

Encounters with Chemistry

William James

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Many famous nonchemists have left behind accounts of their first encounter with chemistry. Whether the person in question was a psychologist, a writer, a critic, an artist, an economist, a mathematician, or a philosopher, whether the experience was brief or prolonged, whether it was pleasant or unpleasant, the purpose of this series is to record these encounters and do to so in the person's own words whenever possible.

The psychologist and philosopher, William James (figure 1), is considered, along with Charles Peirce (1839-1914) and John Dewey (1859-1952), to be one of the founders of the uniquely American philosophy of pragmatism. James began teaching anatomy and physiology at Harvard in 1873, followed by psychology in 1875, and philosophy in 1880. His first major book, *The Principles of Psychology*, was not published until 1890 when James was 48, and many of his other well-known books, such as *The Will to Believe* (1896), *The Varieties of Religious Experience* (1902), *Pragmatism* (1907), *A Pluralistic Universe* (1909), etc. were actually collections of popular lectures and were not published until the final decade of his life.

James had in fact first begun his association with Harvard in 1861 as an undergraduate student, not in psychology or philosophy, but rather in chemistry at the Lawrence Scientific School. This school, like the Harvard Medical School, was distinct from Harvard College proper. It was founded in 1847 based on funds provided by the New England industrialist and entrepreneur, Abbott Lawrence (1792-1855). The school's first Rumford Professor of Chemistry was Eben Norton Horsford (1818-1893), who had studied chemistry under Liebig. Sometime in the early 1850s Horsford developed a new phosphate-based baking powder and in 1854 he opened the Rumford Chemical Works (named after his chair at Harvard) in Providence, Rhode Island, in order to manufacture and market his invention.

By the time James entered the Lawrence Scientific School in the fall of 1861, Horsford had become totally absorbed in his new business and most of the day to day teaching had instead devolved on his newly appointed assistant, Charles Eliot (figure 2), who had studied chemistry in Harvard College under Josiah Parsons Cooke. Many years later Eliot would recall his

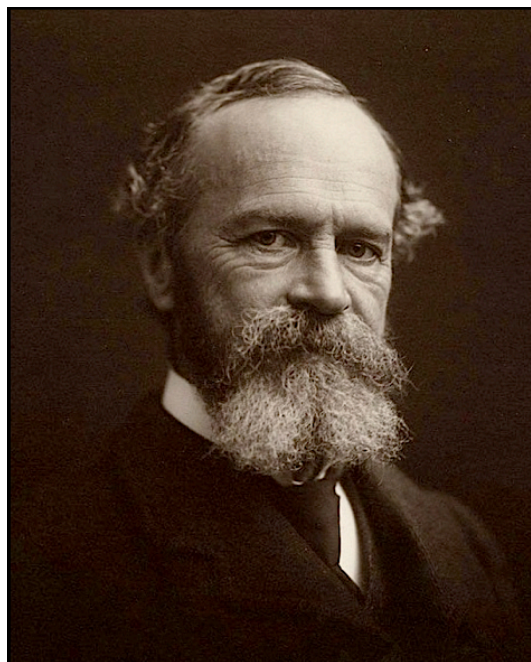


Figure 1. William James
(1842-1910)

first impressions of James:¹

I first came into contact with William James in the academic year 1861-62. As I was young and inexperienced, it was fortunate for me that there were but fifteen students of chemistry in the Lawrence Scientific School that year, and that I was therefore able to devote a good deal of attention to the laboratory work of each student. The instruction was given chiefly in the laboratory and was therefore individual. James was a very interesting and agreeable pupil but was not wholly devoted to the study of chemistry. During the two years in which he was registered as a student in chemistry, his work was much interfered with by ill health, or rather by something which I imagine to be a delicacy of nervous constitution. His excursions into other sciences and realms of thought were not infrequent; his mind was excursive, and he liked experimenting, particularly novel experimenting ... I received the distinct impression that he possessed unusual mental powers,

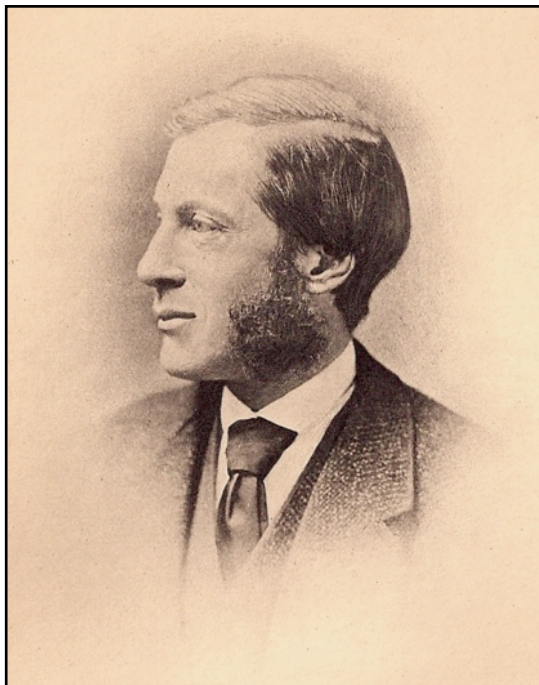


Figure 2. Charles William Eliot
(1834-1926).

remarkable spirituality, and great personal charm. This impression became later useful to Harvard University.

James's chemical activities during his year and half in the school are only fleetingly referred to in his surviving letters of the period, which mostly deal with family gossip. Thus, in a letter written on 16 September 1861, we read:¹

This chemical analysis is so bewildering at first that I am entirely "muddled and beat" and have to employ most of my time reading up ... Eliot I have not seen much of: I don't believe he is a very accomplished chemist, but can't tell yet ... We are only twelve in the laboratory, so that we have a very cosy time. I expect to have a winter of "crowded" life.

and again, later that same month, in a letter to a cousin:¹

... you might weep tears of blood to see me day after day forced to hold ignited crucibles in my naked hands till the eyes of my neighbors water and their throats choke with the dense fumes of burning leather ... This writing in the middle of the week is an unheard-of license, for I must work, work, work. Relentless chemistry claims its hapless victim.

By November of that year we find him already planning his eventual escape from chemistry:¹

As Wilky has submitted to you a résumé of his future history for the next few years, so will I, hoping it will meet your approval. Thus: one year study chemistry, then spend one term at home, then one term with Wyman, then medical education, then five or six years with Agassi, then probably death, death, death with inflation and plethora of knowledge.

"Wilky" was James's younger brother, Garth Wilkinson James, who would later be seriously wounded during the Union assault on Fort Wagner in 1863.

By the September term of his third year, James was willing to admit to a cousin that he had already lost his ardor for chemistry and had begun to follow the plan outlined in the previous letter by studying comparative anatomy under Wyman:¹

When you were at our house, I recollect I was in the first flush of my chemical enthusiasm. A year and a half of hard work at it here has somewhat dulled my ardor; and after a half year's vegetation at home, I am back here again studying this time comparative anatomy. I am obliged before the 15th of January to make finally and irrevocably "the choice of a profession."

These random references to his chemical activities can be given a more concrete framework by quoting the notes on James that Eliot kept for each of the chemistry students under his supervision:¹

First term, '61-'62, James, W., entered this term, passed exam in qualitative analysis well.

Second term, '61-'62, James, W., studied quantitative analysis. Irregular in attendance at laboratory, passed exam on Fowne's "Organic Chemistry."

First term, '62-'63, James, W., studied quantitative analysis and was tolerably punctual at recitations till Thanksgiving, when he began an investigation of the effects of different bread-raising ingredients on the urine. He worked steadily on this until the end of the term, mastering the processes, and studying the effects of yeast on bicarbonate of soda and bitartrate of potash.

The research project undertaken by James his third term is of particular interest as it was probably suggested by Horsford himself in connection with his ongoing work on the manufacture of baking powders, since there was considerable public resistance to the use of "chemical substitutes" for natural yeast and thus an interest in establishing that they were safe for hu-

man consumption.²

It was also in 1863 that Horsford finally resigned his position as Rumford Professor of Chemistry. Eliot, not unexpectedly, hoped to be appointed as his successor, but the position was given instead to Oliver Wolcott Gibbs. Disappointed, Eliot left Harvard for a two-year hiatus in Europe, followed by a brief period teaching chemistry at MIT, another two years in Europe, and his appointment in 1869 as President of Harvard University, a position he would hold for the next 40 years.³

As for James, he pretty much followed the plan outlined in his letter of November 1861, first studying comparative anatomy and physiology under Jeffries Wyman, then acting as an assistant to Louis Agassi, and finally graduating from medical school in 1869,

followed in 1873 by the beginning of his gradual ascent up the academic ladder at Harvard.

References and Notes

1. H. James, Ed., *The Letters of William James*, Atlantic Monthly Press: Boston, MA, 1920, pp. 31-32, 34-35, 39, 40, 42, 43.
2. "The Great Baking Powder Wars," in W. B. Jensen, *Frankenstein's Cat and Other Assorted Lectures on Skepticism and Humanism*, Epicurean Press: Cincinnati, OH, 2015, pp. 76-82.
3. H. James, *Charles W. Eliot, President of Harvard University, 1869-1909*, 2 Vols., Houghton Mifflin: Boston, 1930.