OUROBOROS, A NEW ENGLAND CHEMISTS' CLUB (1)

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At a meeting of the Northeastern Section of the American Chemical Society in Boston, December, 1909, a group of chemistry professors proposed the formation of a "Chemistry Round Table." Its purpose was to provide the opportunity for New England college chemistry teachers to convene and to exchange information and ideas about their profession. This notion had its roots in an earlier but vaguely defined "Chemical Club," whose original members were Edwin J. Bartlett, Dartmouth; Leverett Mears, Williams; Leonard P. Kinnicutt, Worcester Polytechnic (WPI); John T. Stoddard, Smith; and Henry P. Talbott, MIT. It was Kinnicutt of WPI who was the chief proponent of this move.

For an organization that has been typified through the years as unstructured and sometimes leaderless, this founding group moved quickly. Within a year of the original proposal, the first official meeting of the club was held at the Draper Hotel, Northampton, MA, with Professor Stoddard of Smith College as host. Ironically, Professor Kinnicut, the prime mover, was not present but sent W. L. Jennings of WPI in his place. The seven official original members (including the absent Kinnicutt) represented Amherst, Massachusetts College of Agriculture, WPI, Williams, Smith, and MIT. A year later, at the second meeting held at the St. Botolph Club, Boston, six additional members from Dartmouth, Holy Cross, MIT, and Amherst, joined the club. Upon the death of Kinnicutt in 1911, membership consisted of 11 individuals from nine institutions. Information on the early meetings of the club is indeed sparse, for, only at the ninth meeting in 1914 was a vote taken to keep records of minutes and attendance. Indeed that has been carried out scrupulously ever since. The minutes of all meetings through No. 160 have been preserved in the possession of the club's only officer, known for at least the past 50 years as "Custodian of the Archives." Abstracts of the minutes were published in a series of six volumes (2). Most of the material being presented comes from these invaluable documents.

To describe the structure of the organization is not only difficult but perhaps inappropriate. While it was clear from the start that the objective was to bring together teachers of chemistry in New England, the group has never adopted a constitution or set of bylaws in its 92-year existence. A "tentative constitution" was drawn up, probably in 1923. (A copy is to be found in the private papers of Charles James, University of New Hampshire, elected in 1922.) No further mention of the document appears in any subsequent minutes. A fragment of what may be a revision includes the name of George Scatchard, MIT, who was elected in 1926. Among the features covered in this proposed constitution:

> **Membership**: any **male teacher of chemistry** in an institution of **college or university** rank, or person interested in teaching chemistry, **residing in New England.** (not to exceed 30).
>
> **Meetings** two each year, fall and spring. "No formal papers or lectures shall be presented at a regular meeting, except with the unanimous consent of the members present."

> **Object**: to provide an opportunity for social fellowship and informal fraternizing upon things chemical.

Arthur Lamb of Harvard had his own clever version of the objects of the club, recorded in the official minutes: "coadunation [union], libation, deglutition [swallowing], disputation, and cachinnation [immoderate laughter]."

An official name for the organization was not even considered (according to existing minutes) until 1915. Among the suggestions were "Chemical Academy," "Chemical Round Table," and "Ouroboros Club." At the May 1916 meeting, the last was "favored," according to the minutes. Whether any formal vote was in fact taken is not recorded. So, after six years, the organization had a name: Ouroboros Club; over the years this has been shortened to "Ouroboros." What does it signify? According to the Larousse encyclopedia (for it is not to be found in unabridged dictionaries or, indeed, in most encyclopedias), the Greek ouroboros is a circular serpent poised with the tail in its mouth and signifies the totality of nature and the union of heaven and earth. At the Boston meeting of Ouroboros in 1918, Professor Hopkins, Amherst, made a presentation on the significance of "our serpent Ouroboros." In Greek letters it is rendered: Ουροβόρος. The tail-eating serpent, supposedly of Phoenician origin, has been variously viewed as a symbol of science, the alchemist's distillation vessel, and even of magic. According to Egyptian and Greek legend (*Britannica*), the serpent is continually devouring itself and being reborn from itself. Inside the circle is the legend: εν το πάν, transliterated "HEN TO PAN"—"One is the All." The alchemist Zosimos provided a more extended version in a technical recipe:

> One is the all
> By it the all;
> For it the all, and
> In it the all.

Figure 1*. Ouroboros depicted in an illustration from the work of Cleopatra the Alchemist.*

In subsequent meetings members occasionally brought up the subject of their club's name: its origin, its meaning, and even debate over its transliterated spelling; but no conclusions were ever recorded. Member Donald Hornig (Brown University) named his boat "Ouroboros." The hosts at Clark University in 1966 carried the Ouroboros theme to its extreme by publishing the dinner menu with Greek letters.

Without constitution or bylaws, and thus united neither by a set of officers nor a treasury, Ouroboros was self-perpetuating through the one and only recognized continuing official. Described in the minutes of a 1924 meeting as "custodian" and later occasionally as "permanent secretary," the officer eventually became the "custodian of the archives." Biannual meetings have typically been arranged by an Ouroboros member at the designated host institution. This host (in early years dubbed "temporary secretary") sent out invitations to members and guests (named by the nominating committee for possible election.), together with a program for lunch, afternoon activities, dinner, and an evening discussion session. A typical example was the gathering at Dartmouth in 1921 at the Outing Club (Figure 2). Arrangements were also made for entertainment of nonchemist guests (i.e., spouses). Following the meeting, a ballot for new members was sent to those Ouroboros members who had attended. The host also sent a bill of reckoning for the costs of food and libation, recorded minutes of the meeting, and then passed on the records to the following host.

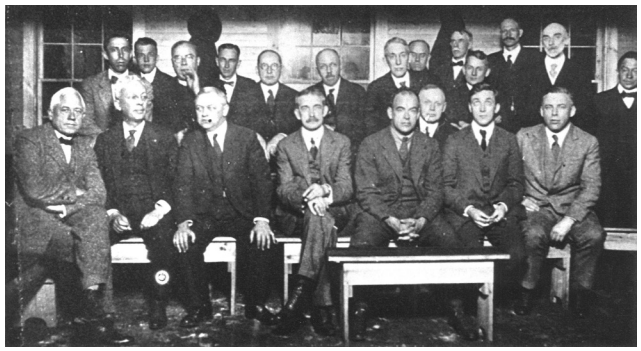

Figure 2. *Attendees at the Ouroboros Meeting in the Dartmouth Hut, October 1921.*

Election of members was a topic discussed at many meetings over the years, with regard to number and method of election. The early limit in membership varied from 20 to 35; but after World War II the active members increased substantially. Three or more negative votes were required to exclude a nomination, according

to action taken at a 1928 meeting. Until the late 1960s the **qualification** for membership never changed: members were to be men teaching chemistry in New England! Membership has at times included one or two chemical engineers. If a member moved from the New England area or retired, he became "honorary." In 1969 a motion was proposed to elect women; it passed by a vote of 24 to 3! The next year the first woman, Anna Jane Harrison (Mt. Holyoke), was elected to membership in Ouroboros. She served as the first female president of the American Chemical Society in 1978. The first election to Ouroboros of a husband and wife (Nancy and Thomas Lowry) took place in 1975.

Over the course of 85 years, Ouroboros meetings were scheduled regularly each spring and fall, with no exceptions from 1916 to 1968. None took place in 1983 or 1993. Amherst College served as host 17 times; Dartmouth 15; Yale 14; Worcester (alone or jointly with Clark) 14; Brown 13; Bowdoin 12. Smith hosted two meetings in the first decade but never thereafter. A dozen or so other schools served as hosts as well. Vermont, represented by a member for the first time in 1972, hosted its first meeting in 1977. At the last meeting at Bowdoin in 1994, 16 came for lunch, 18 for dinner (this included spouses).

The roster of Ouroboros members includes three Nobelists (T. W. Richards, elected 1915 (Nobel laureate 1914); Lars Onsager, elected 1957 (1968); W. N. Lipscomb, elected 1965 (1976). Not all Nobel chemists in New England institutions were members, however. Among Ouroboros members, two served as college presidents and 11 as presidents of the American Chemical Society (one, Arthur Lamb, serving twice) in the span from 1904 (A. A. Noyes) to 1978 (Anna Jane Harrison).

What took place at the 160 meetings over eight decades of the 20th century, besides libation and cachinnation? An enumeration of some of the recurring topics opens a window into the evolution of American chemistry and the mutual impact of the profession and society on each other. Let us listen in on the evening discussion sessions in each decade:

TOPICS DISCUSSED:

1920s

- Requirements for M.S.
- How to present chemistry to nonscience students
- Research ethics
- How to get rid of women students gently!
- J. B. Conant: account of visiting 25 German labs (1925)
- Reduction of chemistry courses in chemical engineering curriculum!
- Ph.D. exam

1930s

- Math preparation for chemists
- Norris proposed Richards Medal (1930, T. W. Richards died 1928)
- Teaching chemistry without lab
- Chemists as consultants—fees
- Chemistry curriculum:
  - General content
  - Physical chemistry in first year
  - Micro- vs. semi-micro analysis
  - Importance of history of chemistry incurriculum
  - Language exams
  - Teaching good English
  - ACS standards
  - Honors courses
  - Honors College
- Academic Calendar
- Selection of Ph.D. candidates—eliminating those incapable!
- Faculty salaries
- Effect of depression on chemical industry
- Increasing ACS dues
- High price of German journals
- College entrance exams
- Increasing enrollments
- Lecture demonstrations (live, by Kistiakowsky and Fieser)

1940s

- Retirement age for professors
- Defense courses
- Effect of war on college curriculum (Conant, others over several meetings)
- Liberal vs. practical education
- General science for B.A.s
- Postwar influx of students
- M.S. at liberal arts colleges
- Financing ACS
- NSF support of research
- Government contracts

1950s

- Freshman course for nonscientists
- Lack of appeal of chemical industry for students
- Importance of undergraduate research for inspiration
- Science vs. humanities ("Two Cultures??")
- ACS accreditation for graduate schools
- Disappearance of quantitative analysis
- Continuing shortage of chemistry students
- NSF support for high school teaching (summer institutes)
- Teaching by graduate students—condemned
- Visual aids for teaching
- Ramifications of conversion of teacher's colleges to liberal arts colleges
- Chemistry libraries—should be kept separate from main libraries
- Advanced placement

1960s

- Outreach for teaching chemistry: UNESCO
- NSF URPP
- Time demand on faculty writing proposals
- Public image of chemistry
- Expansion of Ph.D. programs—feasibility at smaller schools
- Academic calendars
  - Dartmouth plan
  - January program
- Curriculum:
  - Physical versus inorganic approach in freshman chemistry
  - Advanced placement
  - Teaching relevance of chemistry
  - Incorporating pollution, environmental issues
- Student Riots

1970s

- Reduction in graduate enrollment but increase in chemistry enrollments
- Shift in NSF funding from fundamental to applied research
- Curriculum
  - Incorporate more biology, biochemistry
  - more descriptive chemistry!
  - More preparation for chemical industry
  - ACS certification
  - Need for more analytical chemistry
- Opening of student records to students and parents
- Chemical waste: dealing with OSHA and EPA (repeated topic into 1990s)
- Increased cost of laboratory instruction: closed circuit TV; instrument costs
- No substitute for laboratory!
- Faculty unionization
- Dispersal of overhead funds

1980s

- Council for Chemical Research (academic/industrial interface)
- Shortened academic calendar
- Equipment for small schools
- Incentive grading
- Growing use of personal computers
  - Role in undergraduate teaching
  - Role in laboratories
  - Role in lectures
- Concern for high school teaching, also K-12
- Academic teaching labs for 21st century

What role did Ouroboros play in New England chemistry? To be sure, many of its active members were leaders at their own institutions (often heads or chairmen), who were able to commiserate with their colleagues twice a year on subjects of common interest in chemistry. I would like to think that the discussions helped to formulate points of view and values and to provide encouragement for these teachers and researchers to return to their own institutions with reinforced conviction about their policies and methods for accomplishing their goals. The organization also served as an opportunity for socializing with chemistry colleagues, who all became better acquainted and probably were more inclined to communicate with each other between meetings. A particularly congenial gathering was photographed during a visit to the Worcester Foundation for Experimental Biology in 1947 (Figure 3).

No meeting has been held since 1994. At that time there were 34 active members on the roster, even though honorary members (either retired or removed from New England) numbered 44, and 90 members were deceased. Thus, from a charter group of seven far-sighted New England chemists in 1910, the full, cumulative roster of members elected to Ouroboros finally totaled 168 (3). Just as the organization came into existence with

no official document or formal declaration, so it expired without a notification to members nor any written decree.

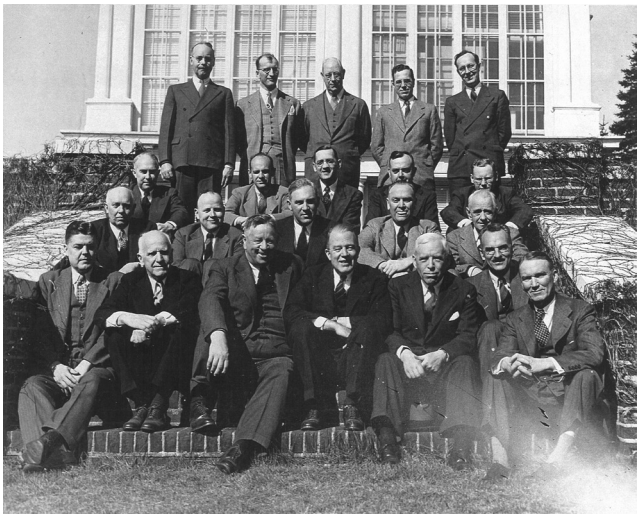

Figure 3*. Gathering of Ouroboros members at Worcester Polytech, May 1947.*

Acknowledgment

I am grateful for considerable help from two honorary members of Ouroboros noted here. The late Edward R. Atkinson, author of several of the volumes of Ouroboros history and a walking archive himself, offered invaluable assistance in this presentation. I thank Fred Greene, "Custodian of the Archives," for providing photographs and other materials from the master files.

References and Notes

1. Presented in a symposium, "Impact of Chemistry on the History of New England," 224th National Meeting of the American Chemical Society, Boston, MA, Aug. 19, 2002.
2. Walter L. Jennings, Meetings 1 (1910) to 59 (1940); Ernest D. Wilson, Meetings 60 (1940) to 80 (1950); Edward R. Atkinson, Meetings 81 (1951) to 110 (1965), 111 (1966) to 135 (1978), 136 (1979) to 150 (1987), and 151 (1988) to 160 (1994). The late Dr. Atkinson provided copies of the minutes to the author.
3. Dr. Atkinson maintained a continuing current roster of membership (personal collection).

About the Author

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