di scienze naturali ed economiche, Palermo, **1869** (15 April), *5*, 111-114. Koerner was then working in Stanislao Cannizzaro's laboratory in Palermo. I wish to thank Professor Leonello Paoloni of the University of Palermo for sending me a photocopy of the Italian article.

3. G. Koerner, *Ueber die Bestimmung des chemischen Ortes bei den aromatischen Substanzen*, ed. G. Bruni and B. L. Vanzetti (*Ostwalds Klassiker der exakten Wissenschaften*, No. 174, Leipzig, 1910), p. 131.

4. For example, by A. Baeyer, *Annalen der Chemie*, **1870**, *155*, 282, 321; by C. Schorlemmer, *J. Chem. Soc.*, **1871**, *24*, 145n.; by W. Koenigs, *Ber. Deutsch. Chem. Ges.*, **1879**, *12*, 453; and by Dewar, as early as June 1869 (see letter published here). Several near-contemporary sources assert that Koerner sent "Privatmittheilungen" to friends; see reference 1 for citations.

5. J. Dewar, "On the Oxidation Products of Picoline," *Proc. Roy. Soc. Edinburgh*, **1872** (read on 6 June 1870), 7, 192-193; ibid., *Trans. Roy. Soc. Edinburgh*, **1872**, *26*, 189-96. Both of these articles were first published in 1872, but a reprint appeared in *Chemical News*, **1871** (27 January), *23*, 38-41.

6. For example, A. Ladenburg, *Ber. Deutsch. Chem. Ges.*, **1883**, *16*, 2063; E. von Meyer, *History of Chemistry*, Macmillan, London, 1891, p. 331; E. Hjelt, *Geschichte der Organischen Chemie*, Vieweg, Brunswick, 1916, pp. 326-27.

7. The first writer actually to cite the Italian journal was G. Schultz, *Chemie des Steinkohlentheers*, 2nd ed., Vol. 1, Vieweg, Brunswick, 1886, pp. 427-28. For other examples, see reference 1.

8. This paragraph summarized in reference 1.

9. I am grateful to Professor K. Hafner for permission to use this collection in May 1975, and for permission to publish this letter.

10. This is Koerner's wording in the critical pyridine footnote; Dewar evidently had received a reprint or detailed communication from Koerner within six weeks after publication of the Italian article.

11. J. Dewar, "On the Coal-Tar Bases," *Rep. Brit. Assoc. Adv. Sci.*, **1868**, *38*, 35-36. The "complete form" is "On the Oxidation Products of Picoline," read to the Edinburgh Royal Society one year after this letter was written.

12. "Dicarbopyridenic" acid is of course pyridinedicarboxylic acid. I cannot see that the hexagonal structure of pyridine is even implied by Dewar's quotation from his 1868 paper.

13. H. E. Armstrong, "James Dewar," *J. Chem. Soc.*, **1928**, *130*, 1066-76, on p. 1069; idem, *James Dewar*, Benn, London, 1924, pp. 6, 17.

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OLD CHEMISTRIES

Mystery Editors of Early American Chemistry Texts

William D. Williams, Harding University

American chemistry, like its culture and commerce, was dominated by European influence until the latter half of the 19th century. More than half of the chemistry books published in America prior to 1850 were American editions of European works (1). The most widely used European works included Chaptal's *Elements of Chemistry* (1796 to 1813), Henry's *Epitome of Chemistry* and *Elements of Experimental Chemistry* (1802 to 1831), Marcet's *Conversations on Chemistry* (1806 to 1850), Brande's *Manual of Chemistry* (1821 to 1839), Turner's *Elements of Chemistry* (1830 to 1874) and Fowne's *Manual of Elementary Chemistry* (1845 to 1878). Even so-called "American authored" chemistry books were largely abstracts or mosaics of European works - chiefly British. Indeed, most early American chemical writers described themselves as "compilers" rather than authors.

Before the time of international copyright agreements, American publishers found it cheaper and less risky to reprint a foreign issue than to import it or to use an untried American work. Some of these reprints were unaltered copies, while others had American chemists as editors. The editor was responsible for proofreading and evaluating the text. He added footnotes, appendices, or an American preface or frontispiece. The editor was usually listed on the title page and signed his additions with "Ed" or the initial of his surname.

A few of the earliest 19th century American chemists preferred to keep their editorship anonymous. Three such volumes attributed notes to "an American gentleman", "a professor of chemistry in this country" and "an American professor of chemistry." Another three texts made no mention of an editor, but contained initialed American footnotes or other obvious American additions.

The following describes these six anonymously edited chemistry books and seeks to identify each "mystery chemist" editor.

A New System of Chemistry (1800)

In 1800, a collection of articles pirated from the *Supplement to the Third Edition of the Encyclopaedia Brittanica* was issued by publisher Thomas Dobson in Philadelphia under the title *A New System of Chemistry* ... (2). The title page did not list author, editor, or source, but American footnotes signed "T.P.S." were added to the 197 page section on chemistry. The additional articles (Mineralogy, Animal and Vegetable Substances, and Dyeing Substances) did not contain "T.P.S." footnotes.

The date and initials leave little doubt that this American editor was Thomas Peters Smith (1777-1802), a promising

young Philadelphia chemist (3-4). Since Philadelphia was then the center of science in America, it is a testimony to Smith's ability that he was chosen editor when men like James Woodhouse, John Redman Coxe and Robert Hare were locally available. As a member of the Chemical Society of Philadelphia, Smith had already distinguished himself with work on committees of the society and by presenting the annual address in 1798. This address, *A Sketch of the Revolutions in Chemistry*, is the earliest known publication of an American chemical society (5). From May 1800 to August 1802, Smith toured Europe, visiting scientists and observing industrial methods. On the voyage home, he was killed at the untimely age of 25 by an explosion of the ship's cannon. American chemistry and technology suffered the loss of a tremendous potential.

The editing of *A New System* was one of Smith's last projects before he left for Europe. The sailing date probably caused him to be rushed in the task, because the first footnote states (6):

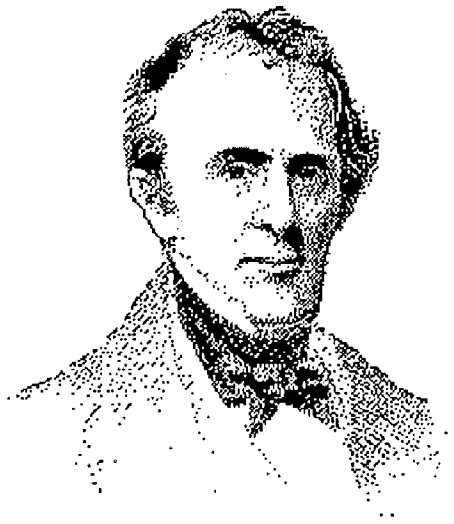
> The writer of the notes signed by T.P.S. considers himself responsible for no other errors contained in this system of chemistry than those contained in his own notes. From a number of circumstances, he was under the necessity of reading this work so cursorily, that probably many deductions which on more mature considerations he might have objected to, may have passed unnoticed.

The unnamed British author of the original *Encyclopaedia Brittanica* article presents another "mystery chemist". He was identified in the second American edition of *A New System of Chemistry* in 1803. It contained identical contents and pagination (including the notes by T.P.S.), but this time the title page included "By Thomas Thomson" (7). Another brilliant youth, Thomson had become editor of the supplement of the *Encyclopaedia* while attending medical school at Edinburgh. The article on chemistry was the preliminary experience for his four-volume treatise, *A System of Chemistry*, published in Edinburgh in 1802. A comparison of the shorter *Encyclopaedia* article with the later large work reveals many identical passages.

At the time Thomas P. Smith edited the *Encyclopaedia* article, Thomson was not yet an established authority and it is doubtful that Smith knew whom he was editing. At any rate, Smith did not hesitate to disagree with the author, insert his own definitions, or make alternative explanations. At the age of 23, Smith exhibited considerable chemical self-confidence.

Epitome of Chemistry (1808)

The 1808 edition of William Henry's *Epitome of Chemistry* had "notes by a professor of chemistry in this country" (8). The British text was unaltered and a 20-page American appendix of notes was added. This "professor of chemistry" is readily identified by comparing the 1810 edition of the same work.



Benjamin Silliman (1779 - 1864) the anonymous editor of several American editions of early 19th century British chemistry texts.

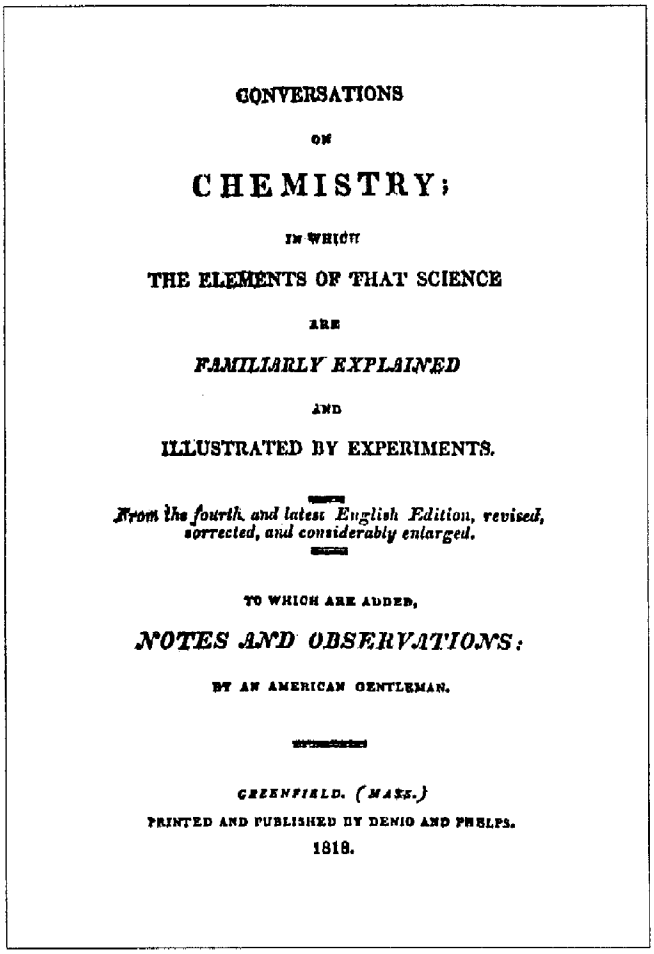
The latter contained the same notes as the earlier, but in this edition, the title page listed the editor as "Benjamin Silliman, professor of chemistry at Yale College" (9).

Benjamin Silliman, Sr. (1779-1864) taught chemistry at Yale from 1804 to 1853. He used Henry as a text until 1830, when he bought out his own two volume *Elements of Chemistry*. Silliman enjoyed a wide reputation as a public lecturer and as founder and editor of *The American Journal of Science and Arts*. There were clues in the 1808 edition that would have identified Silliman as the editor, even without the 1810 edition. A note on "Gazometer and Air-Holders" ends with a mention of "Mr. Hare's compound blowpipe ... which was suggested to the writer while in Philadelphia ..." The association of Silliman and Hare, while they studied chemistry under James Woodhouse at the University of Pennsylvania, is well documented.

Some references, including one by Benjamin Silliman, Jr., regard John Maclean as "associated with ... Prof. Silliman in editing the first American edition of Henry's Chemistry in 1808" (10). This appears, however, to be an incorrect conclusion from a letter of recommendation in that volume. This letter, signed by both Maclean and Silliman, stated that "we have adopted it (Henry's *Epitome*) for our respective classes," but goes on to specify, "A revised and corrected edition has, at the request of one* of us, been printed ..." The footnote stated: "*B. Silliman" (11). In his autobiographical reminiscences, the senior Silliman wrote of the 1808 "republication of Henry's chemistry with my additions" (12).

Conversations on Chemistry (1809)

The 1809, the 1813 and the 1814 editions of Jane Marcet's *"Conversations on Chemistry*, did not list an American editor,



CONVERSATIONS

ON

CHEMISTRY;

IN WHICH

THE ELEMENTS OF THAT SCIENCE

ARE

FAMILIARLY EXPLAINED

AND

ILLUSTRATED BY EXPERIMENTS.

From the fourth and latest English Edition, revised, corrected, and considerably enlarged.

TO WHICH ARE ADDED,

NOTES AND OBSERVATIONS:

BY AN AMERICAN GENTLEMAN.

GREENFIELD. (MASS.)

PRINTED AND PUBLISHED BY DENIO AND PHELPS.

1818.

The 1818 American edition of Marcet's *Conversations on Chemistry* with "Notes and Observations by an American Gentleman"

but had a frontispiece engraving of the "Pneumatic Cistern of Yale College" and appendices giving "a description of the pneumatic cistern" and "the manufacture of artificial mineral waters in the United States" (13). The British contents were unaltered.

These volumes were apparently also edited by Benjamin Silliman, Sr. Publication in New Haven and the mention of Yale would suggest Silliman. The frontispiece drawing and the appendix description of the pneumatic cistern of Yale College were the same as those in the 1810 edition of Henry's *Epitome of Experimental Chemistry*, which did list Silliman as its editor. The last line of the appendix description of the pneumatic cistern at Yale ended with: "... executed by the writer, B. Silliman" (14).

Silliman was involved in a commercial venture to market artificial mineral waters. This enterprise must have been the incentive for the three-page, state-of-the-art appendix in *Conversations*. (A similar appendix on artificial mineral water was also in the 1810, Silliman edited, Henry's *Epitome*.) The appendix in the 1809 and 1813 *Conversations* concluded: "The manufacture of mineral waters upon correct chemical principles was undertaken in New Haven [1806] ... and ... a public establishment for this purpose was opened under the direction of Professor Silliman. An establishment of the same kind, and under the same direction, was effected in New York in 1809 ..." (15).

Conversations on Chemistry (1818)

In the 1818 and 1820 editions of Marcet's *Conversations on Chemistry*, notes and observations were added "by an American gentleman" (16). The only alterations of the British text were three brief notes in an appendix.

The library catalog card for the 1818 edition in the Edgar F. Smith Memorial Collection has the notation: "additions by J. L. Comstock" (17). A librarian's comment on the Library of Congress card for this work and on the title page of the volume in the Boston Public Library also attribute the work to John L. Comstock.

Eleven editions of *Conversations* from 1822 to 1850 did indeed have Comstock's name printed as editor on the title page. Evidence, however, does not support the conclusion that he also edited the 1818 and 1820 editions. A comparison of the anonymous notes in the 1818 edition, with those known to be Comstock's in the 1822 edition, shows no similarity whatsoever. The 1818 edition had only three brief, rather elementary notes by the American editor in an appendix. Comstock's 1822 edition, however, had voluminous footnotes containing sophisticated additions, corrections, and explanations. Comstock exhibited a chemical knowledge and experience far beyond that of the 1818 editor (18).

Another early chemistry writer, John Ruggles Cotting, taught about this time in an academy in Greenfield, Massachusetts, where the 1818 and 1820 *Conversations* were published. A comparison of the *Conversations* appendix notes with Cotting's 1822 text, *An Introduction to Chemistry*, shows no similarity, however (19), and the identity of the "American gentleman" remains a mystery.

Conversations on Chemistry was a popular elementary chemistry text in the format of a classroom discussion between a lady teacher and two girl students. Published anonymously for almost 30 years in England and America, it eventually bore the author's name, Mrs. Jane Haldimand Marcet. The wife of a London physician and chemist, she also authored other children's books. Michael Faraday credited Marcet's *Conversations* with influencing his scientific career (20). Marcet attended the lectures of Sir Humphry Davy and was quick to add his new ideas to her text - a practice that was sometimes criticized by her American editors. The book enjoyed wide circulation in America and had at least seven different American editors from 1806 to 1850. In addition to

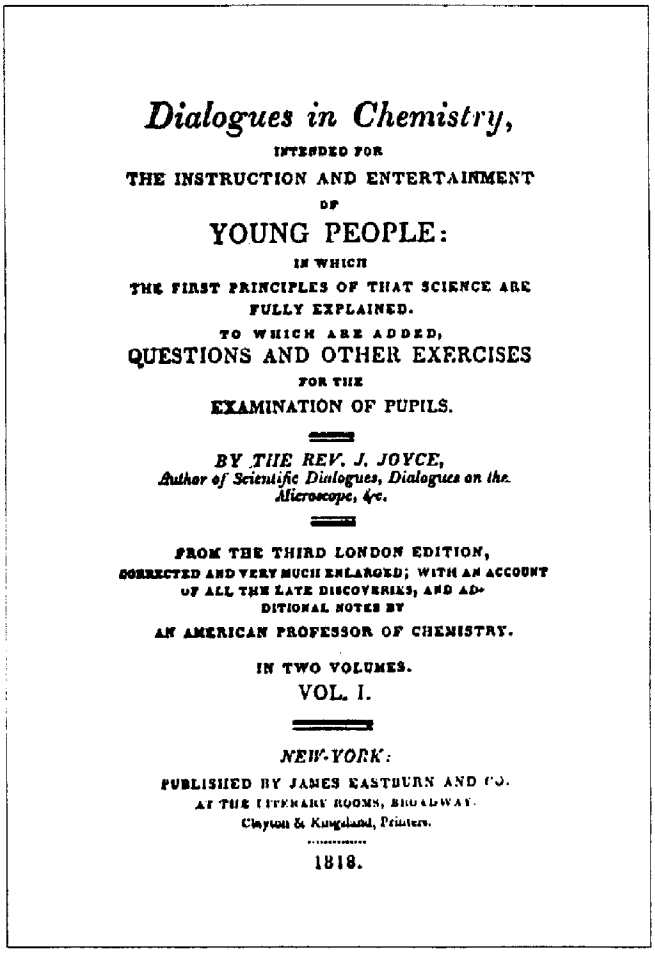
the "American gentleman," Comstock and Silliman, other editors were William H. Keating, Joseph Cloud, Thomas Cooper, and Thomas P. Jones.

A Chemical Catechism (1821)

The 1821 edition of Samuel Parkes' *Chemical Catechism* did not list an American editor, but several footnotes were inserted in brackets and initialed "G" (21). These bracketed notes were not present in 1816 and 1818 editions. They are concluded to be American because the obvious British notes are not bracketed and because one of the bracketed notes boasted of Robert Hare as the inventor of the oxygen-hydrogen compound blowpipe. Such a comment was common in American chemistry books of that era because European scientists had failed to give Hare credit for the invention.

The only prominent American chemists active in 1821 with surnames beginning with "G" were John Gorham, who taught chemistry at Harvard; Jacob Green, who taught at Princeton; and John Griscom, who taught at Rutgers Medical School and Monitorial High School in New York City and gave public lectures in chemistry. Of these three, John Griscom is the most likely editor. Gorham was too busy with a medical practice and his own two-volume text, *The Elements of Chemical Science*, brought out in 1819-20. Although Green did publish anonymous works on chemistry and electricity, he had just begun his chemical career in 1818. Griscom was not only well experienced with secondary level science, for which the

Jane Marcet (1769 - 1858), whose extremely popular book *Conversations on Chemistry* was published for nearly 30 years without her name on the title page. Authorship of the book was frequently attributed to her many American editors and even at times to Mrs. Bryant, the fictional teacher who leads the conversations in the book.



Dialogues in Chemistry,

INTENDED FOR

THE INSTRUCTION AND ENTERTAINMENT

OF

YOUNG PEOPLE:

IN WHICH

THE FIRST PRINCIPLES OF THAT SCIENCE ARE FULLY EXPLAINED.

TO WHICH ARE ADDED,

QUESTIONS AND OTHER EXERCISES

FOR THE

EXAMINATION OF PUPILS.

BY THE REV. J. JOYCE,
Author of Scientific Dialogues, Dialogues on the Microscope, &c.

FROM THE THIRD LONDON EDITION,
CORRECTED AND VERY MUCH ENLARGED; WITH AN ACCOUNT OF ALL THE LATE DISCOVERIES; AND ADDITIONAL NOTES BY
AN AMERICAN PROFESSOR OF CHEMISTRY.

IN TWO VOLUMES.
VOL. I.

NEW-YORK:
PUBLISHED BY JAMES EASTBURN AND CO.
AT THE LITERARY ROOMS, BROADWAY.
Clayton & Kingsland, Printers.

1818.

The 1818 American edition of Joyce's *Dialogues in Chemistry* with "Additional Notes by an American Professor of Chemistry"

Catechism was designed, but also lived in New York where it was published. No confirmation of Griscom serving as editor has been found.

Dialogues in Chemistry (1818)

Dialogues in Chemistry by Jerimiah Joyce was a small two volume British text for juveniles. The format was similar to Marcet's *Conversations on Chemistry* except that the discussion took place between a male tutor and two boy students. The science content of *Dialogues* was more elementary than that of *Conversations.* The single American edition contained "additional notes by an American Professor of Chemistry" (22). The only alteration from the British edition was eight pages of brief notes in appendices at the end of the two volumes.

Editorship of this American edition is not definite, but it may also have been the work of Benjamin Silliman, Sr. The phrase "American Professor of Chemistry" is very similar to

"A professor of chemistry in this country" that Silliman used in his 1808 edition of Henry's *Epitome* discussed above. A comparison of the notes of *Dialogues* with those in *Epitome* does not reveal any identical passages, but each work located notes in an appendix and each exhibited a similar third person writing style. Although different topics are considered in the two sets of notes, several similar topics and wordings can be found. Silliman made a very personal comment about the preparation of nitrous oxide in his 1810 *Epitome*: "If the gas be skillfully prepared, the precaution of letting it stand several hours over water seems to be unnecessary... The writer has not hesitated to administer it for respiration within half an hour ..." (23). A shorter note about this same topic in *Dialogues* reads: "If proper care be taken in preparing this gas, it need not stand so long over water. It may be used with safety in one hour" (24). Several other notes give similar advice without using identical wording.

No mention of an editorship of *Dialogues* can be found in biographies of Silliman, but neither did he acknowledge the editorship of *Conversations*. Perhaps Silliman did not want his name associated with such elementary chemistry.

If Silliman wasn't the editor, the list of American professors of chemistry in 1818 would not be large: John Gorham at Harvard; Parker Cleaveland at Bowdin; Thomas Cooper and Robert Hare in Philadelphia; James F. Dana at Dartmouth; John Griscom in New York; Thomas P. Jones at William and Mary. A study of the writings and biographies of these men fails to give any hint of the editorship of *Dialogues*.

References and Notes

1. W. Miles, *Lib. Chron.*, **1952**, *18*, 51.

2. [T. Thomson], *A New System of Chemistry Comprising the Latest Discoveries and Improvements of the Science*, Thomas Dobson, Philadelphia, 1800, title page.

3. W. Miles, *Chymia*, **1950**, *3*, 100.

4. W. Miles, *J. Chem. Educ.*, **1953**, *30*, 184.

5. Writings of T. P. Smith have been reproduced in the works of the chemical historian, Edgar F. Smith. See E. F. Smith, *Chemistry in America*, D. Appleton and Co., New York, 1914, pp. 12-46, and E. F. Smith, *Chemistry in Old Philadelphia*, J. D. Lippincott Co., Philadelphia, 1919, pp. 14-21.

6. Reference 2, p. 2.

7. T. Thomson, *A New System of Chemistry, Including Mineralogy and Vegetable, Animal and Dyeing Substances, Comprehending the Latest Discoveries and Improvements of the Science*, Thomas Dobson, Philadelphia, 1803, title page. For additional information on Thomson's relationship to the *Encyclopaedia*, see: H. S. Klickstein, *Chymia*, **1948**, *1*, 38; Denis I. Duveen and H. S. Klickstein, *Isis*, **1954**, *45*, 376; and J. R. Partington, *A History of Chemistry*, Macmillan and Co., London, 1964, Vol. 3, p. 716.

8. W. Henry, *An Epitome of Chemistry*, Collins, New York, 1808, title page.

9. W. Henry, *An Epitome of Experimental Chemistry*, William Andrews, Boston, 1810, title page.

10. B. Silliman, Jr., *American Contributions to Chemistry*, Collins, Philadelphia, 1874, p. 10. John Maclean (1771-1814) taught chemistry at Princeton and was an early proponent of Lavoisier's new antiphlogistic chemistry into the United States.

11. Reference 8, p. iii.

12. G. P. Fisher, *Life of Benjamin Silliman*, Charles Scribner and Co., New York, 1866, Vol. I, p. 221.

13. [J. Marcet], *Conversations on Chemistry*, Sidney's Press for Increase & Cooke Co., New Haven, 1813, frontispiece and title page.

14. Ibid., p. 355.

15. Ibid., p. 358.

16. [J. Marcet], *Conversations on Chemistry*, Denis and Phelps, Greenfield, Mass., 1818, title page.

17. *Catalog of the Edgar F. Smith Memorial Collection in the History of Chemistry*, G. K. Hall & Co., Boston, 1960, pp. 119 and 315.

18. [J. Marcet], *Conversations on Chemistry*, Oliver D. Cooke, Hartford, 1822. John Lee Comstock, M.D. (1787-1858) was a Hartford, Connecticut physician who abandoned the practice of medicine to become a writer of science textbooks that were widely used over a 40 year period when American secondary education was in the formative stages. In addition to editing eleven editions of *Conversations*, he wrote *Grammar of Chemistry* (two editions), *Elements of Chemistry* (over 100 editions from 1831 to 1859), *A System of Natural Philosophy* (223 editions from 1830 to 1867), and about 20 other texts in geology, mineralogy, biology, botany, physiology and history. His *Elements of Chemistry* received a modern review in F. L. Pilar, *J. Chem. Educ.*, **1975**, *52*, 791.

19. J. R. Cotting, *An Introduction to Chemistry...*, Charles Ewer, Boston, 1822. Cotting was at different times a minister, chemist, lecturer, secondary science teacher, and geologist for the State of Georgia. His chemistry text, which had only one edition, is described in J. J. McHenry, *J. Chem. Educ.*, **1929**, *6*, 1944.

20. Jane Marcet and her *Conversations on Chemistry* have been the subject of several papers. See: Eva V. Armstrong, *J. Chem. Educ.*, **1938**, *15*, 53; J. K. Crellin, *J. Chem. Educ.*, **1979**, *56*, 459; M. E. Derrick, *J. Chem. Educ.*, **1985**, *62*, 749; G. W. Rayner-Canham, *Education in Chemistry*, **1983**, *20*, 140.

21. S. Parkes, *The Chemical Catechism*, Collins and Co., New York, 1821, p. 81.

22. J. Joyce, *Dialogues in Chemistry*, James Eastburn and Co., New York, 1818, title page.

23. Reference 9, Notes, p. xvii.

24. Reference 22, Vol. I, p. 269.

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