HISTORY

OF

THE DEPARTMENT OF CHEMISTRY

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THE DEPARTMENT OF CHEMISTRY
OF
THE OHIO STATE UNIVERSITY

The Department of Chemistry was one of the original ten departments of The Ohio Agricultural and Mechanical College. Sidney A. Norton, named by the first Board of Trustees in 1873 as Professor of General and Applied Chemistry, was for some years the only staff member. His appointment was the second made to the faculty of the new college.

Professor Norton was graduated from Union College (B.A., 1856; M.A., 1859). He first taught science at the Central High School in Cleveland from 1858 to 1866, and then taught chemistry and toxicology at the Miami Medical College of Cincinnati, from which he received the M.D. degree in 1869. He studied chemistry in Germany at various times in the period 1870-1872, chiefly under Bunsen and Kolbe. He was awarded an honorary Ph.D. degree by Kenyon College in 1878 and a LL.D. degree by Wooster College in 1881.

In the beginning the chemistry department occupied a suite of rooms on the third floor of the only building then on the campus, now known as University Hall. At first only two courses were offered, one being a general lecture course extending over one year. This included inorganic chemistry, organic chemistry, and applied chemistry. The other, which was a laboratory course, extended over three years, and consisted mainly of qualitative and quantitative analysis. The enrollment in the first course in the first year was only five students. In the second year (1874) the total enrollment in chemistry was 14, including two students doing laboratory work. From this very small beginning the enrollment increased slowly, there being 31 enrolled in 1876 and 61 in 1887. One indication of the

slight resources of the chemistry department at this early period is a request made by Professor Norton to the Board of Trustees in 1875 for a grant of $77 to purchase a dictionary of chemistry. This request was granted and he later acknowledged it in a report to the board as follows, ''At present the chemical library of the University consists of a Watt's Dictionary -- a valuable book but one not fully supplying our need .... We have begun to take a chemical journal''.

At the beginning Professor Norton had no assistance except volunteer help given by students without compensation, but in 1879 Mr. David O'Brine was officially appointed as a student assistant. He continued to help Professor Norton until 1887 and was succeeded by Mr. Frederick Keffer who served until 1892.

Soon after the name of the college was changed to The Ohio State University three new departments were added which were allied to the chemistry department and in which certain courses in applied chemistry were taught. These were the Department of Mining and Metallurgy in 1879, the Department of Agricultural Chemistry in 1884, and the Department of Pharmacy in 1885. It then became necessary to provide a building to house the chemistry department and these new departments. The General Assembly in 1881-1882 appropriated $20,000 for the construction of a two-story laboratory building. In September 1882 it was ready for occupancy. Unfortunately this first chemistry building was not destined to last long, for its pleasing exterior of brick and stone enclosed an interior structure of wood. The entire second floor was occupied by the Department of Chemistry and the entire first floor at the start by the Department of Mining and Metallurgy, which later shared it with the Department of Agricultural Chemistry. At this time the course offerings in chemistry were revised. The first-year course consisted of lectures in inorganic chemistry for two-thirds

of the year, followed by lectures in organic chemistry. The second course consisted of a year's work in qualitative analysis and the third course a year's work in quantitative analysis. The fourth course, which was new, included organic analysis and toxicology.

On the morning of February 12, 1889, the building occupied by the chemistry department and the other departments was totally destroyed by fire. Temporary quarters for chemistry were provided in what is now University Hall. The General Assembly, then in session, promptly appropriated $40,000 for another and larger building, which became ready for occupancy in September, 1890.

In 1892 William McPherson (B.Sc., Ohio State, 1887; M.Sc., 1890; D.Sc., 1895), who had previously taught for five years in the High School at Toledo, was appointed as the assistant to Professor Norton. He was destined to have a distinguished career in the university. His outstanding abilities as a teacher and administrator were almost immediately recognized, for he was promoted to Assistant Professor in 1893, to Associate Professor in 1895, and to Professor in 1897. He was the leading spirit in the organization of the Columbus Section of the American Chemical Society in 1897, and he later served as its chairman. At the end of this year he left for a period of graduate study in organic chemistry at the University of Chicago, from which he received the Ph.D. degree in 1899.

Soon after Professor McPherson became a member of the department considerable dissatisfaction arose from various quarters because no laboratory work was given in the first-year course in chemistry. This dissatisfaction reached such a pitch that the head of the Department of Agricultural Chemistry withdrew all first-year students from the general chemistry course and provided for them a first-year course in his own department that included laboratory work.

This action was followed by the withdrawal of all freshman engineering students and their assignment to the new course in the Department of Agricultural Chemistry. Although Professor Norton then attempted to remedy the situation by introducing some laboratory work into his course, the dissatisfaction remained. As a consequence Professor Norton was asked to resign in 1895 as head of the chemistry department, and Professor McPherson was appointed in his place[1].

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[1] Professor Norton continued to serve the department as Lecturer in General Chemistry until 1899, when he was finally retired as Professor Emeritus. A tribute paid to him by former students was published in The Ohio State Monthly, February, 1914. He died on August 31, 1918 at the age of 83. At this writing (July, 1969) a daughter of Professor Norton still survives. She is Mrs. George F. Krauss (nee Sarah Jane Norton) of Worthington, Ohio. Some of the facts in this historical account were supplied or confirmed by her.

Professor McPherson took immediate steps to make laboratory work an essential part of the first-year course in chemistry, and all the freshmen in agriculture and in engineering were again enrolled in this course. However, the introduction of a large amount of laboratory work into general chemistry required additional staff. This took the form of graduate teaching assistants who were given the title Fellow and Laboratory Assistant. Two were appointed at the beginning. One was William Lloyd Evans (B.Sc., Ohio State, 1892) and the other was Richard M. Hughes (A.B., Miami, 1893). Both of these men went on to distinguished careers in teaching and administration. Because of increased numbers in the courses in analytical chemistry, Charles W. Foulk (B.Sc., Ohio State, 1894) was appointed in 1896 as Assistant in Chemistry. He was promoted to Assistant Professor in 1898.

Various other changes in the chemistry curriculum were initiated by Professor McPherson. Organic chemistry was added as a separate course in 1894, and a course in theoretical chemistry was offered beginning in 1895. A four-year curriculum in industrial chemistry was established in 1896. Systematic graduate study and research began on a small scale, and was in fact at that time limited study for the M.Sc. degree, which was awarded to William Lloyd Evans in 1896 and to Richard M. Hughes in 1897.

In June 1899 Professor Foulk was granted a two-year leave of absence for graduate study in Germany, and he spent all of it as a student of Ostwald at Leipzig. William Edwards Henderson (Ph.D., Johns Hopkins, 1897) who had been teaching at Ohio University, was appointed temporarily to replace Professor Foulk. He introduced courses in inorganic preparations and the history of chemistry, and considerably improved the course in theoretical chemistry, which was the forerunner of the later courses in physical chemistry. The department grew in numbers so rapidly that when Professor Foulk returned from his leave, Professor Henderson was retained as a permanent member of the staff. This made possible further expansion of the course offerings in chemistry. Professor Henderson was promoted to Associate Professor in 1901 and Professor Foulk was likewise promoted in 1902.

The second chemistry building, which was named Chemical Hall, proved to be no more fire resistant than its predecessor. On the evening of February 19, 1904, it was totally destroyed in spectacular fire that also destroyed a new addition and large quantities of recently purchased apparatus and chemicals. This was a very serious blow to the department. The General Assembly, then in session, immediately appropriated $15,000 for fitting out temporary quarters, chiefly in Townshend Hall, and $100,000 for the construction of another chemistry

building, which was completed in time for the opening of classes in September, 1906. This third structure still exists as the original part of the present Derby Hall.

The first-year course in chemistry continued to grow in numbers to such an extent that additional staff was needed. In 1905 William Lloyd Evans[2] was named Assistant Professor in charge of the course in general chemistry. His

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[2] Between the time he left Ohio State after receiving the M.Sc. degree William Lloyd Evans taught chemistry for four years in the high school at Colorado Springs and then went on to study organic chemistry under John Ulric Nef at the University of Chicago, from which he received his Ph.D. degree in 1905.

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lectures in this course were delivered with great vigor and zest, and he very soon came to be recognized on the campus as an exceptionally effective and inspiring teacher. To his students he was affectionately known as 'Billy' Evans.

In 1906 James R. Withrow (Ph.D., Pennsylvania, 1905) was appointed as Assistant Professor in charge of the program in industrial chemistry, which had also grown considerably. In the same year Clarence C. Vogt (A.B., Wooster, 1904) was named Instructor. In 1908 both Professor Foulk and Professor Henderson were promoted to full professorships, and Professor Evans was promoted to an associate professorship. He was named Professor in 1911.

At the invitation of Professor McPherson the editorial office of Chemical Abstracts was moved from the University of Illinois to Ohio State in 1909, and given quarters in the chemistry building. This move was very advantageous to the chemistry department since it made available to the staff current issues of many chemical journals at a time when the holdings in the university libraries were far from

adequate. It was also advantageous to Chemical Abstracts, both at the beginning and later, for various members of the department served as assistant editors or as abstractors.

The first of a long series of successful college and high school textbooks and laboratory manuals by Professors McPherson and Henderson appeared in 1905. These came to be widely used, especially after 1915, and did much to make the department known nationally.

In the period from 1900 to 1910 the interest of the staff in an adequate graduate program increased markedly. Towards the end of this period a few students were working for the Ph.D. degree. In 1909 Clarence C. Vogt became the first to be awarded the Ph.D. in chemistry at Ohio State. Professor McPherson was instrumental in establishing the Graduate School, and in 1911 he became its first dean. He continued to serve as the chairman of the chemistry department, and even continued to do some teaching.

The only permanent addition to the teaching staff between 1906 and the beginning of World War I was Cecil E. Boord (Ph.D., Ohio State, 1912). He was named Instructor in 1912 and was promoted to Assistant Professor in 1914. Considerable interruption of normal staff activities occurred when the United States entered the first world war. In 1917 Professor McPherson served in Washington as a civilian advisor to the Trench Warfare Section of the United States Army, but was soon commissioned as Captain. He was promoted to Major in January 1918 and to Lieutenant-Colonel in July 1918. He was responsible for the relations existing between Edgewood Arsenal and the various chemical organizations upon which the arsenal depended. Professor Evans served for two years, first as Captain, and then as Major in the Chemical Warfare Service, and was Director of the Chemical Laboratories at Edgewood Arsenal. Even though

the other staff members remained at Ohio State, most of them were engaged in activities connected with the war. To help handle the teaching duties at this time, Jesse E. Day (Ph.D., Ohio State, 1916), Marion Hollingsworth (Ph.D., Ohio State, 1919), and Cloyd D. Looker (B.Sc., Ohio State, 1918) were added as instructors.

After World War I

At the close of the war, additional staff was needed because of a marked increase in enrollment in chemistry. Edward Mack, Jr. (Ph.D., Princeton, 1916) was added in 1919 as Assistant Professor in charge of the courses in physical chemistry. In the next year, Wesley G. France (Ph.D., Michigan, 1921) was added as Assistant Professor to teach colloid chemistry, at that time an active field of research in chemistry.

Professor Henderson was appointed Dean of the College of Arts, Philosophy and Science in 1921, but he continued to do some teaching in the department. In 1921-22, which is about the midpoint of the existence of the department in the first century of the university, the roster of the permanent staff was as follows:

Professors	Assistant Professors
McPherson	Boord
Henderson	Hollingsworth
Foulk	Mack
Evans	France
Withrow	

At this midpoint the number of Assistants was 16 and the number of Graduate Assistants was 27. Three graduate students were University Fellows, one was a University Scholar, and two held fellowships sponsored by industrial concerns. There were 106 graduate students in all, including 32 in industrial chemistry. In contrast to more recent times, less than half the graduate students in

chemistry were supported by stipends from the university.

Dr. Jesse Day, who in the meantime had been teaching at the University of Wisconsin, returned to Ohio State in 1923 as Associate Professor. Cloyd D. Looker (Ph.D., Ohio State, 1923), who had previously served as an instructor in 1918-1919, was reappointed to this position in 1923. In 1924 the program in industrial chemistry was transferred to the newly created Department of Chemical Engineering and Professor Withrow became the chairman of this new department.

After the end of World War I the chemistry building on the Oval, which was occupied jointly with the College of Pharmacy, became increasingly crowded, for both occupants were expanding in enrollment. A new building was authorized by the General Assembly at a cost of slightly over $1,000,000. The first part of this building, completed in 1925, was a low factory-type structure designed chiefly for laboratories. This is now the Sawtooth section of the present combination of chemistry buildings. Part of it was occupied by the new Department of Chemical Engineering. The four-story structure attached to it on the west was not completed until 1929. The basement of this structure contained an instrument shop, a lecture preparation room, and various service and storage rooms. The south end of the first floor was occupied by the office of the College of Engineering, although this space had been intended originally for the administrative office of the department. This was in the present Room 115, and the office of general chemistry was in Room 112. The office of the laboratory supply stores occupied Room 104. At the north end of the first floor was a chemistry museum. A few offices and laboratories for the staff of general chemistry occupied the remainder of the first floor. The second floor housed the divisions of inorganic chemistry and physical chemistry. With

the exception of a large library room at the north end, the entire third floor was occupied by the division of organic chemistry. The editorial offices of chemical abstracts were on the fourth floor above the library, and the remainder of this floor housed the division of analytical chemistry. Each permanent member of the staff had his own office with an adjoining private laboratory. At the beginning this building and the adjoining laboratory building easily accommodated all the activities of the department.

Although the chemistry department had always had a working library of some sort in its building, it did not have an officially recognized departmental library until 1925. At that time the chemistry library was designated as one of the three departmental libraries on the campus. It was named the Charles Cutler Sharp Library in honor of an Ohio State alumnus who had been persuaded by Professor McPherson in 1922 to provide the department with a fund to purchase books. The amount of this gift was $17,000 in the form of an endowment. The interest has been used ever since to purchase books for the library. At certain periods when ordinary library funds were meager, this generous gift enabled the department to continue to add necessary books to its library. However, the library room in the building on the Oval was much too small, and only when the new building was completed in 1929 did the department have adequate library space. The original departmental library collection not only included the books on chemistry but also those on chemical engineering, pharmacy, and bacteriology. The books on the last two fields were placed elsewhere in 1930.

Many promotions, additions, and other changes of staff occurred in the period from 1924 to 1930. Professor Boord was promoted to a full professorship in 1924, and so was Professor Mack in 1925. Dr. Looker was promoted to an

assistant professorship in 1925, and Professor France to an associate professorship in 1928. Professor Henderson resigned as Dean of the College of Liberal Arts in 1927 and resumed full-time service in the department as head of the division of inorganic chemistry. Because of increasing duties as Dean of the Graduate School, Professor McPherson resigned as the chairman of the chemistry department in 1928. He was replaced by Professor Evans, who then became the third chairman of the department. Wallace R. Brode (Ph.D., Illinois, 1925) was appointed an assistant professor in 1928 and W. Conrad Fernelius (Ph.D., Stanford, 1928) was appointed as an instructor. In the same year Professor Looker left for a position in industrial research. In 1929 Herrick L. Johnston (Ph.D., California, 1928) and Harvey V. Moyer (Ph.D., Kansas, 1928) were appointed as assistant professors. Melville L. Wolfrom (Ph.D., Northwestern, 1927) was appointed an instructor in 1929 and promoted to an assistant professorship in 1930. G. Bryant Bachman (Ph.D., Yale, 1930) was appointed an instructor in 1930.

The second Symposium on Organic Chemistry, sponsored by the American Chemical Society, was held at the chemistry building on the Oval in late December, 1927, and the Seventy-Fifth National Meeting of the society was held in Columbus in late April and early May, 1929, with Professor McPherson as the chairman of the local committee, and with various members of the department involved in the arrangements. Professor McPherson had always been very active in the affairs of the American Chemical Society. In 1909-1911 he served as one of the vice presidents, in 1923-1926 he was a councilor, and in 1930 he was elected its president. His election to this office enhanced the growing reputation of the department.

Shortly after 1930, the general financial crisis in the country began to affect the department in various ways. As the crisis deepened, salaries

were reduced more than once, and promotions in rank were sometimes made without any increase in salary. Nevertheless, the work of the department went forward.

In 1932 Professor Day was promoted to a professorship, Professors France and Brode to associate professorships, and Dr. Fernelius to an assistant professorship. In 1933 Professor Johnston was promoted to an associate professorship, and Dr. Bachman to an assistant professorship. In the next year Professor Moyer was promoted to an associate professorship and Preston M. Harris (Ph.D., Ohio State, 1928) was appointed an instructor. In 1935 Laurence L. Quill (Ph.D., Illinois, 1928) was appointed an assistant professor. In the same year Arnold A. Alberts (Ph.D., Ohio State, 1934) and Alfred B. Garrett (Ph.D., Ohio State, 1932) were appointed as instructors. These last three appointments were to a large extent a consequence of the death of Professor Day[3] on April 19, 1935, and the resignation of Professor Mack, who

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[3] For an obituary see Ind.Eng.Chem.,News Ed., 13, 230 (1935). The major interest of Professor Day was the teaching of first-year chemistry, and he was very highly regarded as a teacher by both faculty and students. However, he by no means neglected research. For several years prior to his death he had been engaged with students in a thorough study of the catalytic oxidation of carbon. He was about to present four papers summarizing all this work at the National Meeting of the American Chemical Society when he was suddenly stricken. His loss was keenly felt at the time as is evidenced by the presentation of a large bronze memorial tablet to the university by students of his classes. This tablet was placed on the wall of the first floor hall of the main chemistry building with appropriate ceremonies in April, 1937. Unfortunately, this tablet is no longer in place. For a description and photograph see, Ind.Eng.Chem.,News Ed., 15, 325 (1937).

left to become the chairman of the chemistry department of the University of North Carolina.

A definite change in the pattern of the research work in the department began about 1930. Before this date most of the research was done by individual professors working out their own ideas, or more often by individual graduate students working under the supervision of their professors. Little financial support for research was received from outside the university and little from the university itself. After this date, and to an increasing degree after 1935, substantial funds for research were received from industrial sponsors, from foundations, some of them recently established, and from the federal government. These funds made possible research projects in which small groups of graduate students and other investigators worked jointly on given research topics, often aided by technicians, laboratory assistants, and clerical help. Although the specific topics of this group research were always within the competence and general field of interest of the professor who supervised the work of the group, some of these topics, especially on projects supported by the federal government, were to some extent specified, or at least influenced, by the sponsor.

In 1931 Professor Evans offered Thomas Midgley, Jr., the co-discoverer of anti-knock gasoline and safe refrigerant fluids, the use of laboratories in the organic division of the department for certain researches that he desired to sponsor. This arrangement, formally designed as the Midgley Foundation at the Ohio State University, with Dr. Albert L. Henne as the Director of Research, continued until 1938. The principal topic of the researches sponsored by this foundation was the preparation of new fluorinated aliphatic hydrocarbons and the investigation of their properties. In 1938 the American Petroleum Institute sponsored a major project on the synthesis, purification, and properties of hydrocarbons. This was destined to last,

with various modifications, for 25 years, the longest period for any sponsored project in the history of the department. It was directed by Professor Boord, and for the first three years was supervised by Professor Henne. In 1941, Dr. Kenneth W. Greenlee joined the project, soon became Associate Supervisor, and continued with it to the end. The research activities of this project began on the third floor of the chemistry building in the laboratories vacated by the Midgley Foundation project, and were soon expanded into an addition, no longer in existence, made to the Sawtooth building on the east near 18th Avenue. Although the Ohio State University Research Foundation, which was started in 1937, and Ohio State University Development Fund, which was established in late 1938, did not immediately affect sponsored research, substantial grants were received from the latter very soon. During much of the period 1930-1940 considerable financial help, which aided research in one way or another, was received from the emergency relief agencies of the federal government. For example, Professor Wolfrom received a grant from the Works Progress Administration in 1935 for a project on the synthesis of carbohydrates, and many students employed under the program of the National Youth Administration served as laboratory assistants or typists on many research projects in the department.

In the years 1936 to 1940 inclusive, an unusual number of changes in staff occurred because of increased research activity, increased enrollment, and retirements. The new appointments are shown in Table I and the promotions in Table II. In 1936 Professor Bachman left to take a position with the Eastman Kodak Company. Professor McPherson retired in 1937 to become Professor Emeritus of Chemistry and Dean Emeritus of the Graduate School. However, in 1938 he was called back to serve as Acting President when President Rightmire retired. He had previously served in this capacity for a brief period when

TABLE I

NEW APPOINTMENTS IN THE YEARS 1936 TO 1940 INCLUSIVE

Year	Name	School Granting Ph.D.	Rank
1936	John P. Howe	Brown	Instructor
1936	William M. MacNevin	Minnesota	Instructor
1936	Melvin S. Newman	Yale	Instructor
1936	Frank H. Verhoek	Wisconsin	Instructor
1937	Edwin N. Lassettre	California Institute of Technology	Instructor
1938	George E. MacWood	Columbia	Instructor
1938	Albert L. Henne	Brussels	Associate Professor
1938	Paul Rothemund	Munich (Dr.Ing.)	Associate Professor †
1939	Henry E. Wirth	University of Washington	Assistant Professor
1940	James P. McReynolds	Illinois	Assistant Professor

† Appointed a non-resident associate professor to supervise Ohio State graduate students who were doing research work in biochemistry at Antioch College on projects sponsored by the Kettering Foundation.

TABLE II

PROMOTIONS IN THE YEARS 1936 TO 1940 INCLUSIVE

Name	Position	Year
W. Conrad Fernelius	Associate Professor	1936
	Professor	1940
Melville L. Wolfrom	Associate Professor	1936
	Professor	1940
Alfred B. Garrett	Assistant Professor	1937
	Associate Professor	1940
Herrick L. Johnston	Professor	1938
Harvey V. Moyer	Professor	1938
Preston M. Harris	Assistant Professor	1938
Laurence L. Quill	Associate Professor	1938
	Professor	1940
Wallace R. Brode	Professor	1939
William M. MacNevin	Assistant Professor	1939
Frank H. Verhoek	Assistant Professor	1939
Melvin S. Newman	Assistant Professor	1940
Edwin N. Lassettre	Assistant Professor	1940

President Thompson retired. This time he served for about a year and a half. On his final retirement he was given the title President Emeritus by the Board of Trustees. Professor Foulk retired in 1939, Professor Henderson in 1940, and Professor Evans in 1941. In the year of his retirement Professor Evans was elected the president of the American Chemical Society, an honor that further enhanced the good reputation of the department. Professor Mack, who had returned to Columbus in 1939 to head the chemistry department of Battelle Memorial Institute, was appointed in 1941 to succeed Professor Evans as chairman.

Very soon after the United States entered World War II both graduate and undergraduate students began to decline in number, and this decline continued until near the end of the war. However, the drop in enrollment was not so great as was first expected. Some compensation came from the considerable number of students enrolled in the Army and the Navy training programs, and from the special students enrolled in the Engineering, Science, and Management Training courses sponsored by the government, such as the course on the chemistry of explosives taught by Professor Johnston. Toward the end of the war, returning veterans increased the enrollment of regular students.

Aside from promotions in rank, which are listed in Table III, few staff changes occurred during the war years. In 1942 Professor Fernelius resigned to accept a professorship at Purdue University, and Professor Quill resigned to become the chairman of the chemistry department at the University of Kentucky. Professor McReynolds, after only three academic years on the staff, died June, 1943, at the early age of 34. In 1943 Professors Mack, Harris, Lassettre, and MacWood were granted leaves of absence, which extended until the end of the war. They were engaged in the Manhattan Project. Only three

TABLE III

PROMOTIONS IN THE YEARS 1942 TO 1945 INCLUSIVE

Name	Position	Year
Preston M. Harris	Associate Professor	1942
	Professor	1945
Albert L. Henne	Professor	1943
Alfred B. Garrett	Professor	1944
Melvin S. Newman	Professor	1944
William M. MacNevin	Associate Professor	1944
Frank H. Verhoek	Associate Professor	1945
Henry E. Wirth	Associate Professor	1945
Margaret H. Kurbatov	Assistant Professor	1945

new appointments were made during the war period. Joseph F. Haskins (Ph.D., Ohio State, 1923), who had previously taught in the department as an assistant professor in the summers of 1923, 1924, 1925, and 1926, and who had been in industrial research since 1929, was appointed a professor in 1942. Margaret H. Kurbatov (Ph.D., Chicago, 1931) and Helen D. Herren (M.A., Chicago, 1928) were appointed as instructors in 1944. Radiochemistry as a special field of study in the department began with the appointment of Mrs. Kurbatov. Professor Moyer served as the acting chairman of the chemistry department while Professor Mack was on leave of absence.

Research projects of direct or indirect military significance were added during the war years, and even a little before. The first such project sponsored by the National Defense Research Committee, was awarded to Professor Wolfrom in

October, 1940. Substantial grants for low-temperature researches on hydrogen and other gases were awarded to Professor Johnston beginning in November, 1942. By 1940 the considerable number of research projects under way in the department gave rise to serious space problems. Even before this date, staff members were forced to share offices and laboratories, but the addition of still more projects after the war began to make additional space imperative. This much needed space was provided in 1943 by a four-story laboratory building erected on 19th Avenue northwest of the chemistry building. Its construction in time of war, when the use of building materials was severely restricted, became possible because the hydrocarbon research project directed by Professor Boord had been declared essential to the war effort by the military authorities. The entire fourth floor of this new structure, which was designated as the War Research Building, was used for this project and became known as the Hydrocarbon Research Laboratory. The entire first floor was used for projects directed by Professor Johnston and was called the Cryogenic Laboratory. The two intermediate floors were used for a variety of projects directed by other members of the staff.

After World War II

The unprecedented numbers of students enrolled in the courses of the department just after the end of World War II strained space facilities and teaching staff. About 4300 were enrolled in general chemistry during the peak quarter in 1946, and nearly 800 in quantitative analysis during the peak quarter in 1947. Unprecedented numbers were also enrolled in elementary organic chemistry. The nearly 300 graduate students in the department far exceeded the number in any previous period. By 1949 the enrollment in the large undergraduate courses had dropped considerably, but still remained above pre-war levels. There was only a small decrease in the number of graduate students.

In order to provide sufficient laboratory space, laboratories in Lord Hall and Townshend Hall were used temporarily. Also used for laboratories were two large corrugated iron and wood huts, designated as Chemistry Annex A and Chemistry Annex B, obtained as surplus structures from the U. S. Army. They were erected on the north side of 19th Avenue across from the chemistry building. Some of both regular and temporary laboratories were kept in continuous operation from 8 a.m. to 10 p.m. A number of smaller wood huts, also from U. S. Army surplus, were erected in the open areas to the west and southwest of the chemistry building. These were used as classrooms for both undergraduate and graduate students. The smaller huts were removed in 1948 but the two larger ones remained in use until the ground was needed for the chemical engineering building.

Teaching loads were heavy immediately after the war, not only because classes were very large but because there were a greater number than normal. Some members of the staff were teaching three courses per quarter. Local high school teachers and chemists from Chemical Abstracts were used to teach some evening classes. Much difficulty was experienced in obtaining enough teaching assistants. Additions to the senior staff were made as soon as possible. As is shown in Table IV, five were added in 1946 and six more prior to 1950. Some of the latter, however, were replacements for losses from the staff. By 1949 the emergency was about over.

Only four promotions in rank were made in the years 1946 to 1950 inclusive, but there were various other changes in the staff. Professor Lassettre was promoted to an associate professorship in 1946 and to a professorship in 1950. Professor Sisler was promoted to an associate professorship in 1948 and Professor MacNevin to a professorship in 1950. In 1946 the new office of

TABLE IV

NEW APPOINTMENTS IN THE YEARS 1946 TO 1950 INCLUSIVE

Year	Name	School Granting Ph.D.	Rank
1946	Earle R. Caley	Ohio State	Associate Professor
1946	Louis Gordon	Michigan	Assistant Professor
1946	Harold Shechter	Purdue	Assistant Professor
1946	Thor Rubin	California	Assistant Professor
1946	Harry H. Sisler	Illinois	Assistant Professor
1948	Donald O. Hofmann	Ohio State	Assistant Professor
1948	Quentin Van Winkle	Ohio State	Assistant Professor
1948	James I. Watters	Minnesota	Associate Professor
1948	Christopher L. Wilson	London (D.Sc.)	Professor
1949	Earl W. Malmberg	Nebraska	Assistant Professor
1949	Thomas R. Sweet	Ohio State	Assistant Professor
1950	Jack G. Calvert	California	Assistant Professor
1950	William J. Taylor	Ohio State	Assistant Professor

Vice Chairman was created to relieve the chairman of the extra administrative duties caused by the presence of a record number of graduate students. Professor Wirth was named to be the first vice chairman of the department. He held this office until 1949 when Professor Caley became the vice chairman. Professor Moyer was appointed Assistant Dean of the Graduate School in 1948, on a half-time basis, to help Dean Hudson with the extra burdens caused by the record number of graduate students in the university as a whole. He held this office until 1950. In 1948 Professor Brode resigned to continue as Associate Director of the National Bureau of Standards, a position he had taken while on leave of absence the previous year. Professor Gordon resigned in 1948 to join the chemistry department at Syracuse University, and Professor Hofmann after only a year on the staff. Professor Wirth resigned in 1950 to become the chairman of the chemistry department at Syracuse University. With the death of Professor France on December 4, 1947, the department lost a staff member who had gained national recognition in the field of colloid chemistry. Professor Hollingsworth retired in 1948 after 30 years of faithful service.

Soon after the Ohio State University Graduate Center at Wright-Patterson Air Force Base was organized in 1945, various members of the staff began teaching advanced courses in chemistry there. This was the first off-campus teaching done by members of the department. Teaching of courses at the Graduate Center has continued up to the present time almost without interruption.

The 50th anniversary of the founding of the Columbus Section of the American Chemical Society was celebrated on October 24, 1947 with an all-day meeting at the chemistry building, with various members of the department participating. The principal speaker was Charles A. Thomas, president of the society. As part of the university celebration of the 75th anniversary of the opening of the Ohio

Agricultural and Mechanical College the department held a two-day regional meeting on November 19 and 20, 1948. Chemists from seven states attended, many of them graduates of the university. Technical addresses on their special fields of interest were given by ten outstanding alumni of the department. On January 17 and 18, 1950, the Third Annual Summer Symposium of the Division of Analytical and Micro Chemistry of the American Chemical Society was held at the chemistry building with the department acting as host. The keynote address was given by Professor M. G. Mellon of Purdue University.

Shortly after the end of World War II, the number of fellowships for graduate students sponsored by chemical companies rose considerably. In 1945-47 there were only six such open fellowships available, but in 1947-48 there were ten. The number rose to twelve in 1949-50 and to fourteen in 1951-52. These numbers do not include the graduate students on sponsored projects who were named fellows. In 1948 unexpected outside financial aid came in the form of a grant of $10,000 from the Dupont Company to be used in any way the department desired. This unrestricted grant was much needed and much appreciated. The Dupont grant-in-aid, later raised to $15,000, has been renewed each subsequent year up to the present. Also in 1949 the Kettering Foundation began to give substantial funds to the department to support fundamental research in certain aspects of biochemistry, and it continued to do so for about seven years.

No new appointments to the senior staff were made in 1951 and 1952. Those for the remaining years of the decade are shown in Table V. Two exceptional appointments are not shown in this table. Howard J. Lucas of California Institute of Technology was appointed Visiting Professor in 1954 for one year, and Dr. Kenneth W. Greenlee was appointed Lecturer in 1959. The promotions in rank for the decade are listed in Table VI. There were five resignations from the staff in the years 1954 to 1960 inclusive. Professor Johnston and Professor Wilson resigned in

TABLE V

NEW APPOINTMENTS IN THE YEARS 1953 TO 1960 INCLUSIVE

(All as Assistant Professors)

Year	Name	School Granting Ph.D.
1953	Michael P. Cave	Michigan
1954	Daryle H. Busch	Illinois
1954	Justin W. Collat	Harvard
1954	David White	Toronto
1954	William N. White	Harvard
1956	Wayne B. Hadley	Chicago
1957	Robert H. Abeles	Colorado
1957	Sheldon G. Shore	Michigan
1959	Richard A. Finnegan	M.I.T.
1960	Gideon Fraenkel	Harvard

1954 to establish business enterprises. Professor Sisler resigned in 1956 to become the chairman of the chemistry department at the University of Florida. In 1959 Professor Malmberg resigned to take an industrial research position. Professor Abeles resigned in 1960 to join the chemistry department at the University of Michigan. Having reached the age of 70, Professor Boord formally retired in 1954. On this occasion the department gave a dinner in his honor. It was attended by former students and by various members of the university faculty and administration, including President Bevis. However, Professor Boord did not retire completely at this time. He continued to direct projects

TABLE VI

PROMOTIONS IN THE YEARS 1951 TO 1960 INCLUSIVE

Name	Position	Year
Cecil E. Boord	Research Professor	1951
Quentin Van Winkle	Associate Professor	1953
	Professor	1959
Frank H. Verhoek	Professor	1953
Margaret H. Kurbatov	Associate Professor	1954
Thor R. Rubin	Associate Professor	1954
William J. Taylor	Associate Professor	1954
Harold Shechter	Associate Professor	1955
	Professor	1960
Jack G. Calvert	Associate Professor	1956
	Professor	1960
Earl W. Malmberg	Associate Professor	1956
Harry H. Sisler	Professor	1956
Thomas R. Sweet	Associate Professor	1956
Earle R. Caley	Professor	1957
Michael P. Cava	Associate Professor	1958
James I. Watters	Professor	1958
David White	Associate Professor	1958
Daryle H. Busch	Associate Professor	1959
William N. White	Associate Professor	1959
Melville L. Wolfrom	Research Professor	1960

sponsored by the American Petroleum Institute and other organizations on a part-time basis as a research professor until 1959. At that time Professor Verhoek and Dr. Greenlee assumed the full supervision of these projects, and so continued until they were terminated in 1963.

A number of changes in the administration of the department occurred in the years 1953 to 1960 inclusive. In 1953 Mr. James C. Bourke was appointed administrative assistant to the chairman in order to help with the increasing volume of business affairs of the department. Professor Mack resigned in 1955 as the chairman of the department. An appreciation dinner for his services to the department was given by the staff on December 10, 1955. He was succeeded by Professor Moyer, who served as acting chairman in 1955-1956, and as chairman from 1956 to his death in 1959. Professor Garrett served as the acting chairman in 1959-1960 and was appointed chairman in 1960. Professor Caley resigned as vice chairman in 1960 and was succeeded in that position by Professor Verhoek.

Four retired and two active members of the department died between 1950 and 1960. Some details and comments are given in the paragraphs that follow. These paragraphs are in chronological order according to date of death.

William McPherson[4] died on October 2, 1951 at the age of 87 after a long illness. He was a man of great personal charm and an outstanding teacher, but his great talent was for organization and administration. It was largely due to this talent that the department rose from obscurity to a position of national prominence. He was the chairman of the chemistry department for

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[4] See J. Am. Chem. Soc. 74, 859-862 (1952) for a detailed obituary by William Lloyd Evans.

33 years, the longest tenure for any holder of this position, and one that probably will never be exceeded. In commemoration of his great services to the department and to the university the chemistry building was named the McPherson Chemical Laboratory by the Board of Trustees in May, 1952, and on November 22 of that year a formal dedication ceremony was held in Room 100 with Professor Boord presiding. Memorial addresses were given by President Bevis, Professor Evans, Professor Foulk, Dr. Arno C. Fieldner, and Professor Boord himself.

After an active retirement, William Lloyd Evans[5] died October 18, 1954,

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[5] See J. Am. Chem. Soc. 77, 4948-4955 (1955) for a long obituary by Melville L. Wolfrom and Edward Mack, Jr.

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at the age of 83. He was an outstanding teacher, chairman of the department for 13 years, and in that position a worthy successor in that position to Professor McPherson. Under his administration the department gained still greater prominence, especially in the area of graduate study and research. His extensive investigations into the mechanism of carbohydrate oxidation were the foundations of the present high reputation of the department in the field of carbohydrate chemistry. Soon after his death, funds began to be collected to provide an endowment for lectures to be given each year in his memory.

Marion Hollingsworth died suddenly on April 6, 1955 at the age of 77. He was well liked as a teacher and did a large amount of laboratory teaching. His work on constant boiling hydrochloric acid as a primary standard, published jointly with Professor Foulk, became a classic in the field of analytical

chemistry. He was a meticulous experimenter and invented various laboratory devices.

Less than a year after he relinquished the chairmanship, Edward Mack, Jr. died on June 4, 1956 at the age of 63. In his earlier years he made notable contributions to physical chemistry, as, for example, the development and application of methods for the determination of the sizes and shapes of molecules from collision cross sections using kinetic gas measurements, and the investigation of the rates and mechanism of gas reactions. In his later years he gave nearly all his energy to the chairmanship of the chemistry department, a position that he held for 14 years. He was devoted to the welfare of the faculty and students of the department. To many of the latter who found themselves in financial difficulty, he loaned, and even gave, money out of his own pocket. In view of this it was especially appropriate that his colleagues and friends established the Edward Mack Memorial Loan Fund, which over the years has been of great help to needy students.

Charles William Foulk died on December 16, 1958 at the age of 89. His striking personality and unusual skill as a speaker made him an inspiring teacher. He was also a skilled writer. His series of textbooks on quantitative analysis were used at Ohio State and elsewhere for many years. Professor Foulk made many contributions to analytical chemistry, especially the application of highly precise methods of measurement to analytical problems. His work on constant boiling hydrochloric acid, sodium carbonate, arsenious oxide, and metallic silver as primary standards in volumetric analysis are examples of this interest. He was also interested in various problems in applied chemistry, particularly in those relating to the industrial use of water. His interest in the composition and properties of natural waters was maintained over many years, and his treatise on the waters of Ohio, which contains over a thousand analyses,

is the standard work on this subject. He also made important contributions to the problem of foaming and priming in boiler water. Professor Foulk had an original and ingenious turn of mind that led him to invent many clever pieces of apparatus. Foremost among these was the chain hydrometer, which makes possible the highly precise determination of the densities of liquids. While still a student Professor Foulk became interested in photography, and this interest persisted for many years. He took and collected pictures of many chemists and groups of chemists. His collection of pictures is now in the chemistry library.

Before he had completed one term as chairman of the department, Harvey Vernon Moyer died on August 5, 1959 at the age of 65. His scientific interests covered an unusually wide range. Very early in his career he was interested in bacteriology and conducted experiments on the large-scale growth of micro-organisms. Later he investigated crystal growth and the mechanism of flocculation with special reference to analytical precipitates. Near the end of his career he became interested in radiochemistry, especially the use of radioactive tracers in chemical analysis. He was the editor of a large monograph on the chemistry of polonium. Before he became chairman, Professor Moyer taught, and for many years was in charge of, the sophomore courses in quantitative analysis. He was a very able and popular teacher. He spent much time in helping individual students with their academic and personal problems. Because of his patience and sound judgment, his counsel was often sought by his colleagues. Professor Moyer took a very active interest in the academic problems of his department, his college, and the university as a whole. He served on many committees of the department, on various college committees, and on various major committees of the university.

The position of biochemistry in the university curriculum had been a matter of controversy for some time, but about 1957 this controversy became much intensified. Most of the course work in this field was being offered by the Department of Agricultural Biochemistry, which before 1948 had been named the Department of Agricultural Chemistry, and much of the research in this field at Ohio State was being done in this department. However, biochemical courses of special interest to medical students were taught in the Department of Physiological Chemistry, and some of the research was being done in that department. The Department of Chemistry offered no courses in biochemistry at this time, but considerable research was being done and had been done by various staff members on problems of biochemical significance. The appointment of Professor Abeles in 1957 marked the first addition of a staff member in chemistry whose primary interest was biochemistry. In line with analogous changes elsewhere, such as at the University of Wisconsin, the Department of Agricultural Biochemistry now proposed to change its name to the Department of Biochemistry. This proposal was opposed by the Department of Chemistry partly because it was of the opinion that the courses offered and the research being done in that department tended to be mostly applied biochemistry, and partly because the chemistry department planned to institute a program in biochemistry that would be of a more fundamental nature. Some members of the chemistry staff desired to have biochemistry established as a distinct division of the department with its own courses and research program. Others in the department, and in the university, believed that a new and separate Department of Biochemistry should be created. The problem was complicated by the fact that each of the three departments concerned was in a separate college of the university. This controversy was settled to

some extent at the time by the proposal that a cooperative program in biochemistry be established which would include all interested and competent staff from the three departments. This program did not become an organized reality until after the middle of the next decade.

The teaching of chemistry at the undergraduate branch campuses began at Marion and at Newark in the academic year 1957-58 and coincided with the establishment of these campuses. At first only general chemistry was taught and then only on a part-time basis. The chemistry department was made responsible for finding the chemistry staff for these campuses, for organizing the courses, and to some extent for providing the apparatus and supplies. This necessary supervision was undertaken in the beginning by Professor Moyer, then chairman of the department. Mrs. Clara D. Smith, of Battelle Memorial Institute, was the instructor at Marion, and Dr. Robert Wong, a research chemist at the Owens-Corning Fiberglas Corporation, the instructor at Newark. In 1958-59 Mr. Richard M. Wilson, a graduate student in chemistry at Ohio State, was the instructor at Marion, and Dr. Wong continued at Newark. In this same year the Mansfield branch campus was started with Mr. Albert W. Goldsbarry, a retired chemist, as the instructor. In 1959-60 Mrs. Marjorie Gardner, a graduate student in Science Education at Ohio State, taught at Marion, and Dr. Wong and Mr. Goldsbarry continued at Marion and at Mansfield. The chemistry programs at the branch campuses expanded greatly in the next decade.

Even before 1950 the quarters for the editorial offices of Chemical Abstracts provided on the fourth floor of the chemistry building had become inadequate. Since no more space was available in the chemistry building these offices expanded into rented quarters in various places. Soon after 1950 it became evident from the greatly expanding rate of chemical publications that a separate large building would be needed to house Chemical Abstracts. By a

legal and financial agreement between the Ohio State University and the American Chemical Society, a suitable three-story building was erected on the corner of 19th Avenue and College Road. This was completed and occupied in 1955, thus ending 46 years of close association between the chemistry department and Chemical Abstracts. In turn this new building became inadequate, and in 1960 a fourth story was added, but very soon the need for still larger quarters arose and in 1965 Chemical Abstracts moved to its present location on the Olentangy River Road.

On the morning of December 1, 1957, Chemistry Annex B was severely damaged by fire. The loss to the building and its contents was estimated at $200,000. Since the research program in radiochemistry was centered in this structure, research activities in this field were crippled for some time. Both this damaged building and Chemistry Annex A were demolished soon after the fire to make room for the Chemical Engineering Building. The loss of these two structures emphasized the growing need for more research space in chemistry, and served to accelerate the plans for a new building to be constructed east of the Sawtooth building. The Department of Chemical Engineering moved from the Sawtooth building, where it had been located since 1925, to its new building in the summer of 1959. Beginning in late 1959 some of the space in the Sawtooth building was extensively remodeled at a cost of over $300,000. The large laboratory room on the southwest side, formerly used for undergraduate organic chemistry, was partitioned into four laboratories for general chemistry. Large laboratory rooms on the north and northwest sides were partitioned into six similar small laboratories for general chemistry. A demonstration laboratory for general chemistry was fitted out on the east side. New storerooms for general chemistry and offices for the storeroom staff were constructed just north of the central

storeroom. South of this storeroom most of the space formerly used by the department of chemical engineering for research laboratories was converted into offices for teaching assistants, and south of these the remaining space was converted into two small classrooms. Beginning in late 1960 the space formerly occupied by the machinery and unit-process laboratories of the chemical engineering department was converted into laboratories and offices for radiochemistry.

New appointments to the staff for the years 1961 to 1965 inclusive are listed in Table VII. Appointments for teaching at the branch campuses are not included in this table. The promotions in rank for this period are listed in Table VIII. Five staff members left during this same period. Professor Hadley left in 1961 to engage in industrial research. In 1962 Professor Lassettre resigned to join the staff of the Mellon Institute. He had been a member of the department for 25 years. Professor Finnegan left in 1963 to join the Department of Medicinal Chemistry of the State University of New York at Buffalo. In the same year Professor William White resigned to become the chairman of the chemistry department at the University of Vermont. Professor Cava resigned in 1965 to join the chemistry department at Wayne State University. Both Professor Kurbatov and Professor Haskins retired in 1961. One active member of the department died in 1961 and one retired member in 1962. Some details and comments are given in the two paragraphs that follow.

William Marshall MacNevin died suddenly on July 4, 1961 at the age of 54. He was an earnest and conscientious teacher of analytical chemistry, and an ardent advocate of this subject in the curriculum of the department. He gave much individual attention not only to his own graduate students but to undergraduate students in his classes, and especially to those undergraduates who were majoring in chemistry. In 1954 he was named the "Honored Teacher of the

TABLE VII

NEW APPOINTMENTS IN THE YEARS 1961 TO 1965 INCLUSIVE

Year	Name	School Granting Ph.D.	Rank
1961	Richard F. Firestone	Wisconsin	Associate Professor
1961	Paul G. Gassman	Cornell	Assistant Professor
1961	William T. Lippincott	Ohio State	Professor
1961	Devon W. Meek	Illinois	Assistant Professor
1961	Andrew Wojcicki	Northwestern	Assistant Professor
1962	Roger E. Gerkin	California	Assistant Professor
1962	Derek Horton	Birmingham	Assistant Professor
1962	Robert J. Ouellette	California	Assistant Professor
1963	Albert Padwa	Columbia	Assistant Professor
1963	Leo Paquette	M.I.T.	Assistant Professor
1964	Leon M. Dorfman	Toronto	Professor
1964	Daniel L. Leussing	Minnesota	Assistant Professor
1964	Eugene P. Schram	Purdue	Assistant Professor
1964	Cuthbert J. Wilkins	London	Visiting Professor
1965	Ernest W. Bowerman	Ohio State	Professor
1965	Ralph Dougherty	Chicago	Assistant Professor
1965	Jack Hine	Illinois	Professor

TABLE VIII

PROMOTIONS IN THE YEARS 1961 TO 1965 INCLUSIVE

Name	Position	Year
William J. Taylor	Professor	1961
Michael P. Cava	Professor	1962
David White	Professor	1962
Sheldon G. Shore	Associate Professor	1962
	Professor	1965
Daryle H. Busch	Professor	1963
Justin W. Collat	Associate Professor	1963
Gideon Fraenkel	Associate Professor	1965
Derek Horton	Associate Professor	1965
Melvin S. Newman	Regents Professor	1965
Daniel L. Leussing	Associate Professor	1965
Thor R. Rubin	Professor	1965
Thomas R. Sweet	Professor	1965
Melville L. Wolfrom	Regents Professor	1965

Year'' of the College of Arts and Sciences, an indication of the quality of his teaching in undergraduate courses. As an investigator he had wide interests as is shown by the wide variety of the titles of his published papers. Although work on the revision of the atomic weight of potassium (with G. P. Baxter) might well be expected of an analytical chemist, the study of azobisazobenzene (with H. E. Bigelow) would ordinarily not be. He studied the aging of analytical precipitates, contributed to the analytical chemistry of the platinum group metals, made many investigations in electroanalytical chemistry, and devised new methods of microanalysis including the development of new apparatus. He was very active in the affairs of the Columbus Section of the American Chemical Society and in the Division of Analytical Chemistry of that society, of which he was the chairman for two consecutive years. Professor MacNevin was very active in the affairs of the department, college and university, and also very active in Columbus community affairs. He was a valuable and respected member of the department for a quarter of a century, and a leader of national reputation in the field of analytical chemistry.

William Edwards Henderson died September 30, 1962 at the age of 92. He was at that ~~had been for some~~ time the oldest emeritus professor in the university. Members of the department and other friends helped him celebrate his 90th birthday at his home on January 29, 1960. In the early days of his career he had conducted and published important investigations in organic and physical chemistry, but he became best known as a teacher and a writer. Professor Henderson was a kindly and scholarly teacher who was very active both in orgenizing and in teaching new courses in the department. He pioneered in the teaching of physical chemistry at Ohio State, organized inorganic chemistry as a separate division in the department, and initiated courses on the history of chemistry and chemical

biography. As a writer he was the co-author with William McPherson of the most widely used and longest series of American textbooks on chemistry ever published[6].

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[6] Twenty-three original and revised editions of these elementary high school and college textbooks were published. Thirteen had Professors McPherson and Henderson as the sole authors, and the rest one or more additional authors. The second group included a Chinese edition published in Shanghai in 1922. The earliest of these textbooks bears the date 1905 and the latest the date 1940.

When Professor McPherson became heavily involved in administrative duties, the writing and revising of the successive editions of these textbooks became largely the task of Professor Henderson. His writing shaped the teaching of elementary chemistry in a great number of schools for many years, and was an important factor in making the department of chemistry at Ohio State widely known.

Because of declining health Mrs. Margaret Millett retired in June, 1962 as head of the chemistry library after 25 years of faithful and valuable service. On this occasion a letter of appreciation was sent to her by the library committee of the department, and a suitably engraved silver bowl purchased from contributions by members of the department was presented to her. She was succeeded by Miss Virginia Yagello.

The new laboratory building on College Road was originally planned to occupy the entire block between 18th and 19th Avenues, but lack of funds allowed it to be constructed for only about two-thirds of this distance. This new laboratory, completed in the summer of 1961 at a cost of about $2,000,000 was named the Evans

Laboratory of Chemistry in memory of Professor William Lloyd Evans, but the term Evans Chemical Laboratory, or simply the Evans Laboratory, came to be the common usage almost at once. After its dedication an aluminum commemorative placque was placed on the wall at the left of the main entrance. At the same time a similar bronze placque in remembrance of Professor McPherson was placed on the wall near the middle entrance of the McPherson Chemical Laboratory. Both placques were designed and executed by Professor Erwin F. Frey of the Department of Fine Arts. Dedication ceremonies for the Evans Chemical Laboratory were held on October 13 and 14, 1961. On the mornings of each of these days two scientific papers were read by prominent former students of Professor Evans. These constituted the first series of the Evans Memorial Lectures, which in a modified form have become an annual event of the department. The formal dedication was held on the afternoon of October 13 with Professor Garrett presiding. Besides Professor Garrett, the speakers were The Reverend Chalmers Coe, pastor of the First Congregational Church, John W. Bricker, Chairman of the Board of Trustees, President Novice G. Fawcett, and Dean J. Osborn Fuller of the College of Arts and Sciences. Among those in attendance were members of the Evans family, the department staff, other university personnel, and about 100 alumni of the department. A banquet was held at the Ohio Union after the formal dedication ceremony with Professor Garrett presiding. The speakers were Drs. Robert C. Hockett, G. Preston Hoff, and Henry B. Haas, all well known alumni of the department and former students of Professor Evans.

On October 16, at the beginning of the week following the dedication of the Evans Chemical Laboratory, a symposium on the occurrence and chemistry of hydrocarbons was held at the new laboratory. This was jointly sponsored by the Department of Chemistry and the Columbus Section of the American Chemical Society. It was the first chemical meeting to be held in the auditorium of the laboratory after its dedication. Another meeting of special interest to

organic chemists was the 18th National Organic Symposium held in Columbus from June 16 to June 20, 1963. It was jointly sponsored by the Division of Organic Chemistry of the American Chemical Society, Battelle Memorial Institute, Chemical Abstracts and the Department of Chemistry. Professor Henne was the chairman of the local committee, which was composed of staff members of the department. Because of the large numbers in attendance all the lectures were given at Mershon Auditorium. This was not only the largest but also the longest symposium on chemistry ever held at Ohio State.

The second series of Evans Memorial Lectures was held on October 26, 1962 with Professor Linus Pauling, Nobel Laureate in Chemistry as the speaker. He gave two lectures on "Molecules, Evolution, and Disease", one in the afternnon of that day and one in the evening. A dinner meeting was held between the two lectures. Invitations were extended to professors of chemistry at Ohio colleges and universities, who were each asked to bring with them two outstanding junior or senior students majoring in chemistry. The total number of these guests of the department was 160. Such invitations to the Evans lectures were extended in subsequent years. This practice has not only made these visitors better acquainted with the activities of the staff and the resources of the department but has had the practical advantage of attracting new graduate students. Professor Louis Fieser of Harvard University gave the Evans lectures in 1963, Dean Henry Eyring of the University of Utah was the lecturer in 1964, and Dr. Glenn T. Seaborg, Nobel Laureate in Chemistry, and Chairman of the Atomic Energy Commission, the lecturer in 1965.

Another series of annual lectures became well established ir 1960. This is the Edward Mack Memorial Lecture series, in part sponsored by the honorary chemical fraternity, Phi Lambda Upsilon, and in part sponsored by the department.

This series, given in the spring of the year, has also served to bring distinguished chemists to the campus. In 1964, for example, Professor Harold Urey, Nobel Laureate in Chemistry, gave a series of three lectures on April 23 and 24, 1964. Both series of lectures have been and continue to be a source of inspiration to the staff and students of the department.

In 1962 Professor Garrett resigned from the chairmanship at the end of one term to become Vice President for Research in the university. Professor Verhoek served as Acting Chairman until 1964, when Professor Calvert became Chairman. In 1963-64 Professor Collat served as Acting Vice Chairman. Professor Lippincott was named Vice Chairman in 1964. Ernest W. Bowerman, an executive of the Esso Research and Engineering Company, Baytown, Texas, came to the department in 1965 as Administrative Vice Chairman to deal with non-academic affairs. Professor Lippincott was then named Vice Chairman.

In 1960-61 general chemistry courses were instituted on a part-time basis at the Lima branch campus with Mr. James A. Bright, a teacher at the Lima Senior High School, as the instructor. Mr. Goldsbarry and Dr. Wong continued at Mansfield and at Marion, respectively. Mrs. Gardner was replaced at Marion after the autumn quarter by Mrs. Sandra S. Thomas, a graduate student in chemistry at Ohio State. In 1961 Professor Verhoek was appointed the director of the chemistry programs at all the branch campuses. In 1961-62 the staffs at the branch campuses remained the same except that Mr. L. W. Terrant of Chemical Abstracts was the instructor at Marion in the autumn and winter quarters, and Mr. Larry Wilson, a graduate student in chemistry at Ohio State, the instructor in the spring quarter. Chemistry teaching on a part-time basis began at the Lakewood branch campus in 1962-63 with Mr. Gerald J. Doss, formerly of the Electric Products Company of Cleveland, as the instructor. The personnel at

the other four branch campuses remained the same except that Mr. Charles E. Thorne, a former and subsequent graduate student in chemistry at Ohio State, was the instructor at Marion. In 1963-64 the only staff change was at Marion, where Dr. Maynard B. Neher of Battelle Memorial Institute served as the instructor. In 1964-65 again the only change was at Marion, where Dr. Joseph M. Prokipcak, a postdoctoral fellow at Ohio State became the instructor. In 1965-66 the personnel at the five branch campuses remained the same as in the previous year.

In 1965, soon after Professor Dorfman joined the faculty, an underground building was constructed adjacent to the Evans Chemical Laboratory to house a 6 MeV electron linear accelerator. This machine, funded by the U. S. Atomic Energy Commission, was used to establish programs in fast-reaction studies and in radiation chemistry.

New appointments to the staff for the years between 1965 and 1970 are listed in Table IX. Temporary appointments and appointments for teaching at the branch campuses are not included. The promotions in rank for the period are listed in Table X. Five staff members left during this period. Professor David White resigned in 1966 to become the chairman of the chemistry department at the University of Pennsylvania. In the same year Professor Padwa resigned to join the chemistry department at the State University of New York at Buffalo. After a year's leave of absence, Professor Collat resigned in 1967 to remain as an executive in the central office of the American Chemical Society in Washington. In 1967 Professor Srinivasan resigned after less than a year on the staff. Professor Dougherty left in 1969 to join the chemistry department at Florida State University. Two prominent members of the staff and one prominent former member died during this period. Some details and comments are given in the three paragraphs that follow.

Albert Leon Henne died on March 11, 1967 at the age of 65. He was born in Belgium and was fluent in both French and English. His interests are international. He served as a visiting professor for short terms at the University of Prague (1947), the University of Colorado (1948), and the California Institute of Technology (1950), and for a year at the American University in Beirut. He

TABLE IX

NEW APPOINTMENTS IN THE YEARS BETWEEN 1965 AND 1970

Year	Name	School Granting Ph.D.	Rank
1966	Larry B. Anderson	Syracuse	Assistant Professor
1966	Michael J. Klapper	California	Assistant Professor
1966	Arnold Krubsack	Stanford	Assistant Professor
1966	John S. Swenton	Wisconsin	Assistant Professor
1966	R. Srinivasan	Southern California	Associate Professor
1967	Peter W. R. Corfield	Durham	Assistant Professor
1967	C. Weldon Mathews	Vanderbilt	Assistant Professor
1968	Perry A. Frey	Brandeis	Assistant Professor
1968	C. William Kern	Minnesote	Adjunct Associate Professor
1968	Raphael Levine	Nottingham	Associate Professor
1968	Robert M. Mayer	George Washington	Assistant Professor
1968	Isaiah Shavitt	Cambridge	Adjunct Professor
1968	Russell M. Pitzer	M.I.T.	Associate Professor
1969	Lawrence J. Berliner	Stanford	Assistant Professor

TABLE X

PROMOTIONS IN THE YEARS BETWEEN 1965 AND 1970

Name	Position	Year
Paul G. Gassman	Associate Professor	1966
	Professor	1969
Devon W. Meek	Associate Professor	1966
	Professor	1969
Andrew Wojcicki	Associate Professor	1966
	Professor	1969
Robert J. Ouellette	Associate Professor	1966
Leo Paquette	Associate Professor	1966
	Professor	1969
Richard F. Firestone	Professor	1967
Roger E. Gerkin	Associate Professor	1967
Daniel L. Leussing	Professor	1967
Gideon Fraenkel	Professor	1969
Derek Horton	Professor	1969

served for several short periods at the University of Brussels, where he helped develop a curriculum for chemical engineering, a subject not before offered at that university. At Ohio State, Professor Henne was an enthusiastic teacher of both undergraduate and graduate students in organic chemistry. Most of his many experimental investigations dealt with the preparation and properties of organic compounds containing fluorine. Although his interests as an investigator were primarily in fundamental chemistry, many of his researches turned out to have very practical applications. His investigations in fluorinated aliphatic hydrocarbons, for example, led directly to the development of the present safe fluids used in household refrigerators. He made a number of investigations on synthetic rubber, and on new kinds of lubricants. He held alone, or with Thomas Midgley and others, a total of 26 American, British, Canadian French, and German patents, mostly on the preparation and uses of organic compounds containing fluorine. Professor Henne was a pioneer and an international authority in the chemistry of these compounds.

Herrick Lee Johnston, an important former member of the department, died on October 6, 1967, at the age of 67. He was widely known for his work in thermodynamics, especially in the low-temperature range. The Ohio State University Cryogenic Laboratory, founded by Professor Johnston, was internationally recognized as a low-temperature research center.

Melville Lawrence Wolfrom died on June 20, 1969, at the age of 69. He was the senior member of the active chemistry faculty both in age and in tenure. In the early days of his career he did considerable undergraduate teaching, later taught only graduate students, and in the latter part of his career devoted almost his entire time to directing research in carbohydrate chemistry and to scientific writing. He was a prolific investigator and author. About 400 papers by Professor Wolfrom and his collaborators have appeared in the leading chemical journals. These represent an enormous amount of exacting labor on very complex problems. His total publications number over 500. He contributed some 30 chapters or sections to various books, was editor or co-editor of 23 volumes of the Advances in Carbohydrate Chemistry, and was the

editor of the section on carbohydrate chemistry in Chemical Abstracts.[7] Both

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[7] Professor Wolfrom was selected to write the history of the department for the Centennial Celebration, and had collected a considerable amount of material for this purpose. He had also written in pencil the first four pages of a rough draft, and a fifth page that had on it only two lines, below which were scribbled at random the names and telephone numbers of some physicians. In all probability this fragment is his last piece of writing. The present history of the department is based in part on the materials collected by Professor Wolfrom.

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his experimental researches and his writings are characterised by unusual exactness and thoroughness. Professor Wolfrom had a world-wide reputation as a leading organic chemist.

Professor Lippincott resigned as Academic Vice Chairman in 1966 and was succeeded by Professor Verhoek, who resigned from that position in 1968. Professor Calvert resigned from the chairmanship in 1968 in order to devote more time to his important investigations in photochemistry. He was succeeded by Professor Dorfman. At the same time Professor Anderson was named Academic Vice Chairman.

A ground-breaking ceremony for the addition to the Evans Chemical Laboratory was held on June 30, 1965. Governor Rhodes and President Fawcett spoke briefly. However, this addition was not completed and occupied until June 1968. The rooms on the south side of the lobby of the Evans Laboratory designed for the administrative offices of the department were very soon found to provide insufficient space for this purpose, and adjacent rooms on the south side of the Sawtooth building had to be used for some of the offices. When the offices of the

College of Engineering in the south end of the first floor of the McPherson Chemical Laboratory were moved to the new engineering building on Neil Avenue, the liberated space was renovated to provide adequate room for all the administrative offices of the department. The move from the Evans Laboratory back to the McPherson Laboratory was made in March 1968. Various other offices in the McPherson Laboratory were renovated between 1966 and 1969, and some laboratories were converted to offices.

After serving as Managing Editor of the Journal of Chemical Education from January 1966, Professor Lippincott was named Editor in July 1967. At this time the editorial offices of the journal, formerly at Wooster College, were moved to the second floor of the McPherson Chemical Laboratory into suitably renovated space. The location of these offices at Ohio State is a definite asset to the chemistry department.

For some years Professor Taylor was the only member of the department chiefly interested in modern theoretical chemistry. In 1968 and 1969 four other full and part-time staff members were added to form a well-defined group of theoretical chemists within the department. Space on the second floor of the McPherson Laboratory was renovated in 1968 to provide offices and a conference room for this group.

As early as 1950 it became very evident that the single large room on the north end of the third floor of the McPherson Laboratory did not provide sufficient space for the chemistry library. Various plans were proposed in 1950-60 to remedy this situation. One was to provide library space in the new laboratory on College Road. Another was to connect the north end of the McPherson Laboratory with the north end of the completed physics building so as to provide a large building for a joint chemistry and physics library.

Still another was to erect an additional floor on the north side of the Sawtooth building for a library that would connect with both the McPherson Laboratory and the new laboratory on College Road. None of these plans materialized. Soon after the editorial office of Chemical Abstracts moved in 1955 from its location on the fourth floor directly over the library, the department recommended that this vacated space be used to house an addition to the library. But this recommendation for a two-story chemistry library met with considerable opposition from the university library committee and main library officials, partly because of their plans for area libraries and partly because of the expense involved. The space vacated by Chemical Abstracts was then used for two classrooms and a large laboratory, which later was used only for the storage of discarded apparatus. A small amount of additional adjacent space was obtained for the library by converting a laboratory and an office on the west side of the third floor to stack rooms. However, it soon became impossible to house all the books and serials on hand, even by adding more shelving and crowding the tiers of shelves together. As a consequence, many books and sets of serials had to be stored in the main library. The plan for a two-story library was revived in 1965. This plan included a stairway within the library to connect the two floors.. After various further delays, work on the construction of the new library began in the summer of 1969.

The vexing and complex problem of the position of biochemistry in the university, which had been debated at length in the period 1955-65, became acute at the beginning of 1966 when plans were being made to establish a department of biochemistry in the new College of Biological Sciences[8].

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[8] This college with a Department of Biochemistry was officially established July 1, 1966. About a year later the name of the department was changed to Academic Faculty of Biochemistry and Molecular Biology.

Some members of the Department of Agricultural Biochemistry, who were to become members of this new department, objected to the offering of courses in biochemistry in the Department of Chemistry on the grounds that duplication and fragmentation of university offerings in this subject would result. However, members of the Department of Chemistry and the Department of Physiological Chemistry were of the opinion that these two departments could offer courses in the subject that would not duplicate or conflict with the courses in biochemistry in the proposed new department and that a cooperative program in biochemistry should be established, as was proposed about a decade before. In order to resolve the conflicting viewpoints and to enquire into the feasibility of such a program, the Associate Dean of Faculties appointed in April 1966 a five-man committee composed of representatives of the Departments of Agricultural Biochemistry, Chemistry, and Physiological Chemistry. This committee not only decided that such a program was feasible but made detailed recommendations in November 1966 for an integrated university program in biochemistry that were acceptable to all three departments. In December 1966 a second committee, composed of five members from each of the Departments of Biochemistry, Chemistry, and Physiological Chemistry, was appointed by the Dean of the College of Biological Sciences to prepare syllabuses for the courses in the three departments. The work of this committee was completed in a few months. A third committee composed of one member from each of the three departments was then appointed by the Dean of the College of Biological Sciences in April 1967 to prepare a descriptive and illustrated brochure for prospective students of biochemistry in which would be listed the staff members of the integrated program in biochemistry, their research interests, and other pertinent information. This brochure was completed and issued in the late summer of 1967. The integrated university program in biochemistry thus became

a working reality in the academic year 1967-68.

Experiments on the use of television as an aid in the teaching of general chemistry were begun by Professor Lippincott in 1966. Early in 1967 a television projector and a large screen were installed in Room 100 of McPherson Chemical Laboratory so that taped demonstration experiments could be clearly shown to large classes of students. This was a great improvement over conventional experimental demonstrations on the lecture table, for these could not be seen clearly by students back of the first few rows. However, such experiments could now be projected by live television so that they could be seen clearly by all students. Television projection had various other advantages. Close-ups of fine details could be shown, experiments could be shown in slow motion, and split images of experiments and their theoretical explanation could be shown simultaneously. All projection could be controlled by the lecturer. This system went into full operation in the spring quarter of 1967. Another application of television was in the general chemistry laboratories. Closed-circuit television receivers were installed in these laboratories in the summer quarter of 1967, so that students doing experiments could receive instructions and see correct techniques demonstrated. This system, which went into operation in the academic year 1967-68, was a radical improvement in laboratory instruction.

Courses and enrollments in chemistry at the branch campuses expanded considerably in the period from 1966 to 1970 in spite of the fact that when the Lakewood branch campus became part of the Cleveland State University in 1966 the teaching of chemistry there was no longer controlled by the department. In 1966-67 chemistry began to be taught on a full-time basis at Lima and at Mansfield, with Drs. Paul Rothemund and Aharon Salmon as associate professors at Lima, and Dr. A. W. Scholl as assistant professor and Mr. James Zeller the

instructor at Mansfield. Chemistry remained on a part-time basis at the Marion and Newark branch campuses, with Mrs. Ruth Anderson as the instructor at Marion, and Mrs. Wilma Mackstroth, a graduate student in chemistry at Ohio State, as the instructor at Newark. In 1967-68 sophomore chemistry courses were added at Lima and at Mansfield, and Mr. John R. Cummings, an Ohio State graduate student in Science Education, replaced Mrs. Mackstroth at Newark. In 1968-69 chemistry at Newark was placed on a full-time basis with Dr. Wilma K. Mackstroth as the instructor. At Lima, Dr. Salmon was replaced by Mr. William N. Sanders, who was appointed an instructor. At Mansfield, Dr. D. V. Rathnamma was added to the staff as an assistant professor. At Marion, Mr. Gary A. Kordosky, a graduate student in chemistry at Ohio State, replaced Mrs. Anderson in the winter and spring quarters. The Marion branch campus is scheduled to begin the full-time teaching of chemistry in 1969-70. Hence by this academic year chemistry at all four branch campuses will be taught on a full-time basis, and in all probability will so continue.

General Chronological Changes and Additional Comments

In the first nineteen years of its existence (1873-1891), the Department of Chemistry at Ohio State had one professor, less than a hundred different undergraduate students annually, and only an occasional graduate student working for the M.S. degree. By the end of the next nineteen years (1892-1910), the professorial staff had increased to five, the number of undergraduates to a few hundred, graduate work for the M.S. degree was offered regularly, and the first Ph.D. student had just received his degree. In 1921, the midpoint of the growth of the department from its beginning in 1873 to the year 1969, the number of professors had increased to nine, the number of different undergraduates to about 2,000 annually, and the number of graduate students working for the M.S.

or Ph.D. degree to 106. Over the next nineteen years (1922-1940), the professorial staff steadily increased to a total of 21 in the last year of this period. This considerable increase was caused in part by regular annual increases in the numbers of both undergraduate and graduate students and in part by increased research activity by the staff, especially the sponsored research activity that began just after the middle of this period. There was a decrease in the number on the senior staff during World War II and a very considerable decrease in the number of regular students, both undergraduate and graduate. In the two years after the end of the war the numbers of students reached the highest level in the history of the department, for over 5,000 were enrolled in undergraduate courses in some quarters and the number of graduate students to almost 300. By 1950 the active professorial staff had increased to 26. In the last nineteen years (1951-1969), the number of professors increased year by year until, as shown in Table XI, those of professorial rank numbered 46 in early 1969. However, of these 46, two were on a part-time basis. The marked increase in number in the last few years of this period was due in part to the addition of biochemists and theoretical chemists to form two new groups within the department and in part to the increased enrollment at the branch campuses.

Remarkable also has been the growth over the years of the number of personnel on the junior teaching staff of the department. At the very beginning the single professor in the department had no assistant, and he never had more than one assistant at any one time. In 1895 two assistants, having the title of Teaching Fellow and Laboratory Assistant, were appointed, and in 1896 another assistant was appointed, making a total of three. Shortly after 1900 the number of personnel on the junior teaching staff began to increase more rapidly than the number of professors, so that by 1921, the midpoint of the

existence of the department, there were 16 Teaching Assistants and 27 Graduate Teaching Assistants on the staff, a total of 43. During the high point of student enrollment just after World War II, the number of the junior teaching staff exceeded 150. In the summer of 1969, as is shown in Table XI, the total number in the various categories was 104.

Still more remarkable has been the growth of fellowships and assistantships for research in recent years. Between 1911, the date of the founding of the Graduate School, and 1921, the midpoint of the existence of the department, support for graduate students doing research in chemistry was almost entirely in the form of general university fellowships and scholarships. A very small number of these were awarded to graduate students in chemistry each year. But in 1921, the department received for the first time, unrestricted grants from chemical companies for fellowships, and two industrial research fellows were appointed for the academic year 1921-22. In this same academic year one student was supported on a university fellowship and one on a university scholarship. Three industrial research fellows were appointed in the next academic year, and two students were appointed to university fellowships. Over the next fifteen years the amount and kind of support remained very much the same. As late as 1937-38 and 1938-39 there were still only three industrial fellows and two university fellows in each of these years. A radical change occurred in 1939-40, when there were seven industrial research fellows, two university fellows, one university scholar, and eight fellows supported by funds received from foundations. In 1940-41 the position of research assistant was established, and five were appointed to this position. In addition there were seven industrial fellows, two university fellows, and two other fellows. From this point on, especially after World War II, support for research by graduate students on funds supplied by industrial concerns, sponsored projects, foundations, and the federal government has steadily increased until in the last few years, as is indicated

TABLE XI

NUMERICAL ANALYSIS OF THE STAFF OF THE DEPARTMENT OF CHEMISTRY IN THE SUMMER OF 1969

I.	Senior Staff		52
	A. Professors	20	
	B. Associate Professors	13	
	C. Assistant Professors	13	
	D. Lecturers	3	
	E. Instructors	3	
II.	Junior Teaching Staff		104
	A. Graduate Teaching Associates	9	
	B. Graduate Teaching Assistants	91	
	C. Teaching Aids	4	
III.	Research Staff		186
	A. Research Associates, Visiting Research Associates, and Postdoctoral Fellows	74	
	B. Predoctoral Fellows (including N.S.F. Trainees)	39	
	C. Graduate Research Associates	16	
	D. Graduate Research Assistants	57	
IV.	Technical Staff (Technical Assistants and Technicians		20
V.	Clerical Staff		22
		TOTAL	384

in Table XI, the number of graduate students so supported has often exceeded the number of those who receive their support from teaching.

The first postdoctoral fellow in chemistry at Ohio State was M. L. Dundon (Ph.D., Ohio State, 1922) who was appointed to a National Research Council Fellowship for the academic year 1922-23. The next was W. H. Charch (Ph.D., Ohio State, 1923) who received a postdoctoral appointment on department funds as Special Research Fellow for 1923-24. There were no others until I. Schurman (Ph.D., Ohio State, 1931) who was appointed a National Research Council Fellow for 1932-33. In the same academic year P. M. Harris (Ph.D., Ohio State, 1928) was appointed the first postdoctoral research associate in the department. Some Ohio State Ph.D. graduates were appointed to honorary postdoctoral fellowships in the depression years, beginning with 1932, when they were unable to obtain other appointments. They carried on research but received no compensation from department funds. The first person with a degree from another university to be appointed to a fellowship here was J. C. Sowden (Ph.D., Northwestern, 1937). However, this fellowship, which he held for two years (1937-39), was the DuPont Fellowship ordinarily awarded to graduate students working for the Ph.D. degree. Postdoctoral appointments here prior to World War II were then few in number and were generally restricted to those who had obtained their degree at Ohio State. After the war postdoctoral fellows, and other research personnel holding the Ph.D. degree, began to come regularly to Ohio State from other universities, often from abroad, and they have come in increasing numbers, so that by 1969, as is shown in Table XI, the persons in this category on the research staff outnumber those in any other single category.

Over the years a great many changes have been made in the curricula and the individual courses in chemistry. Courses have been added, modified, combined, and dropped. Their numbers, titles, content, and even sequence have been changed many times. Such changes have often been the subject of long deliberations in committee and faculty meetings. To trace and collect the details of all these changes now seems impossible, especially the reasons for them. Much of the necessary information is no longer available, and even if available the task would be a monumental one probably not worth the effort.

The first curriculum for an undergraduate degree in chemistry at Ohio State was established in 1896. This was essentially a course of study in industrial chemistry. It led to the degree B.S. in Chemistry. The successor to this curriculum was one in chemical engineering established in 1902. It also led to the degree B.S. in Chemistry. An undergraduate could not major in chemistry as a liberal subject until a curriculum was established for this purpose in 1920. This led to the B.A. degree. For some twenty years this was the only degree awarded to undergraduates who majored in chemistry. In 1937 a curriculum for the B.S. degree in chemistry was established in the Arts College, and soon after an undergraduate could obtain either a B.A. or a B.S. degree in accordance with certain course requirements and the degree of specialization in the subject. Because of some uncertainties in the records, an accurate count of the total number of bachelor's degrees awarded does not seem possible, but this number is about 1500. The M.S. degree in chemistry has been awarded over a longer period than any of the other degrees in the subject. Prior to 1909 it was the only graduate degree awarded. From 1909 to 1921 more M.S. degrees than Ph.D. degrees were awarded. For the period from 1921 to the present the reverse is true, especially since the end of

World War II. When possible, many students now prefer to proceed directly to the Ph.D. degree. By actual count 859 M.S. degrees have been awarded from the beginning up through the commencement of June 1969. In the twelve years from 1909, the year the first Ph.D. was awarded, up to 1921, only 22 doctor's degrees in chemistry were awarded, an average of less than two a year. In four of these years the degree was not awarded. In the next twelve years (1921-1932), the number was 146, an average of about 12 per year. This average did not change very much until the end of World War II, when it about tripled. In recent years more Ph.D. degrees have been awarded annually on the average than either bachelor's degrees or master's degrees. By actual count 1,188 Ph.D. degrees have been awarded from 1909 through the commencement of June 1969.

Mere numbers of staff members, students, and graduates are not a measure of the quality of a university department. The academic reputation and general effectiveness of the chemistry department at Ohio State, and the professional stature of its members, must be rated by other kinds of facts, and by the opinions of individuals and groups outside the department. The department has often been rated by accrediting bodies of various sorts, such as the accrediting committees of the American Chemical Society, and has always come out very well in these ratings. Perhaps the most significant single indication of merit, at least on the state level, was the action of the Ohio Board of Regents in 1965 when it established Regents Professorships to recognize and reward outstanding teachers in the state university system. Of the three professorships then established two went to members of the chemistry department at Ohio State. A significant indication of wider scope is the considerable number of various honors that have been awarded to members of the department over the years. These are listed in Table XII for a recent twenty-year

TABLE XII

HONORS AWARDED TO MEMBERS OF THE DEPARTMENT IN THE TWENTY-YEAR PERIOD PRIOR TO 1969

Year	Professor	Honor
1950	Evans	D.Sc., Capital University
1950	Henderson	LL.D., Ohio State University
1950	Wolfrom	Elected to National Academy of Sciences
1951	Wolfrom	Elected to American Academy of Arts and Sciences
1952	Wolfrom	Honor Award, Division of Carbohydrate Chemistry, American Chemical Society
1952	Caley	Ohio Journal of Science Research Prize
1954	Caley	Citation, American Classical League
1955	Boord	Sullivant Medal, Ohio State University
1956	Newman	Elected to National Academy of Sciences
1959	Wolfrom	Citation, Austrian Government
1960	Garrett	D.Sc., Muskingum College
1961	Newman	American Chemical Society Award for Creative Work in Organic Chemistry
1962	Garrett	D.Sc., Ohio Wesleyan University
1963	Busch	American Chemical Society Award in Inorganic Chemistry
1964	Garrett	Scientific Apparatus Maker's Award in Chemical Education
1964	Garrett	Governor's Award, State of Ohio
1965	Wolfrom	Appointed Regents Professor
1965	Newman	Appointed Regents Professor
1965	Hine	LL.D., Lewis College
1966	Garrett	D.Sc., Denison University

TABLE XII

(Continued)

Year	Professor	Honor
1966		Chemistry Teacher Award, Manufacturing Chemists Association
1966	Caley	Dexter Award in the History of Chemistry
1967	Wolfrom	Austin Patterson Award in Chemical Documentation
1967	Wolfrom	Kenneth A. Spencer Award in Agricultural Chemistry
1967	Caley	D.Sc., Baldwin-Wallace College
1968	Levine	Award of the International Academy of Quantum Molecular Science

period. With two important exceptions, local honors are not included in this table. In addition, it is perhaps worth noting that five members of the staff are listed in the latest edition of Who's Who in America.[9] Another indication

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[9] Vol. 35 (1968-1969), pp. 359, 362, 806, 1609, 2388

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of importance is the extent of participation in leading scientific societies, in particular the American Chemical Society. Two members of the department have been presidents of this society, and many of the members have held various offices in its major divisions and local sections. Nearly all members have presented papers at national meetings of the American Chemical Society, some very many times. Members have been chairmen of special symposia and many have presented papers at these symposia. Members of the staff have given hundreds of technical talks before local sections of the society all over the United States. Participation in the meetings of other scientific societies has included

invited lectures given not only in this country but abroad. Some members of the department have been visiting professors at various universities, including foreign universities. Invited lectures have been given at a large number of colleges and universities. The many publications of the department have made it widely known. Over the entire period of its existence its members have been authors or co-authors of about 50 books, have contributed chapters or sections to about 50 others, and have been authors or co-authors of about 3,000 scientific papers and other serial publications. All of this indicates a highly effective department with a wide and favorable reputation in the academic world.

Earle R. Caley