

BOSTON UNIVERSITY'S DEPARTMENT OF CHEMISTRY: A BRIEF HISTORY
OF THE PERIOD 1904-1973

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In the years prior to the fall of 1904, chemistry courses were taken by matriculants in the College of Liberal Arts extramurally, mostly at M.I.T. Chemistry courses were first offered at the University's cramped location at 12 Somerset St. in the fall of 1904. The Chemistry faculty at that time consisted of Lyman C. Newell, newly recruited to introduce the discipline to CLA. Four years later Chemistry shared in the move of CLA to its new quarters at 688 Boylston St., the former location of the Harvard Medical School. There, Prof. Newell and his students enjoyed the relative luxury of two teaching laboratories, one for 70 students, the other for 12, and a small combined faculty office and laboratory. Such were the quarters of the Department of Chemistry throughout the balance of Newell's chairmanship, which ended with his death in 1933. It was not until 1935, when space previously occupied at 688 Boylston St. by the Biology Dept. was vacated, that Chemistry was able to expand its quarters to accommodate 120 students and provide individual offices and laboratories for its three senior faculty members.

A graduate of Brown University, Lyman C. Newell earned his Ph.D. at Johns Hopkins in 1895 and came to Boston University after teaching at the high school level and then at Lowell State Normal School. He was the author of two textbooks of chemistry which were widely used for decades, an avid collector of books, manuscripts, medals and other artifacts pertaining to the history of chemistry, and highly active in professional and University affairs. Although his bibliography was long, he did not pursue a program of chemical research.

Beginning in 1909, and for more than 10 years thereafter, Prof. Newell's efforts were supplemented by those of his assistant, Helen M. Stevens, CLA A.B., '05, GRS A.M. '21, aided only by undergraduate assistants. Helen Stevens served the Department for 44 years during the last decade of which she bore the title of Associate Instructor. In 1920, Edward Otis Holmes, Jr. joined the Department with the rank of Instructor. Holmes, a physical chemist, had earned his A.B. and A.M. at Harvard and, after a period of employment at DuPont, had earned his Ph.D. at Johns Hopkins. He was soon joined by Marguerite Syner, CLA S.B. '24, GRS A.M., '25. Marguerite Syner was also accorded the title of Associate Instructor in 1943 and continued in the Department until her retirement in 1967. The last addition to the Chemistry faculty during Newell's chairmanship was J. Philip Mason, an organic chemist who earned his B.S. at CLA in 1922 and was a Buck Scholar, received his Ph.D. from Princeton in 1927 and joined the Boston University faculty in 1928 after serving as an Instructor

at George Washington University for three years.

Ed Holmes, a tall, taciturn Bostonian who would, if pressed, characterize the Oliver Wendell Holmes', father and son, as members of the "upstart branch" of the Holmes family, soon after joining the faculty somehow managed to initiate a program of research in spite of an enormous teaching load and very limited facilities. His work, on phototropy of dyes in solution, was more than a decade ahead of its time and resulted in a publication in the most prestigious American chemical journal, "The Photochemical Activity of the Triphenylmethane Sulfonic Acids", Journal of the American Chemical Society 44, 1002-8 (1922). How such research could be performed in the Departmental environment of the early twenties is made clear by Holmes' statement of "appreciation to Professor Norton A. Kent of the Physics Department for his interest and kindness in allowing the use of laboratory and apparatus in connection with this work". But the difficulties standing in the way of Holmes' pursuit of research were soon compounded by growing family responsibilities and he had to interrupt his promising work.

Holmes assumed the chairmanship of the Department consequent upon Newell's death in 1933 and remained in the chair until 1952. It was only then that he returned to his research. Holmes retired in 1957. One of the important contributions of his chairmanship was his introduction of communal faculty discussion of departmental academic and other business and democratic decision making, policies which have remained in place to the present time.

It is symbolic of the development of the Department in the years following Holmes' accession to the chair that the alumni reunion held in his honor at the time of his retirement in 1957 featured guided tours of Departmental research facilities. These tours presented the research of groups headed by six professors, taking place in twelve laboratories and two rooms filled with shared instrumentation, with fifteen graduate students and two postdoctoral research associates describing their work to visitors. At the end of Holmes' term as chairman, he was, in fact, the only tenure-line faculty member not actively engaged in research.

Boston University's move to its present location on the Charles River campus took place during Ed Holmes' term as chairman, all except the last year of which fell within the period of the presidency of Daniel L. Marsh. The first unit of the new campus, the Charles Hayden Memorial Building, home of the College of Business Administration (now known as the School of Management), was dedicated in 1939. The new CLA building, linked to the Hayden Memorial directly to its west, was opened for classes in the fall of 1947. Instructional laboratories for chemistry became available on the new campus in the fall of 1948 with the completion of the Stone Building, linked to the Hayden

Memorial directly to it east. At the time of its opening, the Stone Building housed the offices and instructional laboratories of Biology, Chemistry and Physics. By the end of Holmes' chairmanship Physics had moved to other quarters and the 40+ thousand net square feet of Stone were shared approximately equally by Biology and Chemistry, with the biologists concentrated in the upper floors.

The attractive exterior of the Stone Building didn't completely compensate its occupants for deficiencies which originated in Pres. Marsh's choice of a firm of church architects as its designer. The architects' plans called for five above-ground stories most of one of which was to be taken up by a large lecture amphitheater suitably equipped for scientific demonstrations. One day, when Ed Holmes was visiting the construction site, he realized that the structural framework of the building had been topped off at only four stories above ground. Consultation with Pres. Marsh revealed that he had felt the need to economize by deleting the amphitheater. The fact that at the time of its opening the Stone Building included a large lecture hall in the form of a ground-level appendix (Stone 50) bears witness to the determination and skill of Ed Holmes and his fellow science chairmen in making their case to the autocratic Marsh for the importance of a lecture hall appropriate for the teaching of experimental sciences.

Although the Stone Building provided a small amount of space for laboratory research, most of the research in chemistry in progress at Boston University in 1948 was performed in a structure fondly(?) known as "the shacks", located approximately where the Mugar Library now stands. This H-shaped one-story edifice had been assembled around 1945 from a World War II barracks located parallel to Commonwealth Ave. and connected to a World War I barracks a few yards to its north. Chemistry occupied the older (and sturdier) side of the H. Its happy and productive occupants included the research groups of Profs. Coulter, Gensler, Lichtin and an applied project under Prof. Mason's supervision, as well as, for a while, a paying guest, the fledgling central research laboratory of the Kendall Co. (The head of this five-person group was Willard Bright, later to be sequentially CEO of Kendall Co., Curtiss Wright and Boeringer Mannheim.) The researchers could, if occasion demanded, make such building modifications as required to hang heavy equipment from the rafters or drain selected wastes to the ground beneath the floor. And no worker needed to feel lonely, even in the wee hours of the morning, because numerous pigeons and a community of rats also called the shacks home.

The average pace of recruitment of Chemistry faculty during Holmes' nineteen years as chairman, though slow compared to the standards of recent years at Boston University, was almost four times the average pace during Newell's twenty nine years in the chair. The recruits who achieved tenure at Boston Univ. included

Chester M. Alter, analytical chemistry, Ph.D. Harvard, 1934, joined in 1934, Lowell V. Coulter, physical chemistry, Ph.D. Univ. of California at Berkeley, 1942, joined in 1942, Arno H. A. Heyn, analytical chemistry, Ph.D. Univ. of Michigan, 1944, joined in 1947 after three years in industry, Norman N. Lichtin, physical and organic chemistry, Ph.D. Harvard, 1948, joined in 1947, Walter J. Gensler, organic chemistry, Ph.D. Univ. of Minnesota 1942, joined in 1949 after a year in industry, three years of research on antimalarials at Columbia and three years as Instructor at Harvard, and Louis C. W. Baker, inorganic chemistry, Ph.D. Univ. of Pennsylvania, 1951, joined in 1951. Chester Alter was Dean of the Graduate School from 1945 until 1953 when he left Boston Univ. to become Chancellor of the Univ. of Denver. Lou Baker left in 1962 to become chairman of the Chemistry Dept. at Georgetown University. The others made their careers at Boston Univ. Walter Gensler was the first member of the Department to be selected as a University Lecturer, Lowell Coulter and Norman Lichtin each later chaired the Department for about a decade, Lichtin was promoted to the rank of University Professor in 1973 and Arno Heyn for many years played a leadership role in the Northeastern Section of the American Chemical Society. Others who did not stay included Andrew Kasper, electrochemistry, Warren Lux, physical-organic, and Howard Reiss, physical. Reiss, a 1949 Columbia Univ. Ph.D., managed during his membership on the Boston Univ. faculty from 1949-51 to launch a vigorous research program in chemical physics and then began a distinguished career in industry which included more than a decade at Bell Labs and another decade as founding director of Atomics International's basic research lab and a year as Chief Scientist of the U.S. Air Force. He subsequently returned to academia at UCLA and was elected to the National Academy of Science.

Two notable advances in ^hte Department which took place during Holmes' chairmanship were the initiation of a doctoral program in 1938 and the certification of the Department by the American Chemical Society in 1942.

In 1952 Phil Mason succeeded Ed Holmes as chairman. Mason's term in the chair, which lasted until 1961, was a period of consolidation of use of the Department's space and maturation of its graduate and research programs. No additional space was allotted during these years and there was no net growth in the tenure-track faculty. Klaas Eriks, physical chemistry (X-ray crystallography), Ph.D. Univ. of Amsterdam, 1952, who joined in 1954 after one year of post-doctoral research at each of Penn State and the Univ. of Minnesota and Ronald M. Milburn, inorganic chemistry, Ph.D. Duke Univ. 1954, who joined in 1957 after post-doctoral research at Duke and the University of Chicago and teaching at Duke and Victoria Univ. in New Zealand, replaced Alter and Holmes. Both Eriks and Milburn have made their careers at Boston Univ.

During the years of Mason's chairmanship the role of external sponsorship of research in chemistry grew explosively and reached a level comparable to its current state. At various times during this period, the research programs of various members of the Chemistry faculty were sponsored by the Research Corporation, the Petroleum Research Fund of the American Chemical Society, the Technical Association of the Pulp and Paper Industry, the National Science Foundation, the National Institutes of Health, the Air Force Office of Scientific Research, the Atomic Energy Commission and such industrial sponsors as General Latex Corp. and Armstrong Cork. These funds not only paid for routine research expenses but made possible the acquisition of increasingly expensive instrumentation and the support of both graduate students and post-doctoral fellows. Not the least important was the availability of summer stipends for faculty members, which reduced economic pressures to teach in the summer and enabled faculty members to spend more time on research. The availability of massive external funds for research created a revolution since institutional budgetary constraints now limited only those aspects of the scope and quality of research which required added space.

This account would be incomplete if it did not dwell briefly on the special qualities and broad contributions of Phil Mason. Mason, the son of a Methodist minister who for a time was the oldest living alumnus of Boston Univ., played a leadership role in the Chemistry Dept., in the College of Liberal Arts, in the University as a whole and in his home community of Westwood, MA. His pleasant smile and courteous soft-spoken manner did not obscure the intense commitment which he brought to the several communities which he served. He was dedicated to motivating his undergraduate students to achieve excellence and to supporting what he called the "bootstrap efforts" of those who were economically or otherwise disadvantaged. The endowment of the Mason Memorial Scholarship fund was raised by the Department to create a living memorial to Phil with special emphasis on this dedication. His contributions to Westwood were primarily in the area of public education and are exemplified by his service on and chairmanship of its school committee. Perhaps his most important contribution to CLA and the University was his participation in the planning of the 6-year (now 7-year) combined liberal arts-medical degree program. This program, which was initiated in 1961 with the aid of massive support from the Commonwealth Fund, has long been a national model. Its start-up funding provided for the addition of four new faculty lines in the Chemistry Dept. and for the setting up of two new state-of-the-art undergraduate instructional laboratories. During World War II, Mason headed a research group and himself participated in pioneering research on the synthesis of nitrogen mustards. Although these compounds were candidates for use as chemical warfare agents, they were later widely used in the chemotherapy of cancer. Mason retired from the University in 1966 and died in 1969, a victim of cancer.

Lowell Coulter became chairman of the Department in 1961 and remained in that position until 1973. The period of Coulter's chairmanship was one of major improvement in the space and facilities of the Department and growth of its faculty from eight tenure lines and one associate instructor to eighteen tenure lines, two non-tenurable assistant professors and four non-tenurable instructors. It also saw a drastic shift away from the slow rate of turnover in the faculty which had characterized the Department. During this period, biochemistry was added to the subdisciplines practiced in the Department.

Most of the growth in the size of the faculty which took place during the Coulter chairmanship was based on expanding demand for undergraduate instruction in chemistry and most of the expanded demand came from premedical and other life science-based professional programs such as nursing. As has already been pointed out above, four new faculty lines were created for the six-year CLA-MED program which began in 1961. Two new faculty lines were created for the three-semester life science chemistry program (primarily for students from the School of Nursing and Sargent College), teaching of which began in 1969. Two new faculty positions were created to provide CLA-quality instruction in lower division chemistry courses offered through the Evening Division (now known as Metropolitan College). Even though an external consultant, Prof. George S. Hammond of the California Institute of Technology, advised around 1966 that it would take a critical mass of 25 faculty members with their own independent research programs if the Department was to join the ranks of the top twenty or thirty chemistry departments in the U.S., at most two faculty members were added primarily to increase the instructional and research scope of the Department.

Instructorships had ceased in the early 1950's to be the entry-level positions for tenure-line Chemistry faculty who were expected to develop independent research programs. The four instructors on the Departmental roster at the end of the Coulter chairmanship were expected to take direct charge of lower-division instructional laboratories, supervise teaching-fellows and teach discussion sections. Their teaching loads were heavy and they were not expected to develop independent research programs. Their work facilitated heavy engagement of the tenure-line faculty in research.

One of the two non tenure-line Assistant Professors on the 1972-3 roster of the Chemistry faculty was the chief administrative officer working under the supervision of the chairman. This position was created in 1967 to facilitate the management of what had become a large and technically complex unit so that the chairman could teach, pursue research and play a proactive leadership role in the development of the Department. The first occupant of the position was Julius Feldman, a University of Chicago Ph.D. in biochemistry with extensive

industrial experience. Beginning in 1974, the title of this position became Science Administrator and so remained until the position was terminated in 1984. The other temporary Assistant Professor was a substitute for a faculty member who was on leave.

During Coulter's chairmanship, ten individuals were appointed to tenure-line positions and were ultimately promoted to tenure. Only two of these, Endicott and Lowe, have at this writing left the University subsequent to their advancement to tenure. These ten are Alfred Prock, physical chemistry, Ph.D. Johns Hopkins, 1955, postdoctoral (with Nobel laureate Peter Debye) at Harvard for one year and at Cornell for five years, joined in 1961, Department's first recipient of the University's Metcalf Award for excellence in teaching in 1978; Morton Z. Hoffman, physical chemistry, Ph.D. Univ. of Michigan, 1960, postdoctoral (with Nobel laureate George Porter) at University of Sheffield in England for one year, joined in 1961; John Endicott, inorganic chemistry, Ph.D. Johns Hopkins, postdoctoral (with Nobel laureate Henry Taube) at Stanford University, joined in 1963 and moved to Wayne State Univ. in 1969; Richard A. Laursen, bio-organic chemistry, Ph.D. Univ. of Illinois at Urbana, 1964, postdoctoral (with Frank H. Westheimer) at Harvard for two years, joined in 1966, Department's first NIH Research Career Development Awardee, 1969-74, Department's first Alfred P. Sloan Fellow, 1972-4, Department's first winner of a National award, the Edman prize, 1988; Standish C. Hartman, biochemistry, Ph.D. M.I.T., 1957, Instructor in biochemistry, M.I.T. 1957-9, Associate in Biological Chemistry, Harvard Medical School, 1959-63, Assist. Prof. in Biological Chemistry, Harvard Medical School, 1964-8, U.S. Career Development awardee 1960-8, joined in 1968; Marian A. Lowe, physical chemistry (theoretical), Ph.D. Univ. of Minnesota, postdoctoral Princeton, joined in 1968 and retired in 1988, first female member of the Department to be tenured; Scott C. Mohr, biophysical chemistry, Ph.D. Harvard, 1968, postdoctoral (with Gordon Hammes) at Cornell for one year, joined in 1969; Richard H. Clarke, physical chemistry, Ph.D. Univ. of Pennsylvania, 1969, postdoctoral (with Clyde Hutchison) for two years at the Univ. of Chicago, joined in 1971, Alfred P. Sloan Fellow, 1972-5, recipient of the MacDonald prize for excellence in scientific research, 1985, University Lecturer, 1986; Warren P. Giering, organometallic chemistry, Ph.D. State University of New York at Stony Brook 1969, postdoctoral (with Myron Rosenblum) at Brandeis Univ. for two years, joined in 1971; Guilford Jones, physical-organic chemistry, Ph.D. Univ. of Wisconsin 1970, postdoctoral (with Jerome Berson) at Yale for two years, joined in 1971.

Nine individuals were appointed to tenure-line positions during the period of Lowell Coulter's chairmanship but either left prior to consideration for tenure or were not offered tenure. These included George E. Hein, bio-organic, 1962-6; Stephen Marburg, organic, 1962-6; William P. Bryan, biochemistry, 1964-9; John P. Lorand, physical-organic, 1965-71; Richard H. Mann,

physical, 1967-73; Margaret Jorgenson, organic, 1968-1970 (deceased March 13, 1970); Robert S. Umans, bio-physical, 1969-75; John N. Armor, inorganic, 1970-74; John S. Wishnok, organic, 1970-4. In addition, seventeen individuals held temporary appointments as Instructors or Assistant Professors for one or more years.

Major improvements in the quality of the space assigned to the Chemistry Dept. and some net gain in its area took place during the chairmanship of Lowell Coulter. In 1964 the Biology Dept. moved out of the Stone Building to its new location at 2 Cummington St. All of the Stone Building was converted to the use of Chemistry with the aid of a large NIH award secured by the efforts of Coulter. In 1965 the Department consolidated all of its instructional and research programs in Stone and the shacks were demolished to make way for the construction of the Mugar Library. The capacity of Stone was quickly exceeded by the rapidly growing Department and the process of expansion into the third and fourth floors of the adjacent Hayden Memorial begun. The termination of the College of Practical Arts and Letters at about the time of the consolidation in Stone made PAL's former location on the fourth floor of Hayden conveniently available and the office of the Department was soon relocated into that area. It was not long before more than ten thousand net sq. ft. of research laboratories and faculty offices were located in Hayden. Complete engineering plans for the conversion of all of Hayden Memorial to space for Chemistry were completed in 1967 at a cost of some thirty thousand dollars but no progress was made towards relocating the College of Business Administration and no decision was ever made about implementing such an expansion. The slow metathesis of Chemistry into Hayden was to continue until around 1980 when the decision to build a major center for science and engineering put an end to these temporary measures.

Lowell Coulter was succeeded in the chair in 1973 by the author of this report and he in turn in 1984 by Dan Dill, CLA A.B. 1968. It is left to some other chronicler to record the history of these later years.