the rapidly increasing interest which women are taking in science, especially chemistry, mineralogy and zoology. The recent endeavor to become members of the Boston Society of Natural History is one evidence. There are two women studying zoology at the Society building at the present time. The excellent laboratories at the Girls' High School are showing what chemistry means to one hundred young women yearly.

"In consequence of the increasing advantages offered to women for the elementary study of the natural sciences by the high schools, colleges, summer schools for teachers and winter courses of lectures, a desire to study these sciences further has been developed in the minds of those who have taken the first steps. Many of the subjects require those qualities in which women excel, such as delicacy of touch, eye for color, etc. Many branches of chemistry and mineralogy have special attractions for women, and so far as they have yet been able to go in them, those who have a love of the subjects have been uniformly successful.

If these women could have such opportunities as they need, they would fit themselves for experts in the several branches to which their tastes incline them.

The demand for such training is constantly increasing, but no scientific or technical school offers the training to women. The Summer School for Teachers at Harvard is doing a great deal toward fostering a love of really scientific work on the part of women. The Laboratory at Wellesley College offers instruction to others beside its regular students. These are some of the influences which have been quietly at work creating a thirst for advanced study of these subjects. Many teachers and others are ready and anxious to devote two or more hours a day to some one or more of these studies, but they have no place in which to study, no apparatus with which to work, no instructors to guide them. Moreover, the number of distinct professions (if we may so call them) in this line is increasing; opportunities for special research and the discovery of new applications in science were never better; there are many problems in ordinary housekeeping waiting to be solved by chemical experiment and women must make those experiments if they are ever made. The question comes to us from all over the country - 'Where can I study the higher departments of chemistry?' - "Where can I obtain instruction in the use of the microscope and spectroscope ?' How many times we have had to answer - 'There is, as yet, no place.'"

Impressed by this statement of women's needs in the departments of higher and professional education, members of the Association in touch with the affairs of the Massachusetts Institute of Technology proposed that the Association seize the opportunity offered by a renewal of an effort on the part of the Institute to obtain a new building for its department of chemistry to ask the government of the Institute if they

could consider the question of setting apart a portion of the new building for the use of women engaged in the more advanced study of chemistry and allied subjects.

This proposition met with the approval of the Association and a committee consisting of

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was appointed to confer with the officers of the Institute. Various conferences were held which resulted in inlisting the sympathy of the officials of the Institute in the movement and in securing such promises of cooperation as they were then in a position to make, but the erection of the proposed new building had finally to be postponed. The claims of women were not, however, so postponed and a proposition made by Prof. Runkle that a space be fitted up in the Gymnasium building as a woman's laboratory was accepted by the Association. The Association immediately issued a circular [can this circular be quoted here?] asking for $2,000 to provide instruments and apparatus for a laboratory for women which should afford instruction in advanced chemistry, mineralogy, botany, undustrial chemistry and chemistry as applied to vegetable and animal physiology. The money was all raised within three weeks from the issue of the circular, that is in May, 1876.

(Follow with subscription list in full ?)
if possible—

Before this plan could be put into execution the School

of Mechanic Arts of the Institute was decided upon and space for the woman's laboratory was secured in a low brick annex to the Rogers building of the Institute

This change of plan, involving increased space, called for more money than had been raised by the first subscription and $500 was added by the W. E. A. to the sum already secured for the equipment of the laboratory.

In November, ~~1876~~ 1877, the Woman's Laboratory was opened to students. It consisted of five rooms , viz: the chemical laboratory, the library and weighing room combined, the reception room, the industrial and optical laboratories, the first three were for women exclusively, the two last named being shared by regular students of the Institute, although the instruments all belonged to the women's department.

In October, 1876 the following circular was issued (see "A").

In reporting for the Committee to the Association upon the results of its work Mrs. Richards says:

"The Association may look with pardonable pride upon the results of its efforts - results so soon realized and so far beyond the most sanguine expectations. Either the time had fully come for such a step or the difficulty was much less than we imagined, - probably both conditions existed.

If I remember rightly, I estimated the probable number of pupils for the first winter at fifteen. There were seventeen names on Professor Ordway's list some days ago [before the circular had been issued.]

Lest there be some misunderstanding as to the attitude of the Faculty of the Institute from the fact that only certain courses are offered in its circular, I will state that several members of the Faculty were not accessible when it was necessary to print the notice and, of course, nothing could be done without their consent. Some of these instructors, I may mention Dr. Sterry Hunt as one, have since said to Prof. Ordway that they trust their lectures will not be slighted by the ladies.

In the course of a few weeks you will be invited to visit one of the most comfortable and convenient laboratores to be found on either side of the Atlantic, in which the question is to be solver - Have women the mental capacity for scientific work ?

After the laboratory had been in operation for a year Mrs. Richards made the following report to the W. E. A. in ?, 1877.

"It is always pleasant to have our prophecies fulfilled and especially pleasant when some doubt has been expressed as to the probability of fulfilment. I hope to be pardoned, therefore, if I seem to boast of the fulfilment of my own predictions. I recall so clearly a conversation with two officers of the Association on the morning on which we paid over the last instalment of the money collected for the laboratory for women at the Mass. Inst. Tech. While these officers were both very much interested in the plan and delighted with the hearty response given to their appeal for funds, they expressed doubts as to the result. When I said I felt sure of fifteen students the first year, both exclaimed - Oh, if there are eight or ten we shall be quite happy and think the money well spent!

The rooms were not opened until the last of October and the course was not advertised outside of the Association except by a few circulars sent to friends of members of the Association and to contributors. At this date, we have had twenty-

three ~~students~~ women in the chemical laboratory, and some fifteen have already been enrolled for next year.

Doubt was also expressed in another way. Those who had had experience with the free science classes said that we would find the number of those who were willing to pay for their instruction very small. This statement was not far from the truth, if we substitute the word able for willing. Of the twenty-three students above mentioned only five (so far as I am able to judge) have been in circumstances to pay the fee without sacrifice and self-denial. This makes the number who spend much time in the laboratory quite small. They study as much as possible outside and gain as much as they can in an afternoon. While this increases the usefulness of the laboratoey, it materially lessens its income. The receipts from the twenty-three students being hardly equal to that received from the five regular students.

Some statement of the class of work done may be of interest. First in importance we may place that of aid rendered to teachers. During November and December, the laboratory had the honor to number among its students our friend from Smith College, later her successor at Wellesley and that lady's successor at Framingham Normal School. The teacher of science at Bradford Academy spent a month with us; three teachers of chemistry at the Girls' High School have given Saturdays to practice work; seven others are looking forward to becoming teachers of science. These students have been given work which would illustrate principles, not merely facts. All their instruction has had for its end the broadening of their ideas of science and to fit them to impress on their pupils the depth of the channel and not merely its surface breadth, as is so apt to be the result of popular scientific teaching. Of the remaining number, two are engaged in original research; three are studying for the use they may put their knowledge to in the future but with no very definite aim for the immediate future. Their work is more strictly educational and has a more direct bearing on their own mind. We have four married women, three of them with families of children from five to eighteen years old. The aid the laboratory has been able to give to them has been to me one of its pleasantest features - the proof of its truly broad and liberal character. I have felt the greatest satisfaction in opening the treasures of our storehouse to two of these ladies in particular. One is studying in order to become a physician. Her husband is a doctor of long practice and I presume a very intelligent man, but he sees the defect in the education of his early days and wishes her to have the best of modern instruction. In the two months she stayed with us, we gave her an insight into microscopical work as well as some practice in theoretical and medical chemistry and taught her to read scientific German with the aid of a dictionary. We feel that superficial and slight as was the actual amount of knowledge she gained, it will nevertheless make her a far more intelligent and thoughtful pupil at the medical school to which she is going.

The other lady has been studying mineralogy only, but this case deserves notice because of the possibility of many others taking courage to carry out even at a late day their early longings. Determinative mineralogy, or the determination of mineral species by the blow-pipe, is rarely, if ever, taught in colleges. Smith College will soon be an exception to the rule. Scientific schools usually give a course of it, but until within a few years the so-called mineralogists were mere collectors who had learned to distinguish the common varieties by sight. Most of the dealers of minerals are still of this class. I suppose very few women in the country understand this very fascinating subject and yet there is not another in which women so readily excel, for it requires nice distinctions of color, lustre and other appearances. Although it is dependent upon chemistry and, in any strictly scientific school should follow it, yet it is quite possible to take it up and fully enjoy it and succeed in it, as this lady has done, without any previous knowledge of chemistry for the few simple principles are readily learned in the course of practice.

I have been over the ground thus minutely in order to show you the variety of work made possible in this one little room with earnest workers. Even if the belief of people in general that woman's mind is not capable of deep scientific thought is proved true, yet we must acknowledge that the valleys and foot-hills of science are very attractive to the feminine mind even if they can never hope to scale the heights snow-capped above them.

I will hazard the statement that when the opportunities are equal, four fifths of the intelligent girls will choose science and will become industrious workers in the field of observation gathering facts from which their superiors may build generalizations.

The other and more expensive room,- the optical laboratory,- has not yet been perfected. The room required so much more time than we anticipated by reason of the number and variety of pupils, that we have made slow progress. Nevertheless, the Institute class in vegetable physiology, numbering eight or nine, the Boston University Class in botany and three gentlemen have been accommodated there in a far better manner than would have been possible in any other place in Boston. Six or eight of the students in chemistry have also availed themselves of its privileges by employing two or four hours a week in that work.

As to the future prospects, the optical laboratory promises the widest field when it becomes known. It proposes to occupy an entirely new field looking toward biology from the chemical side; not supplanting the biological laboratory, but sending to it far better prepared pupils.

The old adage - Well begun is half done - has much truth in it. We can certainly call this new enterprise well begun and as one of the trustees said - it will be easier to let it go on than to stop it."

In April, 1882. Mrs Richards reviewed the work in the following paper read before the W. E. A.: