

1 **Chapter 5**
2 **Edgar Fahs Smith (1854-1928)**
3 **Father of HIST**
4

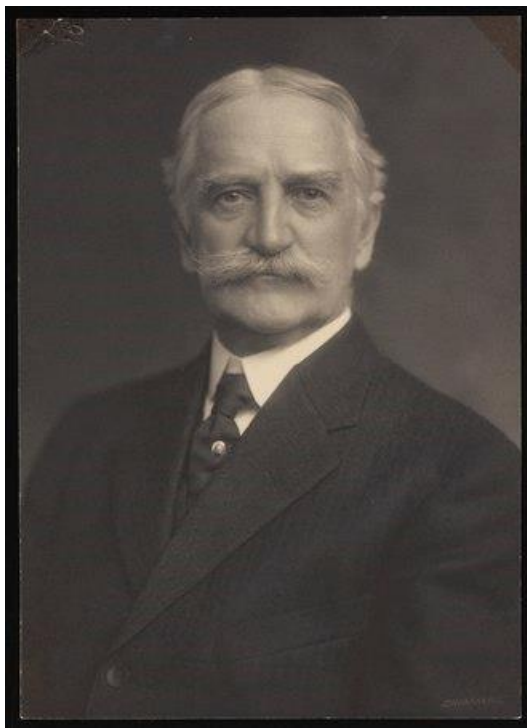
5 **Introduction**
6

7 When the eager “cranks” gathered together to talk about starting a Division of the
8 History of Chemistry at the Chicago ACS meeting in September, 1920, Edgar Fahs
9 Smith and Charles A. Browne were enthusiastic in their support for this notion. In
10 1921, at the Council meeting of the Society, with Dr. Smith as President, he
11 announced that an informal meeting of all those attendees interested in the history
12 of chemistry would be held. (And the rest is history!) But, what was it about Edgar
13 Fahs Smith that led him to devote a significant effort to both creating and
14 publicizing the history of chemistry in America? This chapter will focus on Dr.
15 Smith as a historian. He was eulogized by Lyman Newell in 1932:

16
17 “Truly the Division of the History of Chemistry owes its inception, development,
18 standards, and permanence to the vision, wisdom, generosity,
19 intelligence, and culture of our incomparably beloved patron,
20 Dr. Edgar Fahs Smith”
21

22 **Brief Biographical Details**
23

24 Edgar Fahs Smith was born in York, Pennsylvania on May 23, 1854. He loved
25 Pennsylvania and served her well all his life. He attended the famous York County
26 Academy and graduated in 1872. He was eminently successful and could have
27 attended any college in America, but he chose to matriculate at Pennsylvania
28 College (later Gettysburg College) as a Junior. He was encouraged to major in
29 Chemistry by Dr. Samuel Philip Sadtler (1847-1923). (Fig. 5.1) Sadtler attended
30 Pennsylvania College, Lehigh University (Engineering), Harvard University
31 (B.Sc., 1870), and the University of Gottingen (P.h.D., 1871). He was the perfect
32 first mentor for Smith. Sadtler became Professor of Chemistry at the University of
33 Pennsylvania in 1874, and then transferred to the Philadelphia College of
34 Pharmacy (1891-1916).



35
36

37 **Figure 5.1** Samuel Phillip Sadtler, founder of Samuel P. Sadtler & Son Consulting
38 Chemists in Philadelphia. First President of the American Institute of Chemical
39 Engineers, 1908.

40

41 Sadtler's next gift to Edgar Fahs Smith was to encourage him to go to Gottingen,
42 Germany and work with Frederick Wohler (1800-1882). Smith obtained his
43 doctorate in 1876. While his fluency in German was rudimentary, his knowledge
44 of Latin was exceptional. He made such a good impression at Gottingen that they
45 lionized him 50 years later as an honorary.

46

47 Upon his return to the United States, he was appointed as an Instructor at the
48 University of Pennsylvania in 1876. He shared both a good colleague and great
49 friend in Samuel Sadtler, who became the Department Head of Chemistry in 1887.
50 When Sadtler decided to join the Philadelphia College of Pharmacy in 1891, Edgar
51 Fahs Smith was promoted to Professor of Chemistry (1891-1920, Emeritus 1920-
52 1928). He went on to become the Vice-Provost (1899-1910) and Provost (1910-
53 1920). One of my favorite images of Edgar Fahs Smith is his statue outside the
54 Chemistry Building at the University of Pennsylvania. He is shown crushing
55 ignorance beneath his foot! (Fig. 5.2)



56
57

58 **Figure 5.2** Edgar Fahs Smith as Provost of the University of Pennsylvania. (GDP,
59 by permission)

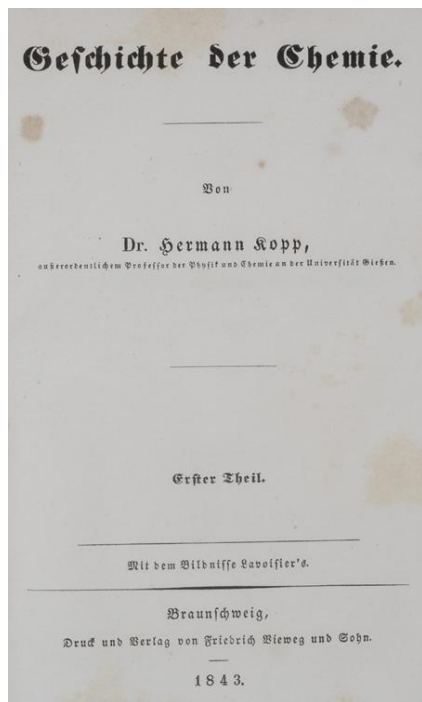
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61 **Edgar Fahs Smith as a Historian**

62

63 Edgar Fahs Smith was many things, but from his childhood he had a love of
64 teaching. In the second volume of the *Journal of Chemical Education*, he wrote a
65 long article on “Observations on Teaching the History of Chemistry,” (2, 533-555
66 (1925)). The following section relates to this article. Smith got his start by reading
67 the monumental history of chemistry by Hermann Kopp (1817-1892), Professor of
68 Chemistry at Giessen. (Fig. 5.3) He followed this by reading the chemical history
69 by Theodore Gerding (1867). He was hooked! He compiled a series of
70 translations from these works and offered a course in the history of chemistry at
71 Penn. The response was numbing. Smith resolved to focus on the chemists
72 themselves, not just their chemistry. This required substantial effort and wide
73 reading in many languages. Smith also obtained images of the chemists and their

74 papers. He also purchased signed letters between famous chemists. He became a
75 regular in the world's antique booksellers.

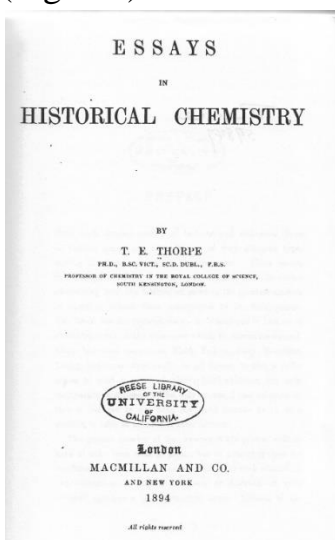


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77

78 **Figure 5.3** Hermann Kopp's *History of Chemistry* (1843) (In 4 volumes)

79

80 One of the books obtained by Smith was the *Essays in Historical Chemistry* (1894)
81 by T.E. Thorpe (1845-1925). (Fig. 5.4)



82
83

84 **Figure 5.4** *Essays in Historical Chemistry* by Sir Thomas Edward Thorpe, FRS.

85 Edgar Fahs Smith became fascinated by the work of Lavoisier. Fortunately, the
86 classic paper by deMorveau, Berthollet, de Forcroy and Lavoisier, had been
87 translated into English by James St. John in 1788. Smith constructed a dramatic
88 presentation of this episode in chemical history. The battle was being fought over
89 a rational nomenclature for chemistry. (Imagine the soul of a nomenclaturist?)
90 The court of scientific opinion was the Academie Francaise. The four horsemen of
91 the Oxygen Revolution were soon engulfed by the French Revolution. Lavoisier
92 was betrayed by Fourcroy and sent to the guillotine. There was no political justice
93 for Lavoisier, but his name is still revered in Chemistry. (Even more modern
94 chemists have chosen Lavoisier as a great subject for a play!)

95
96 Rev. Joseph Priestley (1733-1804) was “burned out of England,” but not for his
97 chemistry. He settled in Pennsylvania and interacted with all the chemists in
98 Philadelphia and Princeton, New Jersey. Not only was he a great chemist, but he
99 was a liberal and irenic human. His original works are still worth reading, even
100 though he chose to employ the paradigm of phlogiston in his thinking: his
101 experiments on gases produced a radical advancement in our understanding of
102 chemical reactivity.

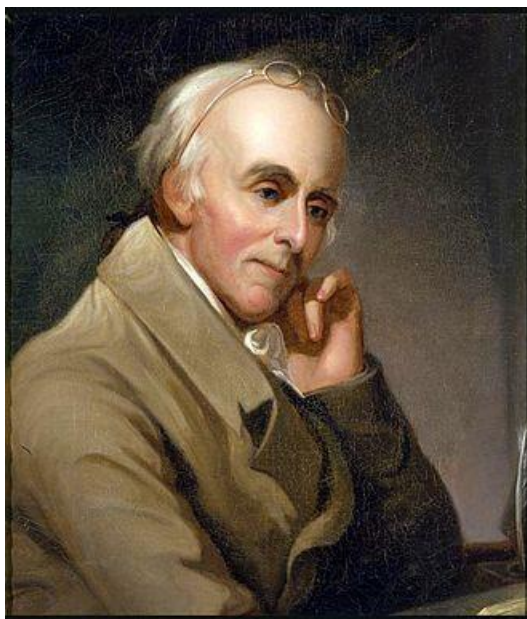
103
104 Edgar Fahs Smith tried to set each chemist in both the time and location of his life.
105 A unique set of circumstances allowed the “Lunar Society” to openly discuss
106 issues of science and polity in Birmingham. One famous visitor to this group was
107 the American, Benjamin Franklin. Priestley wrote a monumental history of
108 electricity that met with Franklin’s approval. And when it came time to flee
109 England, Franklin encouraged him to come to Philadelphia.

110
111 Edgar Fahs Smith had learned enough of the history of chemistry to formulate
112 coherent periods of development. He acknowledged that they were “arbitrary,” but
113 they stopped with the “Era of Analytical Chemistry,” his own specialty, in the
114 period from 1775 to 1925! He was also becoming familiar with the complete
115 written record of chemistry and sought actual primary sources for his best work.
116 Within this larger corpus, the names of many “overlooked” chemists may be
117 found. Smith delighted in bringing them to light!

118
119

120 Edgar Fahs Smith proposed, in this article, that doctoral work in the history of
121 chemistry should qualify for the Ph.D. . While today there are scholars with a
122 Ph.D. in the History of Chemistry, there are precious few who received such a
123 degree from a Chemistry department.

124
125 With an increasing sense of the scope of the worldwide history of chemistry, Edgar
126 Fahs Smith became increasingly focused on the American contributions to this
127 enterprise. (The Editor's most recent book is "Chemistry in 17th Century New
128 England.") Philadelphia became a major center for chemistry in America and Dr.
129 Benjamin Rush (1745-1813) occupied a Chair in Chemistry at the University of
130 Pennsylvania. (Fig. 5.5)



131
132
133 **Figure 5.5** Dr. Benjamin Rush, Founding Father of the United States and Professor
134 of Chemistry

135
136 Benjamin Rush was precocious and graduated from Princeton University at the age
137 of 14 (1759). He then apprenticed in medicine with Dr. John Redman of
138 Philadelphia. He was advised to go to the University of Edinburgh and received
139 his M.D. in 1768. Upon his return to Philadelphia he was appointed as Professor of
140 Chemistry at the University of Pennsylvania in 1769. He published the first
141 American textbook of Chemistry to use in his courses at Penn: *Chymical Syllabus*
142 (1770).

143 Edgar Fahs Smith, as author of the article on the teaching of the History of
144 Chemistry puts in a plug for his own book, *Chemistry in America: Chapters from*
145 *the History of the United States of America* (1914). This volume will be reviewed
146 below.

147
148 One of the greatest Americans of the Colonial Period, John Winthrop, Jr., was also
149 a celebrated chemist and a founding member of the Royal Society. The first
150 President of the United States of America, George Washington, was also interested
151 in chemistry. Smith recounts an episode from 1783 wherein Thomas Paine,
152 George Washington and some junior officers disturbed the mud at the bottom of
153 the creek near Rocky Hill, New Jersey, and ignited the gas bubbles which
154 emerged. Methane can be found in many places in the natural environment, even
155 if politicians forbid it!

156
157 A notable discovery in America in 1831 was chloroform (CHCl_3). Samuel Guthrie
158 (1782-1848) mixed “good alcohol with calcium chloride in a copper still” (which
159 he regularly used to make America’s favorite liquor) and found chloroform in the
160 distillate. He was a medical doctor and used it as an anesthetic in surgery.

161
162 Edgar Fahs Smith liked to carry out real demonstrations in his classes, including
163 classic experiments. He produced hydrogen gas by passing steam over iron filings.
164 Benjamin Rush was also fond of this approach and featured chemistry of interest to
165 early America, such as saltpeter and gunpowder. He also gave a series of talks at
166 the Chemical Society of Philadelphia, which existed from 1792-1811.

167
168 Edgar Fahs Smith was very fond of Thomas Cooper (1759-1839). Cooper
169 immigrated to America after Joseph Priestley was expelled, and joined him first in
170 Pennsylvania. He was elected as a Member of the American Philosophical Society
171 in 1802. He delivered a lecture in 1812 on the history of chemistry to this body
172 and published a subsequent book. Smith calls him the first real American historian
173 of chemistry. Smith also notes H. Carrington Bolton (see Chapter 2) as an
174 American historian of chemistry with a worldwide scope.

175

176

177 Edgar Fahs Smith was also a dedicated bibliophile and his magnificent book
178 Collection is now housed in the University of Pennsylvania Library. He was an
179 avid salesman of the virtues of including a historical perspective in all chemical
180 practice. From his position as President of the American Chemical Society he tried
181 to generate interest in others. He also helped to found the Division of Chemical
182 Education and published many articles on historical subjects in the *Journal of*
183 *Chemical Education*.

184

185 **Edgar Fahs Smith as a Biographer**

186

187 One of the formats for the biographical corpus of Edgar Fahs Smith was the
188 “Brochure:” a separately published pamphlet of limited length. He published 28
189 of these writings. The first one was a reprint of an article in the 1897 volume of
190 the *Journal of the American Chemical Society*: “Professor Theodore George
191 Wormley (1826-1897).” He was born in the town of Wormsleyburg, Pennsylvania
192 in Cumberland County. He attended Dickinson College in Carlisle, PA. After
193 graduation he interned with Dr. John J. Myers in Philadelphia for a year and
194 proceeded to enter the Philadelphia College of Medicine, receiving his M.D. in
195 1849. He was elected to the Chair of Chemistry and Toxicology at the University
196 of Pennsylvania in 1877. He is most famous for his book: “Micro-chemistry of
197 Poisons.” This warm eulogy is typical of Smith’s oeuvre.

198

199 In the first decade of the 20th century, Edgar Fahs Smith memorialized Robert
200 Empie Rogers (1813-1884), George F. Barker (1835-1910) and Fairman Rogers
201 (1833-1900). All three were members of the American National Academy of
202 Sciences and Edgar Fahs Smith wrote their Memoirs. This was one of his fondest
203 tasks.

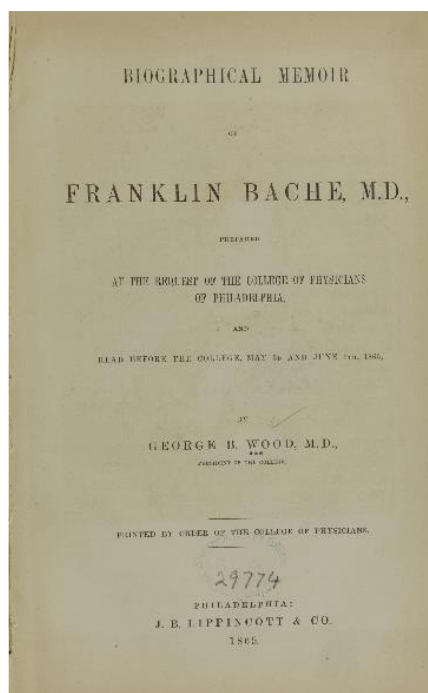
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205 Edgar Fahs Smith was interested in all things Philadelphia. He memorialized
206 David Rittenhouse (1732-1796) in 1914. Rittenhouse was the first Director of the
207 United States Mint in Philadelphia. He was perhaps the greatest American
208 astronomer of the Colonial Period. I remember him as the namesake for my
209 favorite location in Philadelphia: Rittenhouse Square. Smith followed this with an
210 article on Rittenhouse’s nephew, Benjamin Smith Barton (1766-1815) in 1916.

211 Barton was Professor of Materia Medica at the University of Pennsylvania and
212 America's leading Naturalist.

213
214 Once Edgar Fahs Smith had retired as Provost of Penn, and been elected to the
215 Presidency of the American Chemical Society, he could devote himself to the
216 history of American Chemistry. His next pamphlet featured James Curtis Booth
217 (1810-1888). Booth was highly educated in both academic and industrial
218 chemistry. He graduated from the University of Pennsylvania in 1829 and pursued
219 further education for the next seven years in both the United States (Rensselaer
220 Polytechnic Institute) and in Europe (Friedrich Wohler, Gustav Magnus). Upon
221 his return to the United States he pursued many chemical paths and founded the
222 Philadelphia consulting firm: Booth, Garrett and Blair (1881). He is most famous
223 as the melter and refiner at the U.S. Mint.

224
225 Dr. Franklin Bache (1792-1864) was one of the most powerful physicians in
226 Philadelphia during his lifetime. Smith's pamphlet on Bache was made easy by
227 the publication of an extensive memoir of Bache by his collaborator and friend, Dr.
228 George Wood (1797-1879), the President of the Philadelphia College of
229 Physicians. (Fig. 5.6)



230
231
232 **Figure 5.6** Title page of the Memoir of Franklin Bache by George Wood (1865).

233 Edgar Fahs Smith was frequently invited to give major lectures, including the
234 Chandler Lecture at Columbia University in 1922. He chose as his subject Samuel
235 Latham Mitchell (1764-1831), one of the most famous figures in the history of
236 Columbia. The resulting pamphlet is still worth reading.

237
238 One of the most interesting characters in the history of Philadelphia was Mathew
239 Carey Lea (1823-1897). Smith memorialized him in 1923. Lea was from a famous
240 Philadelphia family and joined the family publishing business. But, he spent most
241 of his time on chemistry and photography. He is currently feted as the “Father of
242 Mechanochemistry.” Lea was elected to the American National Academy of
243 Sciences in 1895 and his NAS Memoir was written by George F. Barker.

244
245 While Princeton University is in the state of New Jersey, it is intellectually united
246 to Philadelphia, Pennsylvania. One of Princeton’s finest was Dr. Jacob Green
247 (1790-1841). Smith memorialized him in 1923. Green finished his career as
248 Professor of Chemistry at his alma mater, Jefferson Medical College in
249 Philadelphia.

250
251 Dr. Martin Hans Boye (1812-1907) is known for his wide interests and for
252 pursuing them in Philadelphia. Smith wrote a pamphlet on him in 1924. It was
253 reprinted in the Journal of Chemical Education in 1944 (**21**, 7-11). Boye arrived
254 from Copenhagen in Philadelphia in 1837 and worked with notables such as
255 Robert Hare, Henry Darwin Rogers, Robert E. Rogers, and James Curtis Booth.
256 He was a valued member of the American Philosophical Society and attended
257 meetings until the year of his death.

258
259 John Griscom (1774-1852) was a leading citizen of New Jersey and New York and
260 was elected as a member of the American Philosophical Society in 1836. He
261 taught chemistry at Queen’s College (now Rutgers University) and Columbia
262 College (now University). An extensive Memoir was compiled by his son, John H.
263 Griscom, M.D., in 1859. (Fig. 5.7) Smith used it to produce a nice pamphlet in
264 1925.

MEMOIR,
OF
JOHN GRISCOM, LL. D.
LATE PROFESSOR OF CHEMISTRY AND NATURAL PHILOSOPHY:
WITH AN ACCOUNT OF
THE NEW YORK HIGH SCHOOL;
SOCIETY FOR THE PREVENTION OF PAUPERISM; THE HOUSE
OF REFUGE; AND OTHER INSTITUTIONS.

Compiled from an Autobiography, and other sources,

BY
JOHN H. GRISCOM, M. D.

NEW YORK:
ROBERT CARTER AND BROTHERS.
No. 586 BROADWAY.
1850.

19)

265
266 **Figure 5.7** Memoir of John Griscom, early college teacher of Chemistry in
267 America.

268
269 James Blythe Rogers (1802-1852) was another of the famous Rogers family of
270 Philadelphia. Smith memorialized him in 1927. He obtained an M.D. from the
271 University of Maryland in 1822, but did not practice. The Rogers family compiled
272 an extensive correspondence and Smith mined it. Eventually, James succeeded
273 Robert Hare as Professor of Chemistry at the University of Pennsylvania in 1847.

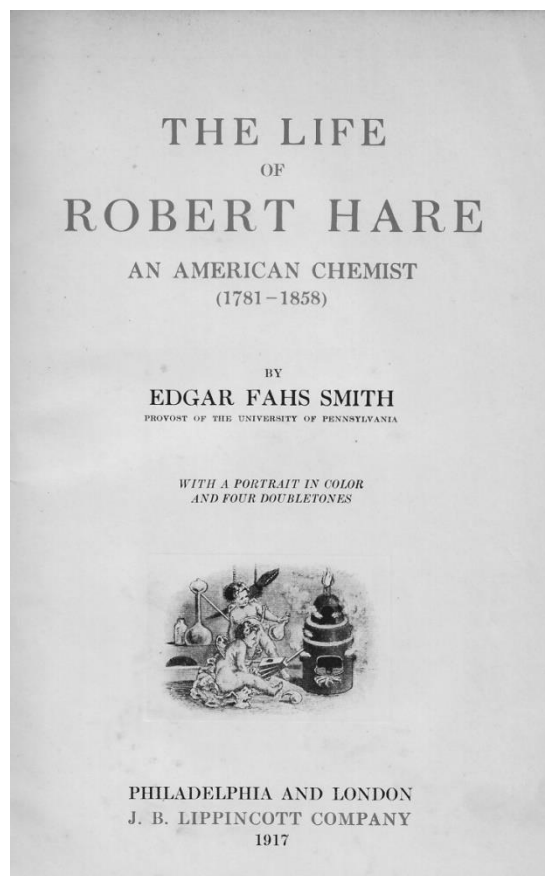
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275 **Full Biographies and Compilations**

276
277 Edgar Fahs Smith's first full book on history, "Chemistry in America: Chapters
278 From the History of the Science in the United States" (1914) contains glimpses of
279 his later productions. He expanded many sketches into full portraits, noted above.
280 He also chose to create full biographies for a few of his favorites.

281

282 Chapter VIII (pp. 152-205) is devoted to Robert Hare's (1781-1858) "Memoir of
283 the Supply and Application of the Blowpipe," (1802). This reprint was considered
284 an important contribution to the history of chemistry in America in 1914. Smith's
285 full biography, "The Life of Robert Hare: An American Chemist (1781-1858)"
286 appeared in 1917. (Fig. 5.8)

287



288

289

290 **Figure 5.8** Edgar Fahs Smith's "Life of Robert Hare" (1917)

291

292 Edgar Fahs Smith was uniquely qualified to write the biography of Robert Hare.
293 He had access to a vast collection of letters and all the published material from the
294 pen of Hare, mostly from the American Journal of Science (Silliman's Journal). In
295 the Preface Smith eulogizes Hare: "Robert Hare, an American xchemist, will
296 surely live in the memory of all who become acquainted with him through his
297 epoch-making contributions to that science which is so closely interwoven with the
298 welfare, comfort and happiness of mankind."

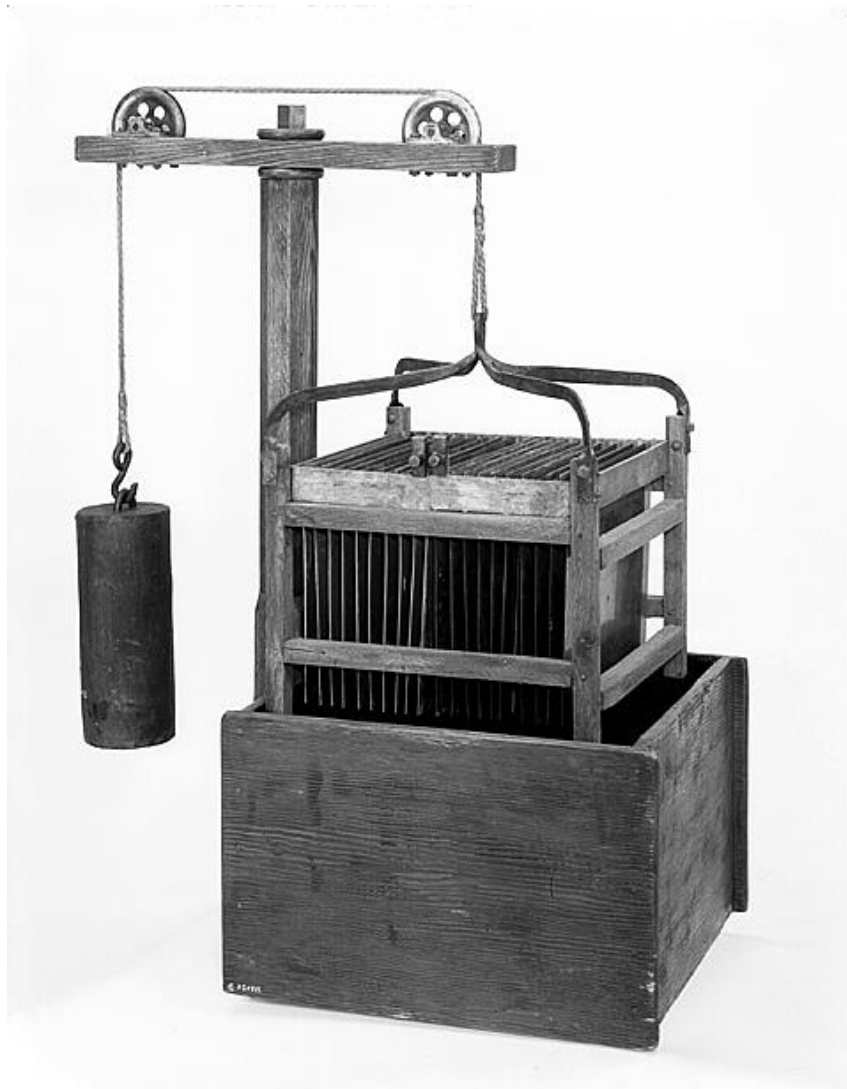
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300 Edgar Fahs Smith was determined to provide the full context of the life of Robert
301 Hare. He was indeed a creature of Philadelphia. He was influenced by both
302 Benjamin Rush and Robert Morris (1734-1806), the founder of the Bank of North
303 America. He benefited from interactions with Joseph Priestley. He was a fixture
304 at the American Philosophical Society. He studied under James Woodhouse
305 (1770-1809) at the University of Pennsylvania. Hare was quite independent and
306 presented his own research to the Chemical Society of Philadelphia in 1801: An
307 address on the oxyhydrogen blowpipe, for which Hare was celebrated ever after.
308

309 Benjamin Silliman (1779-1864), the recently chosen Professor of Chemistry at
310 Yale College, had the good fortune to become both a friend and collaborator of
311 Hare. He had come to Philadelphia to actually learn some chemistry! Silliman and
312 Hare set up their own chemistry laboratory in the boarding house where they lived.
313 Joseph Priestley was quite impressed with the oxyhydrogen blowpipe and it
314 became a mainstay in advanced chemical research throughout the world. After a
315 presentation to the American Philosophical Society in 1803 he was immediately
316 elected as a member. (The other member elected at that time was Count
317 Rumford!) (It is also interesting to note that Hare was awarded the Rumford Medal
318 in 1839 for his oxyhydrogen blowpipe.)
319

320 Smith's biography of Hare is filled with letters between Silliman and Hare. The
321 literary style is similar to many other famous 19th century Lives and
322 Correspondences. One of my favorites is "The life and Letters of Michael
323 Faraday" (1869) by Dr. Bence Jones, Secretary of the Royal Institution. While
324 Edgar Fahs Smith was the Provost of Penn, he served the Institution as a humble
325 historian.
326

327 Robert Hare was appointed as Professor of Chemistry at Penn in 1818. Both he
328 and the institution benefitted from this arrangement for 20 years. One of the
329 aspects of Hare that Smith admired most was that he became an electrochemist.
330 He celebrated his new appointment by inventing the Calorimotor. (Fig. 5.10) This
331 Galvanic battery could be discharged in an electrolyte bath producing large
332 amounts of heat!
333
334



335

336

337 **Figure 5.10** Robert Hare's Calorimotor (National Museum of American History)

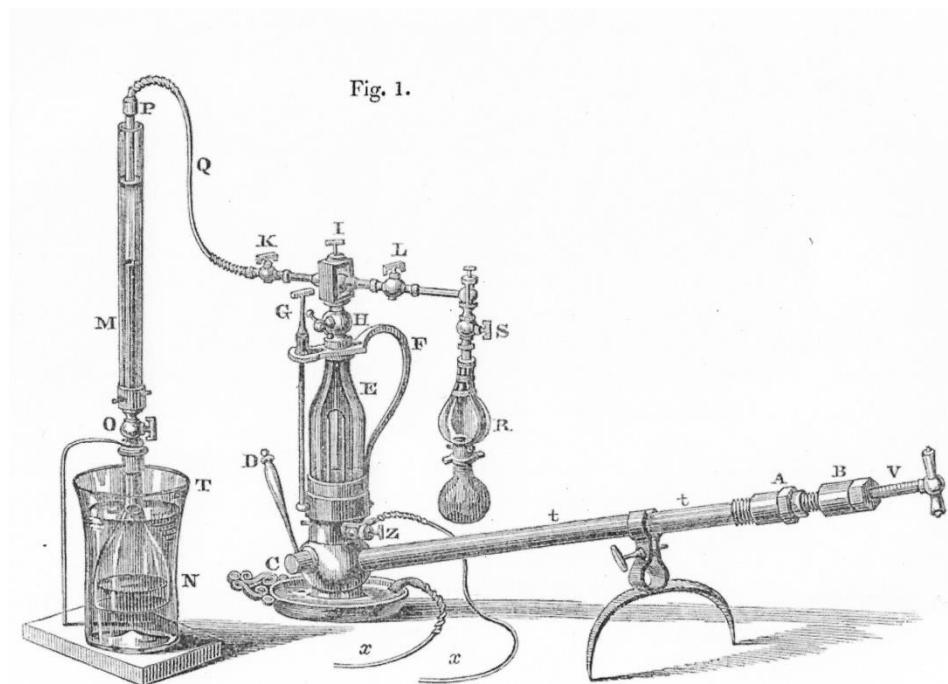
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339 This device could also have earned Hare the Rumford Medal. It exhibits the
340 exchange of chemical, electrical and caloric energy(heat). Robert Hare's lectures
341 at Penn were enlivened by the best set of actual demonstrations in the world in his
342 time. Edgar Fahs Smith loved this aspect of Hare's life.

343

344 Communication among scientists is facilitated by rapid and reliable publications.
345 Hare was highly supportive of the formation of Silliman's Journal (The American
346 Journal of Science). He published many articles there over the period from 1818-
347 1858.

348 Hare's creative mind brought new equipment to every area of chemistry he
349 pursued. The analysis of gases, Eudiometry, led to Hare's Eudiometer. (Fig. 5.11)
350



351
352 **Figure 5.11** Hare's Eudiometer (Phil. Mag. 6, 115 (1829))

353
354 The level of instrumental sophistication associated with the work of Robert Hare
355 was remarkable for the early 19th century in America. The electrochemical cell
356 shown above was also modified to maximize the current flowing through a small
357 wire in order to produce a spark. This device was called a "deflagrator" and
358 became a powerful tool in the chemical laboratory of the 19th century.
359 (Deflagrators based on other principles had been used since the 16th century.)

360
361 In addition to a lively American correspondence, Robert Hare participated in the
362 19th century debates on chemistry and nomenclature. Smith devotes more than 200
363 pages to these issues. While Hare's name is seldom mentioned in the 21st century,
364 Smith includes a long list of eulogies from late 19th century chemists like Ira
365 Remsen and Wolcott Gibbs.
366

367 Edgar Fahs Smith was an electrochemist and valued Hare's contributions to this
368 discipline. Hare is credited with using mercury in quantitative electrochemistry as
369 one of the electrodes.

370

371 Hare was Professor of Chemistry in the Penn Medical School. (As with many
372 appointments in the history of chemistry, it was highly desirable to have Hare at
373 Penn, and this Chair became available.) Eventually Hare carried out many
374 experiments involving animal and human physiology. He was well positioned to
375 do this, but gets little credit today. The leading physiological chemist at the time
376 was Justus von Liebig, and Hare engaged him in discussion and experimental
377 evidence. Hare was not always correct, but he had enough courage to fully engage
378 with the world of chemistry in his time. Smith understood this aspect of his
379 character.

380

381 Robert Hare also engaged in an extended correspondence with Michael Faraday.
382 Faraday was always focused on precise experimental results and coherent systems
383 of discussion. Hare was also a great experimentalist, but he grew fond of his
384 speculative theories of electricity, light and heat(caloric). Since all the natural
385 philosophers of chemistry in the first half of the 19th century were unaware of
386 many of the phenomena needed to complete a coherent theory of electrochemistry,
387 Faraday was typically kind in his approach to Hare. Faraday was content to be
388 patient in his partial understanding of reality, and time has been quite kind to his
389 stance.

390

391 Edgar Fahs Smith was a great admirer of Robert Hare, and with good reason, but
392 science is a respecter of no man. Time reveals new phenomena and new concepts
393 that allow a more coherent understanding of chemical reality. Hare's magnificent
394 experimental achievements and his tenacious exposition of his ideas helped later
395 scientists to keep the gold and quietly abandon the dross.

396

397 After completing his exhaustive biography of Robert Hare, Edgar Fahs Smith
398 chose to write a shorter and sweeter account of the life of James Woodhouse
399 (1770-1809). Serving in between two larger than life figures tends to diminish the
400 remembrance of the man in the middle. But, Edgar Fahs Smith knew that James
401 Woodhouse was a man of substance in his own right. He was a Philadelphian, who

402 loved and served his fellows. He was educated at the University of Pennsylvania
403 and received both Bachelors (1787) and M.D. (1792). His medical studies were
404 interrupted by his service as an army surgeon in the war against the Indians in
405 western Pennsylvania. While Woodhouse was a good chemist, he was first a
406 physician, and this experience of healing under difficult circumstances helped to
407 forge his character. (Fig. 5.12)

408



409

410

411 **Figure 5.12** James Woodhouse, Professor of Chemistry in the Penn Medical
412 School (1795-1809)

413

414 In addition to his teaching duties, which he carried out in a professional manner, he
415 was a practicing physician and contributed substantially to *materia medica* from
416 Pennsylvania. He was also active in early 19th century discussions of acids and
417 astringents.

418

419 Edgar Fahs Smith was attune to Woodhouse's influence on Benjamin Silliman and
420 Robert Hare. One venue of influence, besides the University, was the Chemical
421 Society of Philadelphia, which Woodhouse served as its President. Many famous
422 physicians were members and the meetings were lively. Priestley visited as well.
423 Another organization that retains fond memories of James Woodhouse is the

424 American Philosophical Society. He often attended and frequently was invited to
425 lecture. While Woodhouse died young in 1809, he made his mark on Philadelphia
426 and the American chemical community.

427
428 Edgar Fahs Smith was also privy to several important aspects of the University of
429 Pennsylvania. When it was known that Joseph Priestley would come to America,
430 Benjamin Rush suggested that he be offered a Professorship. Priestley declined,
431 but this gave Rush the chance to nominate James Woodhouse. Smith also knew
432 that Woodhouse had conveyed to Rush a significant land holding in
433 Northumberland, Pennsylvania, which was later transferred to Joseph Priestley, Jr.
434 While Woodhouse differed with Priestley on the subject of phlogiston, he both
435 admired and treasured his presence in America.

436
437 James Woodhouse also followed in the footsteps of America's greatest Colonial
438 physician, George Starkey. When plague struck London, Starkey continued to
439 minister to the sick, and died himself from the disease. When yellow fever struck
440 Philadelphia in 1793, Woodhouse continued to treat his patients and greatly
441 impressed Benjamin Rush. His bravery in battle, his steadfastness in the
442 pandemic, and his calm judgment impressed the entire faculty of the Medical
443 School and Woodhouse was appointed Dean. The students loved him and often
444 dedicated their doctoral theses to him. One of his most famous students was Robert
445 M. Patterson (1787-1854), who became Vice-Provost of Penn and the Director of
446 the U.S. Mint in Philadelphia. Patterson also became President of the American
447 Philosophical Society in 1849-1854.

448
449 Although James Woodhouse was always immaculately dressed in public, he was
450 not averse to carrying out the most physical of experiments. And, he invited
451 students to join him in the laboratory. In order to assist young students in their
452 pursuit of actual chemistry, Woodhouse wrote "The Young Chemist's Pocket
453 Companion," (1797). The book was accompanied by a chemical chest of apparatus
454 and chemicals. Faraday would have loved it!

455
456 While the controversy over phlogiston was nearing its end, Priestley's presence in
457 America brought the subject to the fore. James Woodhouse followed the data and
458 logic of Lavoisier, but not as an ignorant partisan. He opposed the logic of

459 Priestley, but not as an enemy. He knew that both he and Priestley cared more
460 about the ultimate truth of the matter than merely holding a fixed opinion. But, he
461 also knew that, unless he could produce new results that directly contradicted
462 either previous results either obtained by Priestley or those heavily employed by
463 him in his arguments that no mere rhetoric would prevail. (Some chemists in the
464 American community chose to behave more like politicians than scientists.)
465 Woodhouse went “to the woodshed” and sweated his way to victory. He carried
466 out extensive studies of the reactions involving “inflammable air.”(H₂) He used
467 much more carefully analyzed reactants and made sure he knew what he was
468 working with. Even Priestley had used materials, such as “finery cinders” that
469 contained considerable water, and hence hydrogen! Woodhouse treated Priestley as
470 who he was: one of the greatest chemists of the 18th century. First the “facts”
471 needed to be firmly established; in the laboratory rather than by ranting. Priestley
472 appreciated the joint search for the truth, but died before he could see his way to a
473 better understanding. Edgar Fahs Smith correctly discerned the value of James
474 Woodhouse as a real scientist.

475
476 The task of the historian of chemistry requires both a deep understanding of the
477 chemical issues, both experimentally and theoretically, involved in a particular
478 time and place, and the humans involved in the ongoing discussions. Edgar Fahs
479 Smith was both a competent chemist and a sensitive evaluator of the character and
480 behavior of humans. He was able to “see through” a self-promoting John Redman
481 Coxe, a neophyte attempt to win a gun fight by John Maclean of Princeton, and the
482 snobbish conceit of Benjamin Silliman. (A later Chairman of the HIST Division
483 took the side of Coxe against Smith with regard to Woodhouse.)

484
485 After the lively discussions with Priestley, Woodhouse made a trip to England and
486 France to meet with Davy, Gay-Lussac and Thenard. He formed warm friendships
487 with these crusaders for chemical reality. Had Woodhouse lived longer, he no
488 doubt would have made more penetrating discoveries and clarified many new
489 phenomena. Edgar Fahs Smith had the insight to place Woodhouse in the proper
490 context in the world of chemistry, not just in a small coterie of provincials.

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494 **Concluding Thoughts**

495
496 Edgar Fahs Smith was an inveterate collector. He was a bibliophile, like H.
497 Carrington Bolton. But, most of all, he was a keen observer of humanity. He
498 appreciated not just the ephemeral discoveries that litter textbooks, but the ongoing
499 understandings that remain relevant in all times and places. He understood that
500 every historian works with inadequate information, sometimes fraudulent, and
501 often just corrupted. Yet, the attempt to tell the story of chemistry in his own time
502 motivated him to publish more than 100 such episodes.

503
504 Edgar Fahs Smith had his own views on both chemistry and science, but he held
505 them provisionally with a view to the future, when either better information or
506 more cogent analysis would correct the errors or produce a more cogent story. He
507 embraced every person who shared his passion for history. And he displayed for
508 all future generations what can be done when the supply of original material is
509 large and available. The mines of the history of chemistry remain largely
510 unworked, so that any eager seeker for chemical historical truth can find rich veins
511 of narrative and analysis. HIST can be truly proud to be associated with the name
512 of Edgar Fahs Smith.