

This issue of the *Bulletin* is dedicated to the founders of the Division of the History of Chemistry of the American Chemical Society, Edgar Fahs Smith and Charles A. Browne.

LOOKING BACK: EIGHTY-FIVE YEARS OF CHEMISTS AND THEIR HISTORY (1, 2)

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Introduction

It is duly and dually fitting that we are here in Chicago to celebrate the eighty-fifth birthday of the Division of the History of Chemistry (HIST) of the American Chemical Society (ACS). First of all, we are actually a year late in doing so, but then we are in good company because the great Chicago World's Fair designed to celebrate the first voyage of Columbus to the new world was also a year late, opening to the public for the year 1893 (3, 4). But unlike the Great White Way on the Chicago Lake front that was mostly destroyed by fires within a year of its closing, HIST has endured for 85 years, not without its ups and downs, but nevertheless a viable and venerable institution of chemists, by chemists, and for chemists. Secondly, HIST's origin is intimately connected to Northwestern University and an ACS meeting on its campus in the Chicago suburb of Evanston in 1920.

Chemists have had a long standing interest in their history. One of the earliest texts appeared roughly fifty years after Priestley and Lavoisier ushered in the beginnings of modern chemistry, when Thomas Thomson published his two-volume set in 1830 (5). As chemistry found its way as a serious discipline in the late nineteenth century, many teachers of introductory chemistry courses saw the history of chemistry as a way to humanize the course and sustain student interest with anecdotal stories that were great fun but often irrelevant if not erroneous.

When Forris Jewett Moore published his little book on chemical history in 1918, it was the second American text on the subject (6, 7) and it showed him to be "widely read, witty and lucid (8)." His introduction is an eloquent rationale for studying the history of chemistry that is worthy of reading even today. He concluded by saying (7):

As we study how man's knowledge of nature has broadened and deepened with the years, we acquire a better understanding of the trend of thought in our own times, and of the exact bearing of each new discovery upon the old but ever-recurring problems of the science.

By the early 1920s formal courses in the history of chemistry were appearing in various curricula, either as an elective or a requirement (9). Later, many advocates felt, as Moore did, that a knowledge of the history of chemistry was in part what distinguished a *trained* chemist from an *educated* chemist (10) and that the history of chemistry could also be used to develop an appreciation of chemistry in the nonchemist as well (11). At the same time, the Belgian George Sarton, who had founded the journal *Isis*, was establishing the broader topic of the history of science as a formal field of study in the United States (12).

Northwestern University (1920)

Thoughts of a formal discipline and the educational value of the history of chemistry were the furthest from the

minds of Edgar Fahs Smith and Charles A. Browne when they came to Chicago in 1920 for the 60th national meeting of the ACS. There were a number of enticements to attend this meeting, which began on Monday, September 6. While it was called a “Reconstruction Meeting” and labeled with the slogan “Increased Production Through Chemistry,” the advanced publicity seemed to focus more on the entertainment committee and its “unique and delightful program.”

Under the watchful eye of the honorary chairman, Julius Stieglitz, the organizing committee promised chemists that social features “punctuated the program everywhere.” There was a “restful nook known as the [Chicago] Chemists’ Club, where soft lights glow[ed] through alabaster lamps and deep-cushioned chairs invite[d] reactions of repose. At all times delegates [were] welcome to the portals of this retreat of the Knights of the Retort.” Arrangements were also made for the women guests, as special buses would be available to transport them to Marshall Field & Company on Tuesday and Sears, Roebuck & Company on Wednesday. Not all women were there as guests, for the Chicago Section hosted a special dinner for the “professional women in attendance,” something which had never been done before.

After opening ceremonies in the Gold Room of the Congress Hotel, special trains would be the “magic carpets on which members would be borne...to Northwestern University” in Evanston. The committee offered assurances that all speeches would be finished by 4:30 p.m. to “make way” for a “combined men and women’s entertainment and reception, garden fete, and beach party.” In the evening there would be “more recreation in the [Patten] gym in which various lighter qualities of chemistry would bubble to the top. All these diversions were offered as a substitute for that indoor sport traditionally known as a smoker. All the world of the outdoors is open to the devotees of Lady Nicotine as well as the companionship of the daughters of Eve (13).”

This was the setting for the first meeting of HIST. Charles A. Browne, age 50, the chief chemist in charge of the New York Sugar Trade Laboratory and Chairman of the ACS Division of Sugar Chemistry (14), was told by ACS Secretary Charles L. Parsons that Edgar Fahs Smith was anxious to meet him. It must have been interesting for Browne to receive such a message, for he had learned his first chemistry from a Smith textbook while a student at Williams College. During the Tuesday afternoon session held in the Patten Gymnasium, Smith

and Browne sat listening to H. P. Talbot discuss “The Relation of Educational Institutions to the Industries,” but both men were eager to share their common love—the history of chemistry. Browne contends that the afternoon was very hot, but the Patten Gymnasium was supposedly “wonderfully lighted and well-ventilated.”

Nevertheless, somewhere after W. A. Patrick, the second speaker, started talking about “Some Uses of Silica Gels,” Smith and Browne decided to abandon their colleagues in the gymnasium and retired to “a shady seat on the lake front,” where they spent over an hour in conversation. Smith, at age 66, had just retired as Provost of the University of Pennsylvania and intended to devote his remaining years to continuing his historical research (15). He had heard of Browne’s collection of autographed letters, prints, and books and wanted to find out more about this younger chemist and his preservation of historical memorabilia. Most of the time together, however, was focused on Joseph Priestley and included Priestley’s bookplate, the Priestley house in Northumberland, Pennsylvania, and Priestley artifacts (16).

Before the two returned to the gymnasium, they discussed the possible formation of a Section of Historical Chemistry (17). Smith later said that he considered this the very first meeting of HIST, with two members sitting under a shade tree on the shores of Lake Michigan (18). Even after they returned to the gymnasium, Browne and Smith continued their discussions, reflecting on their student days at Göttingen among other matters, and an intense friendship had begun.



Edgar Fahs Smith

Discussions about “Cranks”

Three weeks after their Evanston meeting, Smith wrote his first letter to Browne on September 27 (19):

I was happy in meeting you. I learned so much from you that it gave me a great deal of food for thought. I found on my desk a letter from a gentleman in

Chicago who says there is a movement on foot to form a Section of the American Association for the Advancement of Science (AAAS) to be known as the Section on the History of Science. He told me to write to a certain gentlemen and lay before him the advantages I thought would come to those who would go into such a section.

I really don't know what to do. It seemed to me, after conversing with you, that probably without forming a Section of the American Chemical Society that we, that is those interested in the history of chemistry, might make a point of meeting at some hour convenient to all whenever we attend the meetings of the Society. I wish you would let me know your thoughts on the matter.

Browne's response, dated the next day, reiterated some of the comments he shared with Smith in Illinois (19):

In view of the interest in the History of Science, it seems to me that a Section of the AAAS to be known as the Section of the History of Science might have a promising future. Among the members of the American Chemical Society there are many who are interested in the historical side of chemistry, but who like myself, are at present so bound up with other sections, or divisions, that they are not in an immediate position to renounce their allegiance to these. In fact, historical chemistry is so directly related to all these sections and divisions, that it is not independent, but a part of these, so your plan of not having a separate section but a sort of informal gathering or symposium which will not conflict with other meetings has much to recommend it.

Smith's concern about a History of Science Section of the AAAS was tempered by his perception that a history of chemistry group should operate only on an informal basis. The first suggestion for the AAAS to form a history of science group came from Frederick E. Brasch in 1915 (20). By the time of the Chicago ACS meeting in September, 1920, *Isis* had resumed publication, the American Historical Society had conducted two history of science sessions, and an organizing committee headed by Brasch and including George Sarton was preparing for the first meeting of Section L in Chicago in December, 1920 (21). Thus both HIST and Section L were organized in the same city in the same year (22).

Section L grappled with the same problem plaguing Browne and Smith: namely, how to conduct sessions in the history of mathematics, for example, when there already was an AAAS Section of Mathematics. They resolved the issue by having the more technical history sessions in the parent group (*i.e.* mathematics) and the more general papers of broader interest in Section L (22).

In the years to come HIST would act similarly, often holding joint sessions with other ACS technical divisions to reflect that specific technical interest.

Section L was not formally recognized by the AAAS Council until the Toronto meeting in December, 1921. Brasch, who was now secretary of the section, noted that the history of science movement was growing steadily in the United States and that many educators were now recognizing its place in science and engineering curricula (23):

If we are to enter a new epoch of science teaching, and give more emphasis to the humanistic element in our sciences, it is evidently time now to consider the matter. Science, that which we love to call pure science, has been too long dominated by the ulterior motive of materialism.

It is doubtful that this attitude was part of the thinking of Browne and Smith, but they were generally on target with what was happening in the broader history of science community. During the fall of 1920, Smith and Browne corresponded a number of times, exchanging ideas about Priestley as well as the acquisition of eighteenth and nineteenth century chemistry books. Smith encouraged Browne to "write up the alchemical period in America" after Browne expressed surprise when his study of early records showed "the extent to which alchemy was pursued in early American colonies and even down to the middle of the last century (24)."

In December 1920, Smith was elected President of the American Chemical Society for 1921 (25), and his busy schedule prevented him from visiting Browne in New York to see the "treasures" which Browne admitted were "picked up in very random hap-hazard collecting (26)." Smith was also conducting research on the alkali tungstates and admitted to Browne "that I am at work from morning until night, and my relief comes when I turn to my old books and things of that kind (27)." He told Browne he thought it would be a "splendid thing" if [Browne] were to get out his book on [John] Winthrop, Jr. because "I know with what care you do this historical work...and it would be a great contribution (28)."

Browne and Smith met briefly at the Chemists' Club in New York on February 11 and March 17, 1921, but only had a few minutes to discuss historical matters. Smith was the principal speaker in February, and Browne found his description of a gradual "emancipation" from a narrow organic specialist of the 1870s to one with a broader view encompassing many branches of chemistry done "so pleasantly and with so much good humor and

charm that everyone was pleased (16).” At the March meeting Browne recorded that the speaker, Irving Langmuir, was “handsome as an Adonis with his boyish charming manner [and] made a brilliant impression (29). Browne also shook hands with “old Dr. [Charles F.] Chandler, who in spite of his 84 years is always one of the boys (16).”

Early in April, 1921 Browne passed through Philadelphia and telephoned Smith from the train station, only to find that Smith had just left his office. Writing to Smith a few days later, Browne described the two volumes of *Bibliotheca Chemico Mathematica* that he had wanted to show Smith in Philadelphia (30). As a “descriptive account of some 13,000 books upon chemistry, physics and other exact sciences,” Browne claimed “it was the most fascinating work which I have ever read,” and promised to bring it with him to the Rochester meeting at the end of April (31).

On April 11 Smith acknowledged Browne’s letter and noted that (32):

As I write these lines it dawns on me that it is our bounden duty as ‘cranks’ to try and corral all the ‘cranks’ at some convenient hour and place when we are in Rochester and talk over our hobbies. I am having my Priestley bookplate copied, and shall bring some copies of it with me for distribution to any ‘cranks’ who may wish a copy. I have a couple of other little things which I could easily carry with me, and I think I shall do so. I beg of you to consider for a moment whether we can’t get together. I imagine that perhaps a half a dozen men will be found who are interested in the history of our science and we might be able to have a pleasant symposium.

Browne replied that Smith’s suggestion (33):

..to get together at the Rochester meeting is a good one, and if there is any gap in the program, we ought to make use of it. I will try to bring along a few curiosities in the way of autographed letters, etc....which will not take up much room.

Browne was also going to have copies made of the negative of the Priestley bookplate in his possession (34).

The Rochester Meeting (April 1921)

The 61st national meeting of the ACS was held in Rochester, New York, from April, 26 – 29, 1921. The social aspects so prevalent at the Chicago meeting were also in evidence at Rochester, although the Rochester planning committee “had been instructed to reduce entertainment features to a minimum” after the Chicago meeting (35).

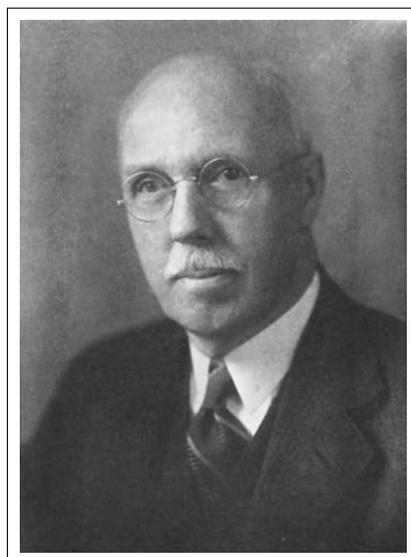
The organizing committee speculated that (36):

The *piece de resistance* will be the banquet, free to members, to be held at Bausch & Lomb’s, after which the company will furnish high class entertainment. At this banquet, it is hoped much of the formality will be dispensed with and the ladies will be in evidence.

[It was later noted that a “sorry lot of chemists” had to leave at 10:30 p.m. to catch the New York train, thus forcing them to miss some “of the best numbers,” including the “Oriental dance number (37)”].

Attendance records for Rochester show 806 ACS members and 428 guests; 289 Divisional and Sectional papers were presented on Wednesday and Thursday at the Mechanics

Institute at 55 South Plymouth Avenue (38). As President of the Society Smith presided at the ACS Council Meeting held on Monday, April 25. While he waited for ACS Secretary Charles L. Parsons to return with some papers he had forgotten, Smith told the 113 councilors that



Charles A. Browne

he was forming a section of the history of chemistry and invited them to attend a meeting on Thursday (39). He again used the term “cranks” to describe those chemists who had a historical interest. This meeting does not appear on any formal program for the meeting, and from the dates of the Smith/Browne correspondence there was apparently no advance announcement of this group’s meeting. In addition to the Council meeting, the most obvious time for Smith to make a public announcement of this meeting would have been when Smith presided at the opening general session on Tuesday.

Instead of the half-dozen people expected by Smith, the audience ranged from 20 to 50, depending on who was doing the reporting (40). Smith and Browne dominated the meeting with the historical items they had brought to Rochester. Smith showed a 1671 alchemical work in Latin which concluded with the words “All Honor and Glory to God, the Keeper of the Earth,” and he recalled

how Sir William Henry Perkin concluded a lecture to students at the University of Pennsylvania by lifting up his hands and exclaiming, "Praise be to God to whom belongs all Glory (41)." Smith also exhibited autographs and photographs, and he discussed early chemistry books by two Harvard professors, John Gorham and John White Webster, who had been hanged for murder.

But it was Browne who contributed the most to this meeting. Not surprisingly, he spent some time talking about John Winthrop and the alchemist George Starkey, who graduated from Harvard in 1646 (42). He also mentioned Amos Eaton (a pupil of Benjamin Silliman), Joel B. Nott (Union College) and Frederick Accum, "who did more than any other chemist of his time to popularize chemistry (41)." In addition to autographs and photographs from his collection, Browne had the most unusual item at this meeting—a lock of John Dalton's hair (43)!

Only one other person had something to exhibit. Charles L. Parsons, the venerable Society Secretary who probably had some advance notice of the meeting from Smith, had a copy of a rare early work by John Dalton that he shared at the meeting.

The others who are recorded as speaking did so spontaneously. Frank Dains of the University of Kansas described the library collection of chemical books at Transylvania University in Kentucky. Well known as an organic chemist, Dains had presented a paper on "Applied Chemistry in Prehistoric and Classical Times" at the AAAS Section L organizational meeting in December 1920 (22). F. O. Rice, then a young professor at New York University (NYU), who would later be known for his work on kinetics and photochemistry, talked about NYU professor John W. Draper and the first photographic portrait of a human face. An unidentified "younger member" called attention to the "forgotten life and work" of the Spanish chemist Andrés Manuel Del Rio who discovered vanadium. Edward Curtis Franklin of Stanford University described the recent book by his Stanford colleague John M. Stillman on Paracelsus (44). Forris Jewett Moore, who taught a well known course on the history of chemistry at MIT, commented on the value of studying the history of chemistry, and his views were supported by George Frankforter of the University of Minnesota.

Although this ended the "informal" presentations of what can be considered the second meeting of HIST, there was additional discussion about a more formal organization. Dains wondered whether the ACS might publish

historical monographs, but Smith "feared the interest in historical chemistry in America was not sufficiently widespread to create a demand for such monographs (41)." C. E. Coates asked whether the section should be organized as other ACS sections and divisions. According to Browne (41):

Smith thought it better not to force the movement, but to let things develop freely and spontaneously. Those who were interested could convene at each meeting for a friendly exchange of views; if any member had something of interest to show, let him bring it along; the program of each meeting would thus shape itself...and would be of more interest than a prearranged schedule of papers.

The Journal of Industrial and Engineering Chemistry reported that (45):

The meeting was a great success, and it was agreed that without any formal organization, such a symposium should be planned as one of the features of future conventions of the Society. For the training of American chemists, one of the things needed is a proper appreciation of the historical and human side of our great science.

The New York Meeting (September 1921)

The next meeting of the ACS in the fall of 1921 was held in New York City (46). This time there was a formal but terse notice on the program (47):

President Edgar Fahs Smith and kindred spirits will meet Friday afternoon, September 9, in Room 301, Mines, to discuss their hobbies.

It was shrewdly scheduled to follow the inaugural meeting of the Section of Chemical Education (CHED), which Smith had organized (48). After the CHED sessions ended, the "members adjourned to attend the "symposium" on the History of Chemistry (49). (It was a preview of the close relationship these two groups would have in the future, especially because of the role the history of chemistry would play both formally and informally in chemical education.)

Swelled by the CHED attendees, more than 100 people crowded into the room scheduled for this "symposium" (50). "This proved to be most interesting, on account of the many rare portraits, books, letters, and pamphlets which were shown (49)." In addition to Smith and Browne (who surprised many by speaking about alchemists in New England), other speakers included Ernest Cohen (University of Utrecht), who spoke on the teaching of the history of chemistry in Dutch universities, a Dr. Adolf (Shantung Christian College) who

“gave an interesting account of chemistry among the Chinese,” and Professor K. C. Pandya who “discussed the Hindu’s contributions to chemistry, both ancient and modern (49).”

It was obvious that this history of chemistry, even on an informal basis, was very popular; and the decision was made before adjournment to form a probationary Section of the History of Chemistry of the ACS (17, 50). A similar action had been taken in the CHED sessions when a motion was “made and seconded that the Section be formally organized (51).” Thus CHED and HIST were “officially” started as formal organizations on the same day, and Edgar Fahs Smith was the first chairman of each group.

The Legacy of Edgar Fahs Smith

Smith may have been enamored by Priestley, but his focus was on Priestley in America (52). Even as early as the Rochester meeting, Smith made it clear that the principal aim of the history of chemistry group should be to look at the history of chemistry in America. According to Browne (34):

This, in his opinion, was to be the chief, although by no means the exclusive aim of the section, and he was always anxious to have a goodly number of papers upon some phase of chemistry in America upon our programs.

It was indirectly seconded in Rochester by the principal ACS founder Charles F. Chandler, who gave a public lecture on “Chemistry in America” at the Rochester meeting. “With a firm and steady voice, and youthful bearing,” [Chandler was then 84] Chandler traced the history of the ACS and American chemistry. He received a lengthy standing ovation, after which Smith presented him with “a beautifully bound” copy of his Ph.D. thesis from Göttingen that he had written sixty years earlier (53).

Browne supported this idea, commenting years later that (34):

There is nothing better which we can do in a constructive way toward promoting the work of the Division than in having always some papers upon the phases of the history of chemistry in America. The field of inquiry is so large, and so much of it unexplored, that it should attract a large band of our younger members.

In the years following the New York meeting, until his death in 1928, Smith’s influence was permanently imprinted on the Division. Browne called attention to “the attraction of his wonderful personality, as it filled

the meetings he attended (34).” Smith urged members to collect and preserve historical material, and hardly a meeting passed without Smith giving portraits, books, photographs, and letters to other members, enlarging and often starting collections with his generosity. L. C. Newell emphasized in 1932 that HIST (50):

...owes its inception, development, standards and permanency to the wisdom, generosity, intelligence and culture of our incomparably beloved patron.

But it was Charles Browne who predicted that “if we could only acquire something of his faith and spirit, the future of the Division would be secure (34).”

What have we accomplished in the 85 years since Smith exhorted us to study chemistry in America? Do we have enough of Smith’s faith and spirit to carry the division to its centennial in 2021 and beyond? To answer that question, we need to examine the achievements of the division, which are substantial considering that HIST has always been a Division with a very small membership.

HIST on Probation

Even though Smith was president of the ACS in 1921 and 1922, there was no favoritism shown his little group, which still had to pass through the standard probationary period before it could join the other divisions of the Society, which it did successfully in 1927, a year before Smith’s death (54). There was the necessary schedule of papers at each national meeting, with 135 read during the 11 meetings of the probationary years. Not surprisingly, Smith and Browne dominated the program: giving papers, continuing to bring books and artifacts, and encouraging others to do so as well. True to Smith’s exhortation, much of the early programming focused on American chemistry, in particular the writing of the biographies of American chemists, many of which were published. Not only were rare books and artifacts part of the HIST sessions, but HIST arranged for special historical exhibits for the general public at almost every national ACS meeting (55).

Other activities beyond the national meeting program occupied that early HIST membership as well. One was the Priestley house in Northumberland, Pennsylvania. Browne and Smith encouraged the construction of the small museum at the house, and they willingly donated their extensive collection of Priestley materials for display. The museum was dedicated as part of the Golden Anniversary celebration of the ACS in 1926, with many HIST members in attendance (56).

More importantly, the Society, probably under Smith's influence, chose HIST to write its fifty-year history (57). Browne headed a committee of five that produced a separate volume of the *Journal of the American Chemical Society* that was light on the history of the society but heavy on the review of American contributions to chemistry in various branches of chemistry. Browne admitted the reviews were incomplete and hoped that HIST would continue to expand the areas covered (58). Over the years HIST has done that in different formats, especially through its joint programming with other technical divisions as anniversary years were celebrated.

As is often the case with small organizations run by volunteers, at any given time it is a small nucleus of people who manage its affairs and keep the ship afloat. Many early HIST officers were in place for many years, presumably because of a shortage of candidates. Nevertheless, they were dedicated to the concept of HIST and its programming. Smith called HIST members "cranks" and considered the collection of books and artifacts a hobby. When the History of Science Society (HSS) was formed in 1924 by Sarton and others to help preserve *Isis*, a serious scholarly pursuit of scientific history was being born. Actually, Smith was elected the fourth president of HSS in 1928, but he died in May of that year before completing his term of office (59). Generally HIST did not consider itself in that category, although some of its ardent early members, like Tenny L. Davis, Henry M. Leicester, Wyndham D. Miles, and Aaron J. Ihde did fit that mold. More often than not, HIST members were at the end of their careers and were content just to hear papers on chemical history without taking an active role in the organization or giving a paper.

While Smith's death brought others to the fore, gone were the wonderful items he brought to the meeting. Others picked up the slack somewhat and carried on the tradition for many years, although in a very spotty manner. Smith's collection remained sealed in his office for three years, when, in 1931, his widow bequeathed it to the University of Pennsylvania along with an endowment to preserve and maintain it (60). The collection quickly became the focal point of serious study in the history of chemistry. Many HIST members availed themselves of its resources and gave HIST papers based on their research in the collection. But with the passing of the cadre of charter members, HIST drifted through uncertain times, reaching a low point during World War II when Ralph Oesper was Secretary.

The Sidney Edelstein Era (61)

Beginning in 1948, HIST would experience a dramatic reversal when Sidney M. Edelstein became the secretary, a position he would occupy for almost 20 years. To say that Edelstein was a man of action would be an understatement at the very least, for Sidney was a person who liked to be at the forefront of what was happening in his spheres of activity. Characteristically, Sidney approached life with great enthusiasm and pursued his interests with some abandon once they became imbedded in his psyche. This included the history of chemistry, which began with a required history of chemistry course at MIT taught by Tenney L. Davis, an early HIST member. Edelstein began collecting books, and in the early 1940s he visited the Smith collection at the University of Pennsylvania, where he met the collection's indomitable curator, Eva Armstrong. He later used Armstrong as a sounding board for his purchases. When he told her that he had a chance to buy an original Boyle for \$20, she advised him that Smith had only paid \$2 for a similar copy and that the one Sidney was contemplating was "terribly overpriced."

Learning of the HIST division for the first time from a visitor to his New York office, Sidney attended a meeting in 1947 which he said "was simply a matter of a few people who didn't quite seem to know what they wanted (62)." They reelected the current chairman, Henry Leicester, and Sidney offered to be secretary. In typical Edelstein fashion, Sidney took it upon himself to change HIST. Sidney was a good promoter, and he did not slack in that regard when it came to HIST.

Henry Leicester remained as HIST chair for four more years, until 1951 (63). Sidney reported (62):

Between Henry Leicester and myself, we kept the Division going. About ten to fifteen people who had been working in the field soon came forward. Before I knew it, we had a small, active corps of people in the division really concerned with the history of chemistry. I would guess we had twenty-five or thirty, maybe up to fifty after a year or two.

Edelstein ran HIST out of the New York Office of the Dexter Chemical Company, which he had founded. He arranged meetings, cajoled people into giving papers, and even paid for the luncheon held at each ACS meeting. Sidney's reign averaged more papers per meeting than Oesper's, but it was spotty. In fairness to Oesper, the war years certainly did not help, and it should be noted that there was no national ACS meeting in 1945 because the federal government refused to grant the ACS a permit to hold a meeting with more than 50 people. Perhaps

what Sidney was most successful at was in establishing symposia as a HIST way of life.

Obviously, more symposia generated more papers, and the peak years for Sidney were 1957 through 1959. During that time there were eleven symposia and 176 total papers, including those in general session. Since five ACS divisions were celebrating their golden anniversaries in Chicago in the Fall of 1958, HIST played a major role and received much attention as it programmed symposia for the history of each division. For the first time there were joint symposia with divisions other than Chemical Education, the most notable in 1958 being O. T. Benfey's Kekulé-Couper Centennial on the "Development of Theoretical Organic Chemistry" (64).

Sidney's philosophy was pretty straightforward (62):

The office was a powerful office because I could put together a program and push the president who would leave it up to me because nobody else was going to do the work. You cannot do everything by letting everybody decide everything, because nobody will decide anything. There always has to be a person who looks after and pushes and does things. I am proud of that. If I had not done that, we might not have a viable Division, with a number of people and a lot of activities.

It should also be noted that it was during Sidney's time that the first three sessions on Archaeological Chemistry were held, the first in 1950, which was chaired by Earle R. Caley of Ohio State (65). There is no evidence that Sidney was responsible for starting this, but he certainly was an ardent supporter. This group continues to operate as a subdivision of HIST, and to date six volumes have been published in the archaeological chemistry series based on HIST symposia which take place approximately every five years (66).

The Dexter Award

In 1956 Sidney established an award whose full title was "The Dexter Chemical Corporation Award in the History of Chemistry." He felt strongly that there should be something to recognize people who did good work in the history of chemistry, and there was nothing like it anywhere in the world. For Sidney, the recipient had to have advanced the history of chemistry in one of three ways—by publication of an important book or article, by the furtherance of the teaching of the history of chemistry, or by meritorious services over a long period of time which resulted in the advancement of the history

of chemistry. For this, the recipient would receive \$250 and the proverbial "suitable scroll (67)."

The first Dexter Award went to that long-time faithful HIST member, Ralph E. Oesper. Oesper received his honor for "meritorious service and continued interest in the field of the history of chemistry," which at least partially fits one of Sidney's three criteria. It may also have smoothed over any still ruffled feathers remaining from Sidney's replacing Oesper as HIST Secretary (68).

The third recipient was that longtime and faithful steward of the Edgar Fahs Smith Collection, Eva Armstrong (69). HIST celebrated the 50th anniversary of this award with a special symposium at the San Francisco ACS meeting in September, 2006 (70). Now named the Sidney M. Edelstein Award for Outstanding Achievement in the History of Chemistry in Sidney's memory, it is funded in part by Edelstein's daughter, Ruth Barish, with significant financial support from the Chemical Heritage Foundation (CHF). Since Oesper and Armstrong received their awards for service and a check for \$500, the award has increased to \$3,500. Most of the other recipients have been serious scholars of chemical history, and the award has gained recognition as the highest honor one can receive in the history of chemistry (71).

The Ihde Influence

In the early 1960s, HIST began to change again. Perhaps most notable was the presence of Aaron J. Ihde, an historian of chemistry who served as HIST chair from 1962 through 1964. It was at the end of this tenure that Aaron's text, *The Development of Modern Chemistry*, was published, the first new book of its kind in many years (72). It greatly enhanced Aaron's reputation as an historian of chemistry, enabling him to attract to HIST others for whom the history of chemistry was not just a hobby, as it had often been for many since the days of Edgar Fahs Smith and Charles A. Browne (73).

Historical Chemistry Journal

Shortly after the Division was founded, Smith asked Browne whether "we could prevail on Dr. [Charles H.] Herty to give us a page of his journal [*J. Ind. Eng. Chem.*] for the...history of science? (74)." This was followed by Smith's musing that "for some reason I can't free myself from the idea that we ought to have a Journal devoted to the interests of the history of chemistry (75)." When Browne accompanied Arthur B. Lamb (the editor of *The Journal of the American Chemical Society*) to the dedica-

tion of a new chemistry building at Dartmouth, he initiated talks about where history papers could be published and found Lamb sympathetic to his plight (76), but Smith doubted Lamb's associates would support history papers in the *Journal*, "yet it ought to appear someplace where it will meet the eyes of our entire membership (77)."

Eventually, Smith gave up on using an existing ACS journal and proposed to Browne that the Section could issue *The American Journal of Historical Chemistry* six times a year with 48 pages per issue, setting the price at \$1.00 per annum to attract the high school and college teachers and perhaps even students (78). Browne was concerned about where the papers would come from for such a journal (79), but the ever optimistic Smith had "no misgivings on the subject matter for publication, but I would like to see right on the table \$100,000, the income from which could be applied to bringing this pet scheme to light (80)." At the New Haven ACS meeting in April, 1923 Smith told Browne he had asked William H. Nichols for that amount (34). This is an astonishing amount of money for that time, roughly equivalent to \$1 million in today's dollars (2006). Smith said that he considered such a journal one of the "greatest needs of American chemistry" and that it was one of his fondest hopes to have such a journal (34). There is no evidence, however, that Nichols gave Smith the money.

More importantly, Smith did not reckon with the young and energetic Neil Gordon, who was instrumental with Smith in founding CHED in 1921 (48). Gordon started the *Journal of Chemical Education* in 1924. He was committed to publishing papers in chemical history and even appointed Lyman Newell, who was then HIST Secretary, to be the associate editor in charge of the history papers. For the time being HIST had an outlet for its papers, and many appeared in the early volumes of the *Journal*. And even though chemical educators thought that the history of chemistry had a place in the education of chemistry students, the volume of their own papers slowly pushed the history papers aside.

In 1948 the first issue of *Chymia* appeared. Designed as an annual volume for scholarly papers in the history of chemistry, *Chymia* was not a HIST publication, but it was edited by a HIST member and other HIST members were contributors. *Chymia* was sponsored by the Edgar Fahs Smith Memorial Collection at the University of Pennsylvania, so in some respects Smith finally got his wish for an American publication devoted to the history of chemistry and fittingly sponsored by his own institution. But the University had agreed to fund it for only three years. The fourth volume was produced

through private donations, but no financial support could be found after that, and the publication ceased after the 1951 issue.

Late in 1956 HIST revisited the idea of a journal of the history of chemistry, but in the end decided to revive *Chymia* instead. The ACS Board approved the joint venture with the University of Pennsylvania, "with the understanding that the ACS would assume no financial responsibility and that the approval would continue "only so long as *Chymia* is the official organ of the Division (81)." HIST now appeared on the masthead along with the Smith Collection; Henry Leicester was the editor-in-chief, and Sidney Edelstein was on the editorial board. That meant that for HIST to revive *Chymia*, it would need to infuse the venture with hard cash. It is tantalizing to suppose that HIST was not particularly flush to support such a venture, but there had to be some financial support forthcoming from somewhere. There is no official record to show just how HIST did finance this venture. However, one name that has been mentioned is Denis I. Duveen, an independently wealthy book collector who often spent time in the Smith Collection. Another is Sidney Edelstein and the Dexter Chemical Company. Interestingly, *Chymia* ceased publication again with volume 12 in 1967, just one year after Sidney left his position as secretary of HIST, a move he did not make willingly (82).

In 1988 this issue was taken up once again by William B. Jensen, then serving as HIST secretary. Desktop publishing had reduced production costs, but more importantly, the history of chemistry was finding less acceptance in the more traditional chemical journals, especially the *Journal of Chemical Education*. Jensen had become editor of the Division's newsletter and had produced a few issues when he decided to expand it into a regular publication. As a result, and with the support of the Division and the Department of Chemistry of the University of Cincinnati and the Oesper Collections in the History of Chemistry, Jensen began in 1988 to publish the *Bulletin for the History of Chemistry*, which incorporated the Division's newsletter. He did not intend to compete with established historical journals of science like *Ambix* (83) and *Isis*.

Jensen reasoned that the majority of HIST members were practicing chemists and teachers of chemistry "who enjoyed reading general interest articles on the history of chemistry but [were] prevented by other duties from engaging in full time historical research." Rather than tackle the social and philosophical questions raised by professional historians, Jensen wanted to reach chemists

by adding a time and depth-of-content dimension to their understanding of the history of chemistry (84). When an objection relating to a paper in the *Bulletin* escalated to legal issues, the *Bulletin* publication was temporarily suspended until those issues were resolved, although no volumes were omitted. It was revived under the editorship of Paul R. Jones and has evolved over the years. Originally papers were by invitation only, but now the *Bulletin* is a fully refereed journal issued twice a year. The HIST Executive Committee considers the *Bulletin* so important to its members that the entire membership dues are used to support its production. It would be a bargain at twice the price (85).

Awards

In 1992 the Division embarked on a program with the ACS Office of Public Outreach to recognize our scientific and technical heritage through a series of plaques designating a site, artifact or collection as a National Historical Chemical Landmark. Originally conceived as a public outreach effort to bring the achievements of the chemical community to the general public, by 2007 the program had made 56 awards throughout this country as well as international awards in England, Mexico, Canada, France, and India. An advisory board receives nominations from ACS local sections or divisions and selects those that conform to the program criteria.

It is indeed fitting that the Edgar Fahs Smith Collection was one of those accepted for a brass plaque now on display in the University of Pennsylvania library. The Office of Public Outreach has been disbanded and the program is now run out of the Office of Communications. The original advisory committee is now an *ad hoc* committee of the ACS Board of Directors, and HIST is no longer an official sponsor; but from the beginning, HIST members have always constituted a part of the membership of the advisory committee (86).

In 2006 the Division embarked on another program that involves the awarding of plaques, but with a different purpose in mind (87). While the ACS Landmarks Program focuses on nominations that would be of interest to the general public and with plaques prominently displayed in public areas, the new HIST award, called Citation for Chemical Breakthroughs, is addressed to chemists. The program recognizes publications, books, and patents worldwide in the field of chemistry that have been revolutionary in concept, broad in scope, and long-term in impact. The award consists of a plaque that is placed near the office or laboratory where the break-

through had been achieved. The program was initially funded by the ACS Innovative Grant Program, the ACS Corporate Associates, and a private donation.

In 2006 one book, three patents, and six scientific publications were honored, including the pH meter invented by Arnold O. Beckman, the discovery of Teflon by Roy J. Plunkett, Moses Gomberg's paper on free radicals, and F. Sherwood Rowland and Mario J. Molina's paper on the destruction of the ozone layer (87). Jeffrey I. Seeman, HIST Chair 2005–2006 and originator of the award, explained that the award is intended to "celebrate great scientific accomplishments and motivate, through shared pride of achievement, all who walk by and see the plaques. We hope they'll say, 'Wow! That was done here (87, 88)!'"

A third award program sponsored by HIST is simply called the Outstanding Paper Award (89). It originated in 1984 with a grant from Raymond B. Seymour, a HIST member who had for many years sponsored HIST symposia on the history of polymer chemistry. The funding came from the proceeds of his book resulting from a HIST symposium, *The History of Polymer Science and Engineering* (90). Originally given for the best oral presentation at a HIST meeting, since 1989 it has been given annually to the best paper published in the *Bulletin for the History of Chemistry* for the previous three-year period. The award consists of \$100 and \$150 in books from the Chemical Heritage Foundation. It is noteworthy that the 2006 award recipient shares a first name with a charter HIST member, Lyman C. Newell, and his topic was in part one that was discussed at the first HIST meeting 85 years ago (91).

Other Activities

In addition to giving awards, the Division has in recent years won two ChemLuminary Awards from the ACS. The first, in 2003, was for "See and Be Seen," a program to help support HIST members giving a historical paper at a regional meeting and thus help promote history at regional meetings, an area that frequently is omitted from regional meeting programming (92). The second, in 2006, was given for the initiation of the Citation for Chemical Breakthroughs program and the piano concert (93). The latter was a HIST-initiated and -organized event at the Washington ACS meeting (cosponsored with CHF). It was the first Annual Fall ACS National Meeting Music Concert, attended by 400 people and reviewed by the *Washington Post*. The concert featured chemist-pianist Victoria Bragin playing works by chemist-composer

Alexander Porf'irovich Borodin. A second concert was held in the fall of 2006 at the national meeting in San Francisco.

Other Divisional Activities

A piano concert is not the first unusual project undertaken by HIST. Beginning in Chicago in 1985, HIST started producing postal cachets that featured ACS presidents and a logo of sorts identifying the city in which the meeting was held. The cachets featured past stamps with a chemistry theme—the 1951 ACS stamp, the 1976 chemistry stamp, and the 1983 Priestley stamp. HIST was sharing a booth with the Chemical Heritage Foundation in the exhibit hall at the time, and adjacent to the booth was a U.S. Post Office substation. The cachets were hand-cancelled by the post office with a cancellation designed by a HIST member and featuring the ACS logo. Cachets were sold as a fund raiser for the division, and even now they show up on eBay. This was done for every ACS meeting for about ten years, when the problems in dealing with the United States Post Office became insurmountable and the program was discontinued. But there was a serious side to this program as well. While the cachets were being sold at the HIST booth, a paper was being presented in the HIST general session on the ACS president featured on the cachet. These papers covered the ACS presidents in a different light from the standard biographical sketches published in ACS histories. The focus was not just on their chemical achievements, but in fact and more importantly, what led to their being considered worthy of the ACS presidency and what they accomplished as ACS president. This resulted in a set of interesting papers covering the first quarter-century of the society. Unfortunately, none of these papers has been published, which is too often the case with HIST ACS meeting papers.

Back in 1937 Browne, noting this fact, lamented that much of the original scholarship that went into the early HIST papers was never published, and quite frequently the manuscripts were lost forever when their author died (34):

In order to prevent such occurrences from arising in the future, I would like to suggest that copies of all unpublished papers read before the Division be deposited for safe-keeping and future reference with the Edgar Fahs Smith Collection at the University of Pennsylvania. Users of such material would...give the same credit for their sources of information as in the case of published articles.

It is difficult to tell in retrospect which authors did that, and even today valuable scholarship presented before the Division is being lost. However, in 2006, the Division signed an agreement with the Chemical Heritage Foundation to preserve its archives, which, unfortunately, are extremely meager in the early years. A records retention policy has been established by HIST and a grant received from the ACS Division Activities Committee in 2006 will provide support to organize the HIST archives and develop a model that might be followed by other ACS divisions. This work has just begun. Perhaps the Division may yet fulfill Browne's wish about disappearing unpublished papers.

The Chemical Heritage Foundation

In 1965 the American Institute of Physics (AIP) approached the ACS about jointly forming a facility for documenting the history of the physical sciences. The ACS in turn gave the proposal to HIST, which under the leadership of Wyndham D. Miles as Chair and Sidney M. Edelstein as Secretary rejected the idea. Instead, they wanted a History of Chemistry Center that would look at the entire history of chemistry, not just the recent or current history that interested the AIP. Nothing came of the idea until it was revived by HIST chair William J. Wiswesser and chair-elect John H. Wotiz in 1979. They convinced ACS President Gardner W. Stacy to fund a task force that would visit a number of potential sites for such a center, study other such facilities, and formulate objectives. The group reported to the HIST membership at the fall 1979 ACS meeting in Washington, and the membership responded with an enthusiastic and unanimous resolution calling on the ACS to establish a Center [Office] for the [Contemporary] History of Chemistry.

This was followed by a symposium at the ACS meeting in Houston in March, 1980 organized by Wotiz and titled "The Chemistry Profession Needs a Center for the History of Chemistry." Since this was intended to be an ACS operation, most thought it would be run out of the Washington headquarters. However, at Houston Arnold Thackray made an alternative suggestion—to house the new center at the University of Pennsylvania in Philadelphia. He noted that Penn already housed the Edgar Fahs Smith Collection in the History of Chemistry, housed the editorial offices of *Isis*, and had an outstanding History and Sociology of Sciences Department.

Ensuing discussions at various levels within HIST and the ACS culminated in final approval at the December, 1982 ACS Board of Directors' meeting that formed

the Center for the History of Chemistry at the University Pennsylvania with Arnold Thackray as its director. In 2007 the Center, which has now become the Chemical Heritage Foundation, will celebrate its 25th anniversary. While CHF owes much of its current organization to the energies and talents of Thackray and others associated with him, there is no question that the efforts of John Wotiz and HIST were instrumental in nurturing and giving birth to the idea of a history center until it came to fruition (94).

HIST in the 21st Century

This brief review of HIST and its activities for the past 85 years brings us to the earlier question of what have we done with the legacy passed on to us by our founders, Edgar Fahs Smith and Charles A. Browne. What would they say of our stewardship 85 years later? The answer is found in two major documents. The first is the HIST Mission statement, adopted in 2006, which can be found elsewhere in this issue. The second is a State-of-HIST statement issued by HIST Chair Jeffrey I. Seeman as he completed his two-year term of office at the end of 2006. He points out that: HIST is on a sound financial basis with resources leveraged to their maximum value. There is a modern web site which is constantly evolving to provide its membership current information as well as serve as a historical resource tool (95). There is a new logo which is on all HIST documents and is explained elsewhere in this issue. Programming continues to be vibrant, including ACS Presidential symposia and others that have on some occasions received coverage in *Chem. Eng. News*. External funding continues to enhance division activities. The Division's *Bulletin* continues to be one superb issue after another. Strong relationships have been developed with the ACS and CHF at several different levels.

"HIST's greatest strength," Seeman concludes, "is its members and our diversity of interests, experiences, and talents. At the same time, the Executive Committee shares a commitment to HIST, a passion to support HIST's mission, and our promises to our members and the ACS."

I submit that this reflects accurately what Smith and Browne would have wanted the division to achieve when they set us out on that long path 85 years ago. They would, I believe, be proud of what we have done, are doing, and will do in the future. "After all, we study the past that we may understand the present and judge wisely of the future (7)."

REFERENCES AND NOTES

1. Presented in part at the 196th National Meeting of the American Chemical Society, Los Angeles, CA, September 1988 (Abstract HIST 014) and the 233rd National Meeting of the American Chemical Society, Chicago, IL, March, 2007 (Abstract HIST 038). This paper is the first in a series of projected papers on the history of HIST.
2. There are a number of past accounts of the early history of HIST. See, for example, L. C. Newell, "Historical Sketch of the Division of the History of Chemistry, American Chemical Society," *J. Chem. Educ.*, **1932**, *9*, 667-669; C. A. Browne, "The Past and Future of the History of Chemistry Division," *J. Chem. Educ.*, **1937**, *14*, 503-515; and C. A. Browne, "Contributions of the Divisions: History of Chemistry," in C. A. Browne and M. E. Weeks, *A History of the American Chemical Society: Seventy-five Eventful Years*, American Chemical Society, Washington DC, 1952, 288-290.
3. The official name was the World's Columbian Exposition. See <http://users.vnet.net/schulman/Columbian/columbian.html> (accessed May 30, 2007).
4. Chemistry and the ACS played an important role in this grand affair. See J. J. Bohning, "A Center of Crystallization in a Molecular M \acute{e} lange: The 1893 World's Congress of Chemists," *Bull. Hist. Chem.*, **1989**, *No. 3*, 16-21.
5. T. Thomson, *The History of Chemistry*, H. Colburn and R. Bentley, London, 1830-31. For high-quality scanned images from these volumes, see <http://othmerlib.chemheritage.org/search/?athomson%2C+thomas/athomson+thomas/1%2C1%2C20%2CB/frameset&FF=a+thomson+thomas+1773+1852&11%2C%2C20> (accessed May 30, 2007).
6. The first American text appears to be a little known work by F. P. Venable, *A Short History of Chemistry*, D. C. Heath & Co., New York, 1894, which went through three editions. I thank Prof. Seymour H. Mausekopf for calling this to my attention.
7. F. J. Moore, *A History of Chemistry*, McGraw-Hill Book Co., Inc., New York, 1918.
8. T. L. Davis, "F. J. Moore—Historian of Chemistry," *J. Ind. Eng. Chem.*, **1927**, *19*, 1066.
9. For the status of history of chemistry courses in the 1920s, see E. F. Smith, "Observations on Teaching the History of Chemistry," *J. Chem. Educ.*, **1925**, *2*, 533-555; L. C. Newell, "A Tested Method of Teaching the History of Chemistry," *J. Chem. Educ.*, **1926**, *3*, 166-169; and W. A. Noyes, "The Teaching of the History of Chemistry," *J. Chem. Educ.*, **1926**, *3*, 560-561.
10. This concept was later emphasized by A. J. Ihde, "Let's Teach History of Chemistry to Chemists," *J. Chem. Educ.*, **1971**, *48*, 686-687.
11. See, for example, B. Jaffe, "The History of Chemistry and its Place in the Teaching of High School Chemistry," *J. Chem. Educ.*, **1938**, *15*, 383-389; B. Jaffe, "Using the History of Chemistry in Our Teaching," *J. Chem. Educ.*,

- 1955, 32, 183–185; and D. M. Knight, “Teaching the History of Chemistry to Non-chemists,” *J. Chem. Educ.*, **1971**, 48, 285–286.
12. For more about Sarton and the formalization of the study of the history of science, see E. Garfield, “George Sarton: The Father of the History of Science. Part I. Sarton’s Early Life in Belgium; Part II. Sarton Shapes A New Discipline,” in *Essays of an Information Scientist*, ISI Press, Philadelphia, PA, 1985, Vol. 8, 241–253. See also I. B. Cohen, “George Sarton,” *Isis*, **1957**, 48, 286–300.
 13. Details of the 1920 Chicago meeting, from which these excerpts are taken, may be found in *J. Ind. Eng. Chem.*, **1920**, 12, 730 (“The Chicago Meeting”); *J. Ind. Eng. Chem.*, **1920**, 12, 918–920 (“Setting the Scenes for the Chicago Meeting”); *J. Ind. Eng. Chem.*, **1920**, 12, 938–941 (“The Chicago Meeting”); and *J. Ind. Eng. Chem.*, **1920**, 12, 1022–1025 (“Program of Papers”).
 14. For more on Charles A. Browne, see J. J. Bohning, “How Sweet It Is: Charles A. Browne, Sugar Chemist and Historian of the American Chemical Society,” *Chem. Heritage*, **2002**, 20, No. 3, 10–11, 34–38.
 15. For more on Edgar Fahs Smith, see The Edgar Fahs Smith memorial issue of *J. Chem. Educ.*, **1932**, 9, 607–666 (various authors).
 16. A valuable resource from which many quotes have been taken is C. A. Browne, “Reminiscences of Professor Edgar Fahs Smith,” original typescript in the Edgar Fahs Smith Collection, University of Pennsylvania Library, call number 540.92 Sm52B. This is taken from Browne’s extensive notes and journals that he kept throughout his career. See also C. A. Browne, “The Past and Future of the History of Chemistry Division,” *J. Chem. Educ.*, **1937**, 14, 503–515.
 17. At the time HIST was organized, a group specializing in a specific topic could form as a Section of the ACS. “After these sections held a sufficient number of successful meetings to prove the need for them, they were given Divisional status with the right to elect their own officers, to draw up their own by-laws...and to collect, control and manage funds.” See C. A. Browne and M. E. Weeks, *A History of the American Chemical Society: Seventy-five Eventful Years*, American Chemical Society, Washington, DC, 1952, Ch. 7 and 17.
 18. For a picture of the shade trees under which Browne and Smith held the first HIST meeting, see *J. Ind. Eng. Chem.*, **1920**, 12, 919.
 19. Browne’s papers are at the Library of Congress, LC Control No. mm 78014134. The 36,000 items are only loosely catalogued. In his correspondence with Smith, Browne kept Smith’s original plus a carbon of his reply, thus providing a reasonably complete picture of their exchange. All quotations of the Smith-Browne correspondence are from letters found in this collection.
 20. F. E. Brasch, “The History of Science,” *Science*, **1915**, 41, 358–360.
 21. For the preliminaries leading up to the first meeting of Section L, see F. E. Brasch, “The History of Science Section and the Progress of Science,” *Science*, **1920**, 52, 559–562.
 22. For a report of the first meeting of Section L see F. E. Brasch, “The American Association for the Advancement of Science. Section L. History of Science Sessions,” *Science*, **1920**, 53, 315–318.
 23. F. E. Brasch, *Science*, **1922**, 55, 405–408.
 24. Browne to Smith, November 15, 1920 and Smith to Browne, November 19, 1920 (19).
 25. At this time the ACS president was elected by the ACS Council, not the membership; see *J. Ind. Eng. Chem.*, **1921**, 13, 2. Election by the general membership did not occur until after the constitutional revision of 1948 (F. W. Walworth, private communication, March 19, 2007). See also F. P. Venable, “The Society’s President for 1921—Edgar Fahs Smith,” *J. Ind. Eng. Chem.*, **1921**, 13, 106–107.
 26. Browne to Smith, January 11, 1921 and February 8, 1921 (19).
 27. Smith to Browne, January 5, 1921 (19).
 28. Smith to Browne, January 21, 1921 (19). Browne never published a book on Winthrop, but see C. A. Browne, “Scientific Notes from the Books and Letters of John Winthrop, Jr., (1606–1676),” *Isis*, **1928**, 11, 325–342.
 29. Langmuir was then 40 years old and had been at General Electric for 12 years. His Nobel Prize in Chemistry was still eleven years away.
 30. *Bibliotheca chemico-mathematica: catalogue of works in many tongues on exact and applied science, with a subject-index*, compiled and annotated by H. Z. [Heinrich Zeitlinger] and H. C. S. [Henry Cecil Sotheran] with 127 plates, containing 247 portraits and facsimiles, H. Sotheran, London, 1921.
 31. Browne to Smith, April 7, 1921 (19).
 32. Smith to Browne, April 11, 1921 (19).
 33. Browne to Smith, April 14, 1921 (19).
 34. See C. A. Browne, “The Past and Future of the History of Chemistry Division,” *J. Chem. Educ.*, **1937**, 14, 503–515. There are two different Priestley bookplates shown in this paper. A preprint of this paper in the author’s collection shows a different pagination and a somewhat different organization than the final published version. The second Priestley bookplate is missing from the preprint. For more on the “missing” bookplate see C. A. Browne, “The Bookplate of Dr. Joseph Priestley,” *J. Ind. Eng. Chem.*, **1920**, 12, 611. Browne’s bookplate apparently was in a book in Priestley’s library before the Birmingham riots of 1791.
 35. *J. Ind. Eng. Chem.*, **1921**, 13, 398.
 36. Anon., “Plans for the Spring Meeting,” *J. Ind. Eng. Chem.*, **1921**, 13, 166. Other advance information about the meeting can be found in *J. Ind. Eng. Chem.*, **1921**, 13, 266–267, 282, and 352–354.
 37. *J. Ind. Eng. Chem.*, **1921**, 13, 404. About 2,000 people attended the banquet, which was followed by vaudeville entertainment and moving pictures shot by Eastman

- Kodak of the previous three days of the meeting. This was still a novelty at the time, but the archival fate of the movie is unknown.
38. The general report of the events of the Rochester meeting are in *J. Ind. Eng. Chem.*, **1921**, *13*, 378–405. Several candid photographs of Smith at this meeting are included in this report. For the “Program of Papers” see in *J. Ind. Eng. Chem.*, **1921**, *13*, 480–483.
 39. Ref. 16, p 6. Browne does not record any surprise at this announcement, which seems to conflict with Smith’s idea that everything should be kept informal.
 40. Anon. counted 25 (*J. Ind. Eng. Chem.*, **1921**, *13*, 397); Browne counted 30 (*J. Chem. Educ.*, **1937**, *14*, 505); and L. C. Newell counted 50 (*J. Chem. Educ.*, **1932**, *9*, 667).
 41. More details of this meeting may be found in C. A. Browne, “The Past and Future of the History of Chemistry Division,” *J. Chem. Educ.*, **1937**, *14*, 505–507. This is a faithful reproduction of Browne’s notes (16).
 42. Starkey has received considerable attention in recent years. See W. R. Newman, *Gehennical Fire: The Lives of George Starkey, an American Alchemist in the Scientific Revolution*, Harvard University Press, Cambridge, MA, 1994.
 43. When the author worked for the Center for the History of Chemistry at the University of Pennsylvania, he found a note that this lock of hair was in the Edgar Fahs Smith Collection at the University (presumably when Browne made a significant donation to the Collection in 1945). The curators conducted an extensive search but were unable to locate this specimen.
 44. J. M. Stillman, *Theophrastus Bombastus von Hohenheim called Paracelsus; his personality and influence as physician, chemist and reformer*. Open Court Publishing Co., Chicago, IL, 1920.
 45. *J. Ind. Eng. Chem.*, **1921**, *13*, 398.
 46. See “Program of Papers,” *J. Ind. Eng. Chem.*, **1921**, *13*, 951–955 and “Reports of Meetings of Divisions and Sections,” *J. Ind. Eng. Chem.*, **1921**, *13*, 956–960. For additional information about the meeting, see *J. Ind. Eng. Chem.*, **1921**, *13*, 667, 733–737, 750, 752, 844–848, and 862–892.
 47. At this time the official programs were 4 x 8.75-inch booklets that were given out to attendees when they registered. This announcement is on page 2. A copy of the original is in the HIST archives at the Chemical Heritage Foundation.
 48. For the events leading up to the formation of the Division of Chemical Education, see J. J. Bohning, “Crystallizing Classroom Chemists: From Isolated Disorder to Organized Interaction in the Teaching of Chemistry. A History of the Effort To Create a National Chemical Education Organization,” *J. Chem. Educ.*, **2003**, *80*, 642–650.
 49. J. C. Olsen, “The Meeting of the Section of Chemical Education,” *J. Ind. Eng. Chem.*, **1921**, *13*, 1074–1076. A summary of the HIST session is given on p 1076. There appears to be a conflict between Smith’s call for a Friday afternoon session on the printed program and this account which says the CHED sessions were on Wednesday and Thursday.
 50. L. C. Newell, “Historical Sketch of the Division of the History of Chemistry, American Chemical Society,” *J. Chem. Educ.*, **1932**, *9*, 667–669.
 51. Reported by N. Gordon in *J. Ind. Eng. Chem.*, **1921**, *13*, 960.
 52. E. F. Smith, “Priestley in America, 1794–1804,” P. Blakiston’s Son & Co., Philadelphia, PA, 1920.
 53. C. F. Chandler, “Chemistry in the United States,” *J. Ind. Eng. Chem.*, **1921**, *13*, 391–397. This is the complete text of his talk, accompanied by a picture of Chandler on the steps of Havemeyer Hall at Columbia University.
 54. *J. Chem. Educ.*, **1928**, *5*, 447.
 55. J. J. Bohning, “The History of HIST. II. The Probationary Years,” 198th National Meeting of the American Chemical Society, Miami Beach, FL, September 1989 (Abstract HIST 011); manuscript in preparation.
 56. Browne covers some of this in Ref. 34. See also the Priestley issue of *J. Chem. Educ.*, **1927**, *4*, 145–213, and especially C. A. Browne, “Priestley’s Life in Northumberland and Discussion of the Priestley Relics on Exhibition in the Museum,” *J. Chem. Educ.*, **1927**, *4*, 145–172, and “Joseph Priestley as an Historian of Science, with Some Account of his Historical Apparatus Existing at the Present Time,” *J. Chem. Educ.*, **1927**, *4*, 184–213.
 57. *J. Am. Chem. Soc.*, Golden Jubilee Number, Part I. Origins and Developments of the American Chemical Society 1876–1926, Part II. Reviews of Progress in Various Branches of Chemistry in America, No. 8, August, 1926, 254 pp. This was a separate printing from the regular *Journal*. There is a regular No. 8 issue containing technical papers consistent with the pagination of No. 7 and No. 9.
 58. Ref. 14. See also J. J. Bohning, “How Sweet it is: Charles A. Browne, Sugar Chemist and Historian of the American Chemical Society,” 220th National Meeting of the American Chemical Society, Washington, DC, August, 2000 (Abstract HIST 009).
 59. C. A. Browne, “Edgar Fahs Smith,” *Isis*, **1928**, *11*, 375–384.
 60. L. Farrington, “Alchemy, Metallurgy, and Pharmacy: Edgar Fahs Smith and the History of Chemistry,” <http://www.library.upenn.edu/exhibits/rbm/at250/science/lf.pdf> (accessed June 3, 2007). Browne made a significant donation to the Smith Collection in 1945. See J. J. Bohning, “Sweetening the Pot: the Library of Sugar Chemist Charles A. Browne and its Impact on the Edgar Fahs Smith Collection,” 223rd National Meeting of the American Chemical Society, Orlando, FL, April, 2002 (Abstract HIST 015).
 61. This section on Sidney Edelstein is taken from J. J. Bohning, “Ruling the Roost: Sidney Edelstein and HIST,” 224th National Meeting of the American Chemical Society, Boston, MA, August 2002 (Abstract HIST 031); manuscript in preparation.

62. Quotations attributed to Edelstein are taken from: Sidney Edelstein, interview by J. L. Sturchio and A. Thackray at New Orleans, LA and West Palm Beach, FL, August 31, 1987 and February 24, 1988 (Chemical Heritage Foundation, Oral History Transcript #0075). See also J. J. Bohning, "Moonshine Whiskey and Japanese Shoestrings: The Making of a Textile Chemist," *Beckman Center News*, **1989**, 6, No. 1, 3–4, reprinted with permission on the HIST web page at http://www.scs.uiuc.edu/~mainzv/HIST/awards/Edelstein%20Papers/Edelstein_bio_Bohning_CHF_2-header.pdf (accessed June 4, 2007).
63. For more on Henry M. Leicester, see G. B. Kauffman "Henry Marshall Leicester (1906–1991) A Memorial Tribute," *Bull. Hist. Chem.*, **1991**, No. 10, 15–21.
64. O. T. Benfey, "Introduction to Kekulé–Couper Symposium," *J. Chem. Educ.*, **1959**, 36, 319–320; E. N. Hiebert, "The Experimental Basis of Kekulé's Valence Theory," *J. Chem. Educ.*, **1959**, 36, 320–327; H. M. Leicester, "Contributions of Butlerov to the Development of Structural Theory," *J. Chem. Educ.*, **1959**, 36, 328–329; A. J. Ihde, "The Unraveling of Geometric Isomerism and Tautomerism," *J. Chem. Educ.*, **1959**, 36, 330–336; E. Campaigne, "The Contributions of Fritz Arndt to Resonance Theory," *J. Chem. Educ.*, **1959**, 36, 336–339.
65. For more on Earle R. Caley, see the HIST web page at <http://www.scs.uiuc.edu/~mainzv/HIST/awards/Dexter%20Papers/CaleyDexterBioJJB1.pdf> (Accessed June 4, 2007).
66. C. W. Beck, Ed., *Archaeological Chemistry: a symposium sponsored by the Division of the History of Chemistry at the 165th meeting of the American Chemical Society, Dallas, Texas, April 9–10, 1973*, American Chemical Society, Washington, DC, 1974; F. Carter, Ed., *Archaeological Chemistry II*, American Chemical Society, Washington, DC, 1977; J. B. Lambert, Ed., *Archaeological Chemistry III*, American Chemical Society, Washington, DC, 1984; R. O. Allen, Ed., *Archaeological Chemistry IV*, American Chemical Society, Washington, DC, 1989; M. V. Orna, Ed., *Archaeological Chemistry: organic, inorganic and biochemical analysis*, American Chemical Society, Washington, DC, 1996; K. A. Jakes, Ed., *Archaeological Chemistry: materials, methods and meaning*, American Chemical Society, Washington, DC, 2002.
67. *Chem. Eng. News*, **1956**, 34, 369.
68. For more on Ralph E. Oesper, see the HIST web site at <http://www.scs.uiuc.edu/~mainzv/HIST/awards/Dexter%20Papers/OesperDexterBioJJB2.pdf> (accessed June 4, 2007).
69. For more on Eva Armstrong, see the HIST web site at <http://www.scs.uiuc.edu/~mainzv/HIST/awards/Dexter%20Papers/ArmstrongDexterBioJJB2.pdf> (accessed June 4, 2007).
70. "Celebrating a Legacy: Fifty Years of the Dexter and Edelstein Awards," 232nd National Meeting of the American Chemical Society, San Francisco, CA, September 2006, Abstracts HIST 013–022. See http://www.scs.uiuc.edu/~mainzv/HIST/meetings/2006-fall/HIST_Fall_2006_Program_and_Abstracts.pdf (accessed 27 June 2007).
71. For a complete listing of all Dexter and Edelstein Award winners and their biographies, see the HIST web site at <http://www.scs.uiuc.edu/~mainzv/HIST/awards/index.php> (accessed 4 June 2007).
72. A. J. Ihde, *The Development of Modern Chemistry*, Harper and Row, New York, 1964.
73. For more on Aaron J. Ihde, see J. J. Bohning, "Aaron Ihde: a Life from Bascom's Hill," *Bull. Hist. Chem.*, **2001**, 26(1), 3–14.
74. Smith to Browne, August 23, 1921 (19). Herty was editor of *The Journal of Industrial and Engineering Chemistry*.
75. Smith to Browne, September 16, 1921 (19). Smith said he did not want to be editor (something Browne could do), but perhaps he could collect money for it. He again reiterated that this journal should focus on chemistry in America.
76. Browne to Smith, November 2, 1921 (19).
77. Smith to Browne, November 3, 1921 (19).
78. Smith to Browne, July 18, 1922 (19).
79. Browne to Smith, July 19, 1922 (19).
80. Smith to Browne, July 21, 1922 (19).
81. *Chem. Eng. News*, **1957**, January 14, 52.
82. Complete sets of this publication are now rare, and individual volumes averaged \$100 each on the used book market in 2006.
83. *Ambix* is a publication of the Society for the History of Alchemy and Chemistry begun in 1937.
84. W. B. Jensen, "From the Editor's Desk," *Bull. Hist. Chem.*, **1988**, No. 1, 3.
85. For more information on the *Bulletin* and a searchable database of its collective contents, see the HIST web site at <http://www.scs.uiuc.edu/~mainzv/HIST/bulletin/index.php>.
86. For more on the program, see the ACS web site at <http://acswebcontent.acs.org/landmarks/> (accessed June 4, 2007). The Edgar Fahs Smith Collection designation is at <http://preview.interlockingmedia.com/acslandmarks/landmarks/fahs/fahs.html> (accessed June 4, 2007). For a recent designation, see L. R. Raber, "Rumford Baking Powder Becomes a Landmark," *Chem. Eng. News*, **2006**, 84 (No. 28, July 10), 74.
87. Details of this award may be found on the HIST web site at http://www.scs.uiuc.edu/~mainzv/HIST/awards/citations_chem-breakthroughs.php (accessed June 4, 2007).
88. For example, see L. Wang, "Landmark Achievements: Awards Program Honors Institutions where Breakthrough Chemical Discoveries Occurred," *Chem. Eng. News*, **2007**, 85 (No. 18, April 30), 35.
89. Details of the award are on the HIST website at <http://www.scs.uiuc.edu/~mainzv/HIST/awards/paper.php> (accessed June 4, 2007).
90. R. B. Seymour, *History of Polymer Science and Technology*, M. Dekker, New York, 1982.

91. L. R. Caswell, "Andres del Rio, Alexander von Humboldt, and the Twice-Discovered Element," *Bull. Hist. Chem.*, **2003**, 28, 35–41.
92. *Chem. Eng. News*, **2003**, 81 (No. 41, October 13), 114–115.
93. *Chem. Eng. News*, **2006**, 84 (No. 41, October 9), 41–42.
94. Many of the details may be found in J. H. Wotiz, "A History of Chemistry Center," *J. Chem. Educ.*, **1981**, 58, 415–417.
95. See <http://www.scs.uiuc.edu/~mainzv/HIST>. This web page makes a lot of the Division's information accessible in one place, including meeting papers and abstracts, awards, division business, and the like

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The Division of the History of Chemistry (HIST) of the American Chemical Society (ACS) seeks to advance knowledge and appreciation of the history of the chemical sciences among chemists, students, historians of science, and the broader public by

- Encouraging research and scholarship in history of the chemical sciences;
- Providing a welcoming environment for the discussion of history of chemistry in a variety of venues, particularly in symposia at national ACS meetings;
- Serving as a resource for chemical scientists in general, and members of the ACS in particular, who seek to understand the roots of their discipline, sub-discipline, or interdisciplinary subject;
- Recognizing major achievements from the past in the chemical sciences and the individuals who made those achievements;
- Publishing a scholarly journal in history of chemistry;
- Interacting with other organizations interested in the history of science; and
- Adding value to the ACS by helping it achieve its vision and missions.