

THOMAS COOPER AND ALFRED VICTOR DU PONT: A CASE STUDY
IN CHEMICAL EDUCATION IN THE EARLY NINETEENTH CENTURY

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Hagley Museum

September, 1958

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The problems involved in attempting to secure adequate instruction in chemistry were many in the United States of 1816. Some of these problems were those of the sciences in general, others seem to have been within the particular province of chemistry alone.

Science, in one form or another, had long been taught in American colleges. The Newtonian system had found early and enthusiastic support in such institutions as Harvard and Yale almost as soon as it had been presented and as new colleges were founded during the eighteenth century they usually provided for some form of scientific instruction.¹

After nearly one hundred years of the teaching of science, however, certain difficulties which had faced the earliest instructors were still plaguing their nineteenth century counterparts. Libraries were inadequate and facilities for demonstration nearly nonexistent, at least outside the handful of leading colleges. By 1816 there could also be seen a certain reaction against the alleged materialism and atheism of the Enlightenment.² Science, having been at least partially identified with the Enlightenment, was bound to participate to some degree in the fate of its late patron. The clergy of America, which was for many years to continue as the main fount of education, viewed science with an uneasy eye. The naïve hospitality of the seventeenth and eighteenth century New England Puritan leaders toward the New Science had been

ill-repaid. Samuel Miller, himself a Presbyterian minister and member of the American Philosophical Society, showed a rare tolerance when he asserted in 1803: "A man who is a bad Christian may be a very excellent mathematician, astronomer, or chemist; and one who denies and blasphemes the Saviour may write profoundly and instructively on some branches of science highly interesting to mankind."³ Most of his colleagues would no doubt have denied the possibility of such a juxtaposition.

These handicaps to the teaching of science in general also applied to the teaching of chemistry in particular. Texts were few and inadequate and demonstration equipment, more often than not, had to be built by the teacher himself.⁴ In addition to these general difficulties, chemistry also suffered as the result of being a newcomer among the separate disciplines of science. Only a few years before, Lavoisier had revolutionized the very foundations of chemistry and, in most colleges, it had not yet received the separate recognition which its new status demanded. Too often it was jealously considered by medical faculties as their own special province and confined to the position of a mere hand-aid of the *Materia Medica*. Another, and perhaps more serious handicap, at least from the standpoint of the pupil, was the method by which chemistry was taught. The lecture system was employed almost exclusively and when demonstrations were attempted, they were handled by the professor and not by the students. The frequency with which these demonstrations failed is perhaps an indication that the lecture system was not only customary but, at least in some cases, obligatory.

Such was the state of chemical education in the United States when, in 1816, Eleuthère Irénée du Pont selected Thomas Cooper to direct the

scientific studies of his eldest son.⁵ Alfred Victor du Pont, who had been born in France in 1798, had completed his course of study at Mount Airy Academy, near Philadelphia, and at eighteen was ready to enter college.⁶ His father was on intimate terms with John Vaughan⁷, the Philadelphia merchant and librarian of the American Philosophical Society and was acquainted with such scientific luminaries as Thomas Jefferson, the Abbé Correa⁸, and Thomas Law.⁹ It was no doubt to these men that E. I. du Pont turned for advice in the selection of a school.¹⁰ Where might the son of a manufacturer learn the lessons of science necessary to his future work? It seems reasonable to assume that Carlisle College (now Dickinson) was enthusiastically recommended as the best place to receive such an education, for it was there that Thomas Cooper had been teaching chemistry since 1811.¹¹

If E. I. du Pont's friends did recommend Cooper, it was not the first time that he had heard his name. As early as 1803 he had, in a letter to his father, alluded to Priestley's residence in the United States. "No one here knows," he said, "that one of the greatest chemists of Europe has come to establish himself in Northumberland."¹² Cooper had been living with Priestley since he had been in this country and perhaps du Pont knew of him by this time. In 1805 Thomas Law had mentioned Cooper to du Pont in a favorable, though probably political, context.¹³

By whatever considerations it was decided that Alfred Victor should study under Thomas Cooper, the choice was a fortunate one for E. I. du Pont. During his youth in France he had worked with Lavoisier and was therefore in a position to seek, and recognize, outstanding

chemical instruction. Furthermore, and these could have been no small considerations in 1816, the religious, political and economic views of the two men were in sufficient harmony to make their friendship possible. E. I. du Pont was, as a good son of eighteenth-century France, tolerant in religion, a liberal in politics and a somewhat ambivalent conservative on economic matters.

Thomas Cooper was also a child of the Enlightenment.¹⁴ His long association with Joseph Priestley was sufficient evidence, at least for many clerics, of his liberal views on religion and his imprisonment for violation of the Sedition law was eloquent testimony of his democratic leanings in politics.¹⁵ His views on "political economy" were, along with those of other eighteenth-century liberals who lived into the nineteenth century, basically inconsistent.¹⁶ Along with such men as Thomas Jefferson and Pierre Samuel du Pont de Nemours, he had a deep philosophic aversion to the prospect of a free-wheeling industrial economy. Also like Jefferson and the elder du Pont, he grew to recognize the advantages of the economic independence of America.¹⁷ It was perhaps through his contemplation of political economy that Thomas Cooper was led to become one of the earliest advocates of the application of science to industry in America. "There are few chemists in this country among manufacturers," he complained, and in his magazine, the Emporium of Arts and Sciences, he made a special effort to point out the close and necessary connection between chemistry and manufacturing.¹⁸ Du Pont was a subscriber of the Emporium and he no doubt read such words with approval.

Although E. I. du Pont had received his chemical training under Lavoisier, and Thomas Cooper had been the pupil of Joseph Priestley, the two men were probably able to agree even on the still thorny point of phlogiston. Cooper had referred to phlogiston in his Introductory Lecture at Carlisle as "a theory which has called forth in its attack and defence, some of the first rate talents that modern times can boast of: and which indeed, still remains a question, not entirely free from obscurity."¹⁹ He was no slavish follower of his old friend and teacher. Notwithstanding Lavoisier's unfounded claim to the discovery of oxygen, said Cooper:

he cannot be deprived of the honour of that most ingenious train of reasoning, and that accuracy of experiment, which first of all ascertained the true nature of calcination and combustion . . . which raised the French theories triumphant over the prostrate doctrine of phlogiston--and which made the French nomenclature, the universal language of the chemical world."²⁰

There was nothing in such an attitude which could have offended Lavoisier's pupil. All things considered, du Pont was satisfied that Cooper was the man to train his son.

And so it was decided. On May 18, 1816, Pierre Samuel du Pont wrote his wife in France that he was almost alone at Eleutherian Mills.

"All the others," he reported:

have gone to accompany Alfred to Carlisle, fifty leagues from here, where he expects to take a course in chemistry under Mr. Cooper. That decidedly inconveniences Irénée,

but it is necessary that he personally introduce his son to Mr. Cooper, and that he arrange the manner in which the young man can and must live in that part of the country, where it is not easy to send parcels.²¹

The advisability of finding suitable housing for young Alfred was greater than his grandfather knew. When a college building at Carlisle had first been turned into a dormitory for the students, the resulting discipline problems had been remarkable and varied. Cooper had, for a time, lived with the students and his influence, far from being appreciated, had been deplored by the more staid members of the college. His habit of resorting to the sovereign elixir of red wine to cure the students' minor ailments was particularly upsetting to some people. Nor did the fact that Cooper was reportedly the first man in Carlisle to drink whiskey and water help to make him popular with the more restrained elements of the community.²²

Three days after P. S. du Pont had written his wife that his son and grandson had left for Carlisle, E. I. du Pont wrote home to Eleutherian Mills and reported on conditions at the college.

I am very satisfied [he said] with our decision for Alfred so far as the instruction goes; but it has been more difficult than I would have believed to decide how he is to live. Judge Cooper, who lives in the college, wanted Alfred to be there too and I regretfully consented because I saw nothing else to do; fortunately I found out in time that it would be very bad for his work as well as for his

recreation--he would have had to spend his evenings and Sundays in very bad company. I made a compromise arrangement that will avoid those two difficulties and yet give him all the time he needs for study. He will go to the college in the early morning, have his breakfast and dinner there and stay all day; in the evening he will return for supper and for the night in a private house, where he has a very nice room, and nice people who will take good care of him and with whom he will spend his Sundays; part of the time he will be with the family of our old correspondent, James Givin, who are very wholesome and respected people here and have promised to show him all sorts of attentions. Their son, who is Alfred's age, studies at the college, and will be a good friend for Alfred and prevent his making unfortunate acquaintances, as he might easily have done.²³

Soon after his grandson was installed at the college, Pierre Samuel du Pont wrote:

Alfred has been sent to Carlisle under Dr. Cooper, the friend and principal pupil of Priestley, the greatest chemist there is in America. Alfred will not be what is called a scholar, but he will be a chemist, mathematician and mechanic. These are the most important actual sciences in our position.²⁴

If Alfred was not a scholar, as his grandfather feared, neither was he a mere technician. On June 15, 1816, he was unanimously elected to

membership in the Belles Lettres Society, and thereafter took an active part in its debates although it is possible that the greatest attraction of the Society was its library. Only two days after he became a member, he borrowed the first two volumes of Accum's text on chemistry. Within a week he had also taken out the first two volumes of Thomas Thompson's work on chemistry and during July he borrowed the second two volumes of Thompson.²⁵

Carlisle College, despite Cooper's presence, was no place at which to begin one's education in 1816. If the resignation of its president and most of the faculty (including, strangely enough, Cooper himself) the previous year had not killed the college, it certainly was badly crippled, and shortly after young du Pont arrived the school closed its doors, not to open them again until 1822.²⁶ The records do not disclose exactly when du Pont left the school; a list of alumni carries only the curt comment, "Non-graduate . . . Further record unknown."²⁷ On September 7, he applied for and was granted a diploma from the Belles Lettres Society and his last withdrawal from its library is dated September 20, 1816.²⁸

Alfred Victor du Pont's removal from Carlisle did not mean the end of his education. On October 7, 1816, his father wrote from Philadelphia: "I saw Judge Cooper this evening; he wants Alfred to be here as soon as he can. Try to send him on Wednesday morning by the Steamboat and I will be here to get him installed."²⁹ Less than seven months after he had entered Carlisle in search of chemical instruction, Alfred Victor du Pont was to give up his plans for a regular college education. He was to become "apprenticed" to Thomas Cooper, rather than

to be his student. "During this summer," wrote his grandfather, "Alfred is at Carlisle, during the winter at Philadelphia with Judge Cooper, close friend of M. Priestley. He is not studying law with the Judge, but chemistry. M. Cooper is a distinguished chemist. He gives courses in both cities. Alfred will serve as operator; that is the best way to learn."³⁰ As his father had once been sent to assist Lavoisier, now Alfred was to help Cooper. "He is now with Judge Cooper," wrote P. S. du Pont, "the foremost chemist in America, attending to the office and performing experiments in the public lectures which the doctor gives, because being a judge does not prevent his being practiced in and teaching the sciences, even for money."³¹

When Thomas Cooper left Carlisle, he returned to Philadelphia, the scene of some of his most active work and the center of American science. Whatever his motives for leaving Carlisle, he arrived in Philadelphia ill-prepared to support himself and his family. In order to earn money he turned to the giving of public lectures and was able, with the additional help of an editorship of the Port Folio offered to him by Dr. Charles Caldwell, to maintain himself until his appointment to the University of Pennsylvania.³²

These were the lectures which enabled Alfred Victor du Pont to continue his studies under Cooper. Lectures meant demonstrations, and demonstrations, at least for Cooper, meant an assistant. It was Alfred's duty to tend to the chemist's office and to prepare and perform the experiments with which Cooper illustrated his lectures. As Pierre Samuel du Pont had observed, this was the best way to learn. In 1816 the actual handling of experimental apparatus was entrusted to very few students. To be able to serve as the "laboratory assistant" of the most

eminent chemist in America was indeed a privilege and opportunity.

In December, 1816, Thomas Cooper was appointed Professor of Chemistry and Mineralogy at the University of Pennsylvania, a chair which was a part of the newly formed Faculty of Natural Science.³³ Cooper, who had probably been giving public lectures on his own initiative, now began to conduct regular courses under the auspices of the University.³⁴ In point of fact, he seems to have been one of the few new professors who did lecture. Dr. Charles Caldwell, who was made Professor of Natural History on the new faculty, later stated that "though all the professors of the Physical Faculty accepted their appointments, Dr. Cooper and myself alone delivered lectures in it. All our colleagues, except Mr. Hare, who delivered a single introductory lecture, were nothing but sleeping partners in the concern."³⁵

Cooper delivered his first official lecture soon after his appointment. The editor of the Port Folio commented:

Some time since the Editor attended an address introductory to a course of lectures on Chemistry, proposed to be delivered in this city, by that indefatigable lover of science, Judge Cooper. The following notes of this address are now published with the approbation of the lecturer, in the hope that our young men may be incited to the study of this useful branch of learning."³⁶

The lecture which followed gave some indication of the scope of the proposed course and the method by which he intended to give it. It said in part:

The chief use of a chemical lecture is to enable a student to read with advantage the books that treat on the subject; to show those experiments to the eye that would be unintelligible from mere description on paper. It will be impossible to exclude oral instruction, but I shall dwell briefly on what the book will tell you, and more amply on those applications of chemical knowledge which the books usually met with do not supply.

I hope to give the natural history of the substances which are the objects of chemical investigation; then their artificial history; how to procure them; then their chemical properties when procured; and lastly their uses in medicine, in the arts, and in manufactures.

I propose to perform the experiments by means of the apparatus usually described in the common books. But my chemical knowledge has been acquired in situations where my domestic utensils have constituted my apparatus, because my local situation and the state of my finances compelled me to economy and substitution. I shall endeavour therefore to show as often as I can, in what way the most material properties of chemical substances can be demonstrated by means of apparatus, every where to be found, and within the compass of moderate income.

In so doing, I believe I shall best serve the interests of the science I profess to teach, and present nothing that can deter the student from the future pursuit of the knowledge he is anxious to retain, as well as to acquire.³⁷

While other students were taking notes and watching the experiments performed with "domestic utensils," young du Pont was in the enviable position of actually manipulating the equipment. "Alfred is at the home of the chemist, Cooper," wrote his grandfather, "distilling his head in Alembics and Retorts, and breaking it against all the mineralogical stones."³⁸

When the first series of lectures on chemistry was completed, Cooper began a second. The Port Folio again published the first address.

The course of Chemistry to which this lecture is introductory [wrote Cooper,] will be different, in some degree, from those I have already given. As it will be offered to a miscellaneous audience of both sexes, it will be incumbent upon me to show what inducement of amusement or instruction such a course of Chemistry can present to those who are invited to attend³⁹

However the professor proposed to amuse the ladies in his audience, the fact that they were there at all was probably indicative more of his financial straits than any great desire on his part to educate Philadelphia society.

The teaching of chemistry at the University of Pennsylvania had for many years been the exclusive duty of the Medical Faculty and the newly appointed Professor Cooper fought a long and losing battle to strengthen that subject in the Natural Science department. Medical students were required to attend the lectures of Dr. Redman Coxe of the Medical Faculty while Cooper's lectures were strictly voluntary and therefore

less well attended. Cooper sought to have the two chairs of chemistry put on an equal footing by allowing the students to fulfill their chemistry requirement by attendance at either course.⁴⁰ His move failed and since his income from the University derived exclusively from the fees paid by his students, he had little choice but to open his lectures to the general public.⁴¹

During the fall of 1817, Professor Cooper delivered the first of several lectures on mineralogy in addition to his regular series on chemistry. The Analectic Magazine announced the new course and reported that it would "occupy between two and three months, at three Lectures a week. Tickets 15 dollars." The course was to be illustrated by a collection of minerals consisting of "between three and four thousand specimens. The "Introductory Lecture" of this series was also printed in the Port Folio and demonstrated that same independence of opinion that Cooper had shown in his approach to chemistry.⁴³

The two courses, on chemistry and mineralogy, carried Professor Cooper into 1818. In the spring of that year he again began a series on mineralogy but there was a limit to the number of persons in Philadelphia who were willing to pay fifteen dollars to attend them. "We should have been glad," commented the Port Folio bravely, "that a greater number of our fellow citizens had partaken of our entertainment. But we were gratified in observing ladies and gentlemen of the first rank in the community--manifesting their claim to a place in the first rank of intelligence, by a profound attention to a discourse on science."⁴⁴ In the face of diminishing attendance at his lectures, Cooper applied for the recently vacated and more lucrative chair of

chemistry in the Medical Faculty. His efforts were unrewarded and the appointment went instead to Robert Hare.⁴⁵

Thomas Cooper remained at the University in the all but defunct Faculty of Natural Science until the next year, delivering his lectures as usual but probably more with an eye toward feeding his family than with any hope of bettering his position.⁴⁶ In September, 1819, the Abbé Correa wrote that he had been "invited by our friend Cooper to assist to his lecture on Geology, at the University."⁴⁷ It must have been one of the last delivered because shortly thereafter Cooper moved to the University of South Carolina where he spent the rest of his life as professor and President.

Alfred Victor du Pont was not present to assist his teacher during the last year of his efforts at Philadelphia.⁴⁸ There is some reason to believe that his father was planning to send him to France to complete his training, a pilgrimage made by many aspiring young scientists. If this was so the plans were rudely put to naught early in 1818 when a severe explosion destroyed a large part of the Du Pont black-powder manufactory along the Brandywine. This accident put an end not only to plans for the future but also to the training of the present. Alfred was called home to help his father repair the only source of livelihood which the family had.⁴⁹

Deprived of his position as assistant to Thomas Cooper, Alfred Victor du Pont continued to show that interest in science which had no doubt recommended him to his teacher. In September, 1818, Eleuthère Irénée du Pont wrote his wife: "Tell Alfred that if he wants the experience of distilling some acid, he might as well make

one or two distillations; for the Still was lent to us and must be returned next week."⁵⁰ Three years later, on a business trip to Rhode Island, he wrote: "I spent the evening gathering minerals for Alfred, which is not difficult here, where the bones of the earth are very near the skin."⁵¹

When Alfred du Pont returned to the Brandywine, he found abundant opportunities for applying his newly acquired knowledge of chemistry. In 1816 a tannery had been built in the powder yards and was reported to be using a new and secret process, probably one using chemicals.⁵² Across the stream from the powder yards, his uncle was operating a woolen mill which produced a finished cloth requiring bleaching and dying. In addition to these, the manufacture of gunpowder itself required a knowledge of chemistry and Alfred du Pont, who later became president of the Du Pont Company (1837-1850), directed the early efforts of the company to make gun cotton from his own formula.⁵³ In a day when a manufacturing company was unlikely to retain research personnel, administrative and scientific ability were valuable combinations.

It was a difficult matter, in the United States of 1816, for the son of a manufacturer to find the specialized type of education he sought. An able scientist such as Thomas Cooper, who militantly believed in the necessity of scientific competence in manufacturers, was all too rare a person. When such an one was to be found in the midst of one's own circle of acquaintances the blessing was compounded. E. I. du Pont, who could number among his friends such men as Lavoisier, Jefferson, Vaughan, and the Abbè Correa, was certainly one to choose Thomas Cooper as the man to supervise his son's education.

If the sins of the teacher were not directly inherited by the pupil, the controversial and itinerant career of Thomas Cooper certainly did not tend toward offering a formal or lengthy education for Alfred Victor du Pont. However much advantage he gained from being an apprentice rather than a mere auditor, the erratic nature of his instruction seriously handicapped his education. Years later Alfred Victor wrote that his brother (who had attended the University of Pennsylvania) had "received an education far superior to that given me, in this our father was right, his means were more ample and he wished Alexis to have . . . the best that could be had here."⁵⁴ He was only partially correct in his appraisal. His education had, no doubt, suffered because of its all too brief and informal nature, but he was wrong in assuming that, in 1816, America offered a better teacher than Thomas Cooper.

NOTES

1. See Theodore Hornberger, Scientific Thought in the American Colleges, 1638-1800 (Austin, 1945).
2. Ibid., pp. 79-88.
3. Samuel Miller, A Brief Retrospect of the Eighteenth Century (New York, 1803), I, xii-xiii.
4. When Amos Eaton was giving popular lectures on science, from 1817 to 1824, he was thrown back upon his own ingenuity and claimed to "illustrate the most obtruse parts by a dishkettle, a warming pan, a bread-tray, a tea-pot, a soap bowl or a cheese press." Quoted in Dirk J. Struik, Yankee Science in the Making (Boston, 1948), p. 203.
5. Eleuthère Irénée du Pont (1771-1834), the youngest son of Pierre Samuel du Pont de Nemours (1739-1817), was the founder of the E. I. du Pont de Nemours and Company.
6. See "A Compilation of Source Materials on the Education of Alfred Victor du Pont . . . ," typescript in Longwood MSS (Longwood Library, Kennett Square, Pennsylvania). This report deals largely with the early education of du Pont. The information it gives on his later activities is unreliable in many particulars.

7. John Vaughan (1756-1841) was the principal powder agent and purchaser for E. I. du Pont.
8. See Richard Beale Davis, The Abbé Correa in America, 1812-1820 (Philadelphia, 1955).
9. Thomas Law (1759-1834) was an Englishman who came to America in 1793. He has been given credit for the idea of establishing the Columbian Institute. John W. Oliver, History of American Technology (New York, 1956), p. 153.
10. No records bearing directly upon this question have as yet come to light. The Longwood Library, which contains most of the early correspondence of the Du Pont family, is currently in the process of arranging this material. When this task has been completed, additional light may be shed on this problem.
11. For the best source of information on Cooper's stay at Carlisle, see Whitfield J. Bell, Jr., "Thomas Cooper as Professor of Chemistry at Dickinson College, 1811-1815," Journal of the History of Medicine, VIII (1953), 70-87. Professor Bell, and other biographers of Cooper, seems to feel that Cooper left the college at the time of his resignation in September, 1815.
12. E. I. du Pont to Du Pont de Nemours, July 16, 1803, B. G. du Pont, Life of Eleuthère Irénée du Pont, VI (Newark, Del., 1925), 253.
13. T. Law to Messrs Dupont de Nemours and Baudwe [sic], December 29, 1805, ibid, VII (Newark, Del., 1925), 226.

14. See Bell, "Thomas Cooper," 73-74.
15. Priestley had been a leading figure in the formation of English Unit^aerianism. Ira V. Brown, "The Religion of Joseph Priestley," Pennsylvania History, XXIV (1957), 85-100.
16. See Dumas Malone, The Public Life of Thomas Cooper, 1783-1839 (New Haven, 1926), for the best extended biography of Cooper.
17. For example, see Cooper's "Prospectus" for the Emporium of Arts and Sciences, II (1813), 7.
18. Ibid., I, new series (1813), 18. While still living in England, Cooper had himself been active in a company of textile bleachers and printers operating near Manchester. Harold A. Larrabee, "Truculent Thomas Cooper: Foe of Tyranny, Friend of Freedom," "John and Mary's College"; The Boyd Lee Spahr Lectures in Americana, 1951-1956 (Carlisle, 1956), p. 183.
19. Thomas Cooper, Introductory Lecture of . . . (Carlisle, 1812), pp. 62-63.
20. Ibid., p. 70.
21. Du Pont de Nemours to wife, May 18, 1816 (Letter No. 42-- Typescript English Translations, p. 464), Longwood MSS (Longwood Library).
22. For college days at Carlisle, see James Henry Morgan, Dickinson College; The History of One Hundred and Fifty Years, 1783-1933 (Carlisle, 1933), pp. 180-202.

23. E. I. du Pont to wife, May 21, 1816, Du Pont, Life, X (Newark, Del., 1926), 150-151. James Givin was the Carlisle agent for Du Pont powder. His son, also James Givin, was one class ahead of Alfred du Pont in college. George Leffingwell Reed (ed.), Alumni Record, Dickinson College (Carlisle, 1905), p. 69.
24. Du Pont de Nemours to wife, May 29, 1816 (Letter No. 43-- Typescript English Translations, p. 471), Longwood MSS (Longwood Library).
25. I am indebted to Dr. Norman Wilkinson, Research Associate of the Hagley Museum, Wilmington, Delaware, for this information. F. C. Accum's System of Theoretical and Practical Chemistry (Philadelphia, 1814) had been edited by Cooper. He also edited Thomas Thompson's A System of Chemistry, although not until 1818. The book here mentioned must have been an earlier London edition. Malone, Cooper, pp. 408-409.
26. Morgan, Dickinson, p. 209. Professor Bell attributes Cooper's leaving to the opposition of President Atwater of Dickinson. Bell, "Thomas Cooper," p. 86. Morgan says that it was merely in anticipation of the closing of the college. Morgan, Dickinson, p. 189. J. M. Mason, who became Principal of the school when it reopened in 1822, merely stated that it "had long languished, and at last expired." Niles' Weekly Register, XXIII (1822-23), supp., 27.
27. Reed, Alumni, p. 70.

28. MS records of the Belles Lettres Society, at Dickinson College.
Photostats shown to me by Dr. Wilkinson.
29. E. I. du Pont to wife, October 7, 1816, Du Pont, Life, X, 176-177.
30. Du Pont de Nemours to wife, October 16, 1816 (Letter No. 66--
Typescript English Translations, p. 677), Longwood MSS (Longwood
Library).
31. Du Pont de Nemours to wife, November 16, 1816 (Letter No. 70--
Typescript English Translations, pp. 717-718), Longwood MSS
(Longwood Library).
32. Charles Caldwell, Autobiography of Charles Caldwell, M. D.,
(ed.) Harriot W. Warner (Philadelphia, 1855), p. 341.
33. Wyndham D. Miles, The Development of Chemical Education in
Columbia, Princeton, Rutgers, and Pennsylvania (unpublished
doctoral dissertation, Harvard University, 1955), pp. 258-259.
This is the best treatment of Cooper's stay in Philadelphia.
34. See supra, note 30.
35. Caldwell, Autobiography, p. 330. Edward Potts Cheyney, History of
the University of Pennsylvania, 1740-1940 (Philadelphia, 1940),
p. 206, states that Dr. Barton, Professor of Botany, was the
"only member of the Faculty who lectured regularly."
36. Port Folio, III (1817), 187.

37. Ibid., 201.
38. Du Pont de Nemours to wife, July 1, 1817 (Letter No. 93--Typescript English Translations, n. p.), Longwood MSS (Longwood Library).
39. Port Folio, III (1817), 406.
40. Miles, Development, p. 264. Another reason for the lack of attendance was the fact that the University failed to grant a degree to students under the Faculty of Natural Science. Ibid., p. 255.
41. Perhaps still hoping to improve his position at Pennsylvania, Cooper refused a position as Professor of Chemistry at William and Mary college in 1817. He gave "previous engagements" as his reason. Niles' Weekly Register, XIII (1817), 159, 166.
42. Analectic Magazine, X (1817), 352.
43. Port Folio, IV (1817), 352.
44. Ibid., V (1818), 400. Although chemistry was the most popular science of the day, public response to scientific lectures was still short of what it was to be when Louis Agassiz spoke to great crowds at the Lowell Institute. John C. Greene, "Science and the Public in the Age of Jefferson," ISIS, XLIX (1958), 16, 19-21.
45. Malone, Cooper, pp. 231-232.
46. See Miles, Development, p. 265.
47. Abbé Correa to Zaccheus Collins, [September, 1819], Davis, Abbé Correa, p. 171.

48. The last mention of Thomas Cooper in the Du Pont records seems to be in a letter from E. I. du Pont to John Vaughan and Bd. Dahlgren, dated October 26, 1818, in which it is suggested that a dispute over the quality of a shipment of saltpeter be referred to judges. Cooper and John Harrison were both mentioned as being acceptable to the Du Pont company. E. I. du Pont de Nemours and Co., letter book (1818-1820), Old Stone Office Collection (Hagley Museum).
49. "Alfred Victor du Pont," The National Cyclopaedia of American Biography, VI (New York, 1896), 456.
50. E. I. du Pont to wife, September 17, 1818, Du Pont, Life, X, 305.
51. E. I. du Pont to daughter, July 16, 1821, ibid., XI (Newark, Del., 1926), 38.
52. Ibid., X, 126-127; Franklin D. Scott (ed.), Baron Klinkowström's America, 1818-1820 (Evanston, Ill., 1952), p. 54.
53. B. G. du Pont, E. I. du Pont de Nemours and Company; A History, 1802-1902 (Boston, 1920), pp. 69, 72.
54. Unsigned letter [Alfred Victor du Pont to sister], June 27, 1854, Allan J. Henry (ed.), The Life of Alexis Irénée du Pont (Philadelphia, 1945), II, 192.