

Historical Information concerning the Department of Chemistry and Biochemistry University of Denver

Part 1. By Bernie Spilka

Chemistry: The Early Years

The auspicious start that Astronomy and Physics at the University was not matched by Chemistry. Still, **C. Gilbert Wheeler** who taught Mineralogy and Geology appears to have been a Chemist, and in all likelihood also taught Chemistry. He is discussed under Geography and Geology for we know he instructed in the latter area. Since he left DU after two years, it is also possible that someone from the Medical School faculty might have presented basic Chemistry. This situation changed with the arrival of William P. Headden whose career at DU was troubled to say the least.

William Parker Headden

In 1882, the University hired its first well defined chemist, **William Headden**. He was born in 1850. earned his undergraduate degree from Pennsylvania's Dickenson College, and a Doctorate from the University of Giessen in Germany.ⁱ His fate at the University of Denver is somewhat shrouded in mystery, yet suggests the subtle hand of power concealed within the proverbial velvet glove. It is a story that should be told.

In the 1882-1883 Bulletin, Headden first appears as Professor of Chemistry and Geology. In the 1884 faculty roster he is listed as Professor of Chemistry and Physics. He continued in this position through 1886. Suddenly, he is the object of a rebellion by the medical students who felt he was too difficult. This was soon followed by Dr. Headden protesting the graduation of certain medical students. The Medical Dean and faculty opposed Headden and prevailed. The trustees approved their graduation.ⁱⁱ Could these have been the rebels or their ringleaders? Even though, we will probably never know, Headden's objection may have set the wheels in motion that ended his departure career at DU.

On the surface, tranquility was reestablished. The trustees received requests from Headden to purchase a mineral collection for \$40, an action that was deferred. A second request for a microscope and various accessories was approved.ⁱⁱⁱ

Three months later, statements attributed to the Medical School requested that “they be allowed to make other arrangements than those in existence for the instruction of their students in Chemistry.”^{iv} This stance was explicitly confirmed by the medical faculty, and the trustees reconsidered the appointment of Headden. A committee of one, Governor Evans, was recruited to inform Headden of the medical faculty’s complaint. It seems Evans was certainly important enough to constitute a committee by himself. Upon hearing this, Headden submitted his resignation to Governor Evans, and it was accepted by the trustees.^v Another committee was then formed to confer with Headden regarding instruments in his laboratory that he might be willing to sell along with lots that he owned in University Park.^{vi} The implication is clearly to sever his connections with the University.

In the next meeting of the executive committee, a discussion ensued regarding Dr. Joseph Sewall as the new Professor of Chemistry and Physics. Sewall held an M.D. degree, and had founded the medical school at the University of Colorado, in addition to being its first Dean. The DU medical faculty was quite satisfied with this new arrangement. President Moore was included in these deliberations. He presents information on his communications with Dr. Sewall and offered very favorable comments on Dr. Headden. Dr. Headden’s resignation was denied and he became Professor of Geology, Mineralogy, and Analytical Chemistry.^{vii} A three man committee including Governor Evans and Dr. Moore is appointed to meet with the medical faculty to discuss how the two chemistry professors would be paid.^{viii} Considering the history of this issue and the impressive nature of the committee one suspects that these deliberations with the medical faculty went beyond the salary issue. Finally, the June 1887 annual report of the trustees included the reappointment of Dr. Headden with his new title.

There was an interesting and rapid reaction by the Dean's council during the brief interval between Headden's resignation and his reappointment. On June 15, 1887, the faculty secretary was requested to convey to the trustees their "regret of the resignation of Dr. Headden in whom they recognize an accomplished scholar, a conscientious Christian and an earnest laborer for the welfare of the University."^{ix} The Dean and his faculty colleagues were not likely to buck the trustees, but considering that any animus relative to Headden involved only the Medical School. The support of the college for Headden might have also been directed at the medical faculty; it would certainly not go unnoticed by them.

A year passed with no further indication of difficulty. A precursor to change was, however, evident in the Trustee minutes of June 12, 1888. A motion was approved to consolidate the two chairs of Chemistry "in one and put in charge a professor of Natural Science, viz: Jos. A. Sewall M.D., L.L.D."^x The 1888 annual report includes the appointment of Dr. Sewall in the college, and Headden now became an instructor in the Medical School's chemical laboratory, a clear reduction in his university position, and a sign of things to come^{xi}. Ten days later, the assistant secretary to the trustees presented a letter to the board indicating the termination of Headden due "to financial considerations." This missive further declared "this opportunity to declare their (the board's) high appreciation of Dr. W. P. Headden for five years the able representative of their department of Natural Science." Further remarks were offered "thanking him for his splendid record as a teacher," and ranked him "among the most exacting scientists of our commonwealth" etc.^{xii}

Appreciative praise notwithstanding, the "hidden history" of Headden was resolved. He was gone from the University of Denver. Rounding out this picture, we note that Headden became Dean of the South Dakota School of Mines. He left that position in 1893 to head the chemical section of the Experiment Station at Colorado A. & M, (later renamed Colorado State University). His 38 year career there earned him an international reputation as a dedicated researcher and prolific writer in Chemistry,

mineralogy, agriculture, and agronomy.^{xiii} It is not amiss to speculate that DU lost a fine and productive scholar when Headden was forced to realize his potential elsewhere. In modern verbiage, we may say that DU goofed.

Joseph Addison Sewall

Headden's successor was a noted chemist as well as an administrator, **Joseph A. Sewall**. At the age of 22, in 1852 he graduated from Harvard with a medical degree. He soon earned his Ph.D. in Chemistry. After practicing medicine for about eight years, he became Professor of Chemistry at Illinois Normal University where he taught for 16 years. During this period he was awarded an honorary L.L.D. degree. In 1876, because of health problems, he and his family moved to Colorado. Here he was installed as the first President of the University of Colorado. Sewall held this position for ten years, demonstrating great skill in assembling a small faculty, attracting students, and managing an effective educational institution despite severe monetary problems.^{xiv} During his tenure at the University of Colorado, he also proved to be an academic jack of all trades teaching a broad range of courses in the physical and biological sciences, political economy and logic.^{xv}

Unfortunately, Sewall had enemies. By 1886, a crisis of trust had developed and he resigned his presidency. He was immediately approached by the University of Denver which, as already noted, was looking for a replacement for Headden. Sewall thus joined the DU faculty in 1887 as Professor of Natural Science, and held this position through the 1891 school year. From 1889 to 1895, he served as Dean of the School of Pharmacy at DU. After leaving the University, he held a variety of positions including that of Chemist for the city of Denver. While in this last role, he criticized the legislature for its inadequate funding of higher education. He died in 1917 at the age of 87.

Joseph Sewall was a complex individual with great breadth of perspective and accomplishment. It was discovered that he had written some poetry which demonstrated his appreciation for both education and the humanities. His relations with students were excellent, and he was considered a fine

teacher, administrator, organizer, and educational leader.^{xvi} In many ways, he was the right person for a young state striving to build a system of higher education.

William Cyrus Strong.

Sewall's successor in 1892 was **William C. Strong** who, despite having only a Masters degree, became Professor of Natural Science. The students regarded him as genial and kind. According to DU's first yearbook, *The Mount Olympus* of 1895, "he is respected and beloved by all the students for his cordial manner, his generous true nature, and his kindness to all."^{xvii} He taught Geology, Mineralogy, and Chemistry. After three years he left the University to become Professor of Physics and Chemistry at Bates College in Lewiston, Maine.

Chemistry comes into its own

Prior to 1908, Chemistry was a one person department. After Strong left the University, a man of considerable significance in the history of DU was hired, namely, **Wilber Dwight Engle**. In 1908 he was joined for two years by **Alfred N. Finn**, who today is only survived by his name. Over the next decade, the number of chemistry assistants went from one to four. Others who were instructors appeared and disappeared after a year or two in the 1913-1920 period. All that can now be done is list their names: **Edwin Arthur Rees, Carlotta Estelle Roose, Paul Joyce Deeds, and Henry James Beattie**. Some like **Earl Engle, Alfred Clarence Nelson, Clarence Milton Knudson, and Reuben Gustavson** became student assistants, but were destined for much greater roles at DU in future years.

The 1920s and 1930s witnessed the publication of some impressive, primarily student-oriented, science papers. In addition, two local journals, *The University of Denver Engineer* and the *The University of Denver Chemist*. were published. In Chemistry, this was the time of the "Gas House Gang," which was described as "the students of Denver University who work in fumes and smoke for the advancement of Science."^{xviii} Despite such evidence of growth and development, one sour note must be introduced. As late as 1909, the Chemical Club not only consisted of male faculty and students, but formally restricted

membership to males.^{xix} Returning to our consideration of the people, we must first a father-son continuity, both of whom dedicated their lives to DU.

The Engle Dynasty

The Engles, father and son, constituted as much of a dynasty as one ever sees in academia in that it lasted 70 years. **Wilber Dwight Engle** was born in Portland, Michigan on August 15, 1870. In 1895, he was appointed Professor of Physics and **Vernon G. Hale**, Professor of Chemistry.^{xx} The latter never appears in a University publication. Engle is first listed in the 1896 catalog as Professor of Physics and Chemistry even though he only possessed B.A. and an M. A. degree from Albion College. He went on leave the following year to complete his Doctorate, and the order of disciplines with which he was associated was reversed. Chemistry, his real expertise, was now listed first.

As a chemist, Engle worked on Vanadium and Uranium, and also specialized in toxicology. His main energies, however, went into teaching and university administration rather than research and publication. For all practical purposes, Chemistry as a distinct academic unit had come into being though it did not become a Department until 1909.

Engle was a bear for work, and variously performed as Professor of Chemistry in the Medical School, Director of Chemical Engineering, Head of the School of Pharmacy, Dean of the Graduate School, and Dean of Science and Engineering. In the Chancellor's 1929 Report to the trustees, he is identified as Director of the Summer School, Head of the School of Pharmacy, Vice-Chancellor of the University, and Dean of the School of Chemical Engineering.^{xxi} Possibly to take up that "dead" time between midnight and 2.00 am, he either chaired or was a member of uncountable committees. I suspect if we were to examine the records more exhaustively, we might find that he felt he did not have enough to do. After his retirement, during World War II he was called back as Chair of the Department of Geography and Geology. In 1943, possibly as a reminder, the Board of Trustees reaffirmed his position as Professor

Emeritus.^{xxii} Some people need to be periodically cued regarding their official status even while those who do the prompting ask for more work from the retiree.

As these many assignments indicate, Wilber Engle was highly regarded in administrative circles. In 1917, he was appointed Vice-Chancellor in order to lighten Chancellor Buchtel's considerable work load. Following Buchtel's retirement in 1920, he became Acting Chancellor for two years until Chancellor Harper took office. Upon the latter's retirement in 1927, the trustees requested that Engle again serve as interim Chancellor.

When Engle retired from the Vice-Chancellorship in 1937, the Board of Trustees termed him an "inspiring teacher, a careful investigator, a wise counselor, and a true friend."^{xxiii} This was not much of a retirement as he assumed the Chair of the Division of Physical Sciences and also took on the Chairmanship of the Department of Chemistry.

The trustees' high opinion of Wilber Engle was confirmed by a number of former students. One stated that he was known "far and wide as a great teacher of chemistry."^{xxiv} Some, however, regarded him as a thorough, but dry lecturer. One DU graduate remembered him as warm, friendly, and gracious, but very formal and rather stand-offish. Another saw him as impressive, but aloof. The *Clarion* viewed him as "very dignified and reserved (with) a keen sense of humor."^{xxv} Various ex-students thought of him as austere, distant, and old-school. He was apparently quite aware of his position and the roles he should play plus their associated formalities. Given the interpersonal expectations that prevailed during the first half of the 20th century, Wilber Engle was a traditional "good and proper professor."^{xxvi} In 1923 the first issue of *The Chemist*, a department publication, included a letter from him in which he seemed to unbend. This warm missive recounted his 28 years at DU, and his high opinion of the students whom he requested keep in contact with him. Beneath the veneer of formality, he concealed geniality that was not widely known.^{xxvii}

Engle was a devout Methodist, and in keeping with church strictures, totally abstained from alcohol. It is ironic that in 1910 he was called as an expert witness in a Court matter concerning the sale of illegal liquor. The question was “whether an undefined liquid was beer or not.”^{xxviii} Engle identified the offending fluid as beer. We suspect not by gustatory methods.

Outside of school he loved to work in his flower garden, make furniture, and cook various meats. Recreationally, he enjoyed fishing, taking mountain trips and playing a little golf. He further liked to travel, but his many regular duties kept this to a minimum. Here was a rather well-rounded academic who saw to it that he rarely had a moment to spare. Like Herbert Howe, work was his main pleasure. There is a saying that death is nature’s way of telling one to slow down. Unhappily, Wilber Engle received this message on August 16, 1952.

Earl Asgard Engle.

Born on October 10, 1897 in Michigan, **Earl Engle** followed in his father’s footsteps. He was an undergraduate at the University of Denver. In the 1915-1916 Bulletin, he is listed as an assistant in Chemistry. The next year, he advanced to the position of instructor.^{xxix} In 1922, he received his Doctorate from the University of Illinois, and returned to DU as Assistant Professor of Chemistry. Continuing up the academic ladder, he became Associate Professor in 1924 and Professor in 1929. Remembered both as a sweet man who was never ruffled, and a kindly quiet gentleman, he was primarily interested in teaching and was not a researcher. Even after retirement, he regularly attended Chemistry classes seemingly to observe and understand how others taught, also possibly to comprehend why, according to some of his students, he was not as successful a teacher as he wanted to be. Earl Engle could be called a “memo man.” He sent out innumerable memoranda to faculty and administrators. These were always congratulatory, appreciative, thoughtful, kind and sensitive with never a negative word or implication. He valued his colleagues and felt, whenever possible, that they should know they were in his thoughts. Dwight Smith, a later head of Chemistry and Chancellor of the

University, eulogized Engle at his funeral, saying, "He "was the least pretentious of men. He taught principles, taste, grace, and a love for others by example."^{xxx} He died on May 31, 1985.

Reuben Gilbert Gustavson.

Overlapping with the Engles was a very different kind of scholar who was destined for considerable academic greatness. **Reuben Gustavson**, known as "Gus" or eventually "Dr. Gus" was born on April 6, 1892 in Denver. He received his Bachelor's and Master's degrees at DU in 1916 and 1917, respectively, and joined the Denver faculty in 1920 as Assistant Professor. In 1925 he achieved his Doctorate at the University of Chicago. He became an Associate Professor the next year, and attained the title of Professor in 1927. A prolific researcher, he joined with his colleagues in Biology, and published 12 papers during the 1930-31 school year alone. His output moderated between three to five publications annually until 1937 when he left DU to become Chairman of Chemistry at the University of Colorado. He was soon Dean and from 1943 to 1945, President of the University. He continued this administrative whirlwind by becoming Vice-President and Dean of Faculties at the University of Chicago. These positions were followed with the Chancellorship at the University of Nebraska. He closed his academic career as Professor of Chemistry at the University of Arizona. This glimpse into his impressive career represents only a sampling of his many accomplishments. Those who remember him at DU frequently commented that as a teacher and researcher he overshadowed all others in the department. One of his teaching assistants considered him "wonderful and exciting."^{xxxi} Former students still speak of him, both in and out of the classroom, in superlatives. One stated that he opened a quarter with a lecture on Semmelweiss, and afterwards there was hardly a dry eye in the room. As noted, Reuben Gustavson was an outstanding success in whatever he undertook. Still, no matter how great someone is in life, it eventually ends, and did so for Dr. Gus on February 23, 1974.

Alfred Clarence Nelson.

Alfred C. “Pete” Nelson was born in Salt Lake City on November 14, 1898. After his family moved to Denver, his life was soon devoted to the University of Denver. While an undergraduate in 1918, he became a Chemistry assistant, and earned his Bachelor’s degree in Chemical Engineering in 1920. The next year he acquired a Master’s in Chemistry. Like so many DU graduates, especially from the Denver area, he wanted to be a permanent part of the University, and it appeared that the feeling was mutual. “Pete” Nelson became an instructor in Chemistry in 1923. Continuing as a member of the faculty, he received his Ph.D. in 1926 from the University of Iowa. Promotion to Assistant Professor came the next year. 1929 saw him move up to Associate Professor, and in 1930, he attained the title of Professor. By this time he had actually left the Department, though he always kept the formal affiliation.

Those who knew him first mention that he had a smile for everyone. “Friendly” is the adjective that was most often used to describe him as he always showed a sincere interest in the lives and welfare of his students. These traits marked him for a different kind of academic career, namely one in administration. Here he demonstrated a considerable strength when faced with vexing problems and an ability to be gruff and determined in realizing his and the University’s goals. Starting as Registrar in 1929, he continued to show a personal concern for those who desired to attend the University. After eight years as registrar, in 1937, he moved on to become Dean of the Graduate College. He finally achieved DU’s highest honor, the Chancellorship, an interim position for one year in 1948. When Albert Jacobs was appointed Chancellor in 1949, Nelson became his chief aide as Vice-Chancellor for the next three years. He returned to the Graduate School Deanship in 1960. Like his mentor, Wilber Engle, Nelson took on innumerable administrative roles, always displaying great organizational skills and novel educational ideas. These were especially apparent when he assumed responsibility for directing DU’s Community College venture. Here adult education became an important cause for him.

Nelson dedicated his life to the University of Denver, and was variously labeled DU’s “Mr. Chips” and “Mr. DU”. With almost 50 years of service to the institution he loved, he was a bridge that spanned

its entire middle years from Chancellors Buchtel to Alter. In 1963 he retired as Professor Emeritus of Chemistry. He died on November 6, 1980.

Essie White Cohn.

Another chemical “giant” of this middle period in the history the University was **Essie White Cohn**. Though she restricted herself to the Department of Chemistry, like Nelson she traversed the somewhat less abbreviated gamut from undergraduate student assistant to Professor. She was the first woman to break the hard science barrier at DU, and heralded the development of a Women’s Chemistry Honor Society in the department. In addition, she was instrumental in bringing Iota Sigma Pi, the National Chemical Honor Society for Women, to DU around 1919. For three years beginning in 1948 she was its national president. These efforts on behalf of women interested in Chemistry reflected her more general concern with women’s issues. However, her support of female science students was not consistent with the feminism of the 1960s, as she allied herself with other women faculty to teach the girls classically “feminine” social skills such as how to serve tea and give social gatherings.^{xxxii}

In the days prior to her 1926 marriage to Byron Cohn of the DU Physics Department, as Essie White, she received her Bachelor’s degree in 1922 and her M.A. in 1923, both at the University of Denver. She earned her Doctorate at the University of Chicago in 1936. In 1923, she became an instructor in Chemistry at DU, a position she held for eight years. In 1931 she was promoted to Assistant Professor. Her next step to Associate Professor was in 1938, and she attained her Professorship in 1941. Her early DU photographs picture a very beautiful young woman that her record supplements with evidence of considerable intelligence and intellectual achievement. She was selected by both Phi Beta Kappa and Sigma Xi, and throughout her life was continually honored by professional and scientific organizations for her accomplishments. Quite often she held high offices in societies such as the American Association for the Advancement of Science, the American Chemical Society, and the American Association of University Women. As if these were not enough, Cohn was extremely active in

University and Denver community groups, enough so to be selected in 1954 as Woman of the year by Colorado Sigma Kappa. In 1955 she was selected Outstanding Faculty Woman at the University of Denver. She was further chosen University Lecturer for 1961-62.^{xxxiii}

Like her colleague Reuben Gustavson until he left DU in 1937, Cohn was a research scholar who chose problems that were well out of the Ivory Tower mode. Her work concerned issues of health, nutrition, cancer detection, treatment of the blood disease Polycythemia vera, and physical growth at high altitudes. Publishing more than 40 scientific papers, she gained national recognition as a fine researcher. When she studied the toxicity of a certain kind of egg white in 1955, the *Clarion* reported that she needed the aid of Dr. Fred D'Amour of the Biology Department to hold rats for injection with her serum. One rat temporarily delayed his treatment as she delivered the needle to Dr. D'Amour. Commenting that some people may come to resemble objects with which they work over long periods of time, he wondered if his years of research in "The Rat House" might have influenced his appearance to Dr. Essie.

Former students offer descriptions of Cohn that are nothing less than a litany of superlatives. As a teacher she was regarded as fair though rigorous, a no nonsense instructor who demanded evidence of study and learning of her course material. She knew her lecture subjects thoroughly and tightly organized their presentation. Her appreciation of student shortcomings was evidenced in a willingness to answer all queries in a warm and understanding manner. Another device she regularly employed was to take the matter being discussed and place it in the context of everyday life experience. One of her endearing practices was to open class sessions with stories of earlier scholars who worked on the problems with which she was about to deal. Because of her concern with nutrition, one of her basic courses was popularly termed "Kitchen Chemistry." She had an aversion to the simple drudgery of memorizing and taught mnemonic devices to aid students in learning topics such as amino acids.^{xxxiv} Former students said that she was "loved by all" and especially by the girls. Even though this

enthusiastic assessment was widely shared, it is virtually impossible to please everyone. One critic, a brilliant scholar himself, was interviewed. He stated that he simply hated learning passively as was and is too often true in basic Chemistry. The weight of the evidence is still overwhelming in her favor. Another former student referred to her as “a ball of fire.”

Essie White Cohn was no narrow pedant. Clearly dedicated to her profession, she continually demonstrated that she was also a woman of scholarly breadth and aesthetic richness. Among her many interests and activities, she was a member of the Denver Symphony Guild, the Denver Civic Theater, the Botanic Gardens. She sang in a choral group, read poetry, loved hiking in the mountains and working in her garden. The significance and satisfaction of being a truly well-rounded was not lost on her. In the minds and hearts of the DU community, Essie White Cohn occupied a very special place. In 1961-62, she was chosen University Lecturer. She died the following year on March 4, 1963.

Clarence P. Knudsen

Like virtually all of the other early 20th century chemists at the University, **Clarence Knudsen** was a DU product. This was a time when distinctions between the physical sciences and engineering were poorly defined. Knudsen participated in both realms.

Born December 19, 1900 in Denver, Knudson received a B.S. degree in Chemical Engineering in 1921, and a Master's degree in 1922, both from the University of Denver. He is listed as an instructor in Chemistry for these two years. Transferring to the University of Iowa, he earned his Doctorate in Chemistry in 1924 and accepted a position as Chemistry Instructor for the following two years at the University of Nebraska. Then there is that magic appeal of Colorado to which Knudsen returned. From 1926 to 1929, he served as an Instructor, and then Assistant Professor of Chemistry at the Colorado School of Mines. His name reappeared in the DU Bulletin for 1929-1930 as Associate Professor of Chemistry, his assignment until 1933 when he was promoted to Professor. Until 1938, he remained exclusively a faculty member in Chemistry. He was then designated Professor of Chemistry and

Chemical Engineering. Though this title continued until the end of his career in 1960, he functioned as the Dean of the College of Engineering from 1941 on.

Knudsen's allegiance to Engineering was evident from the mid-1930s on as he became affiliated with four national engineering organizations while retaining his membership in the American Chemical Society. In addition to engaging in research and publishing a small number of technical papers, his former students remarked that he encouraged them to exercise their talents in research. This inclination was not his forte, possibly because he became increasingly involved in administration. Another factor may have been his social nature in life, which was probably more compatible with executive rather than research functions.^{xxxv}

This last propensity was manifested early in Knudsen's academic career as he joined fraternal, professional, and honorary groups. He also became an active church member. Associates described him as an unassuming, serious, business-like person who always understood his responsibilities and limitations. Former students further saw him as neither really friendly nor unfriendly, simply as orderly, systematic, and practical, yet always approachable. Rather than perform less than optimally, at the age of 58, he tendered his resignation as Dean and recommended to the Chancellor that he be replaced by someone younger who could deal with the growing workload.^{xxxvi}

Personally, he derived pleasure from listening to classical music from his own impressive record collection. He was also an avid sports fan, particularly a backer of the DU hockey team. International travel was also one of his greatest pleasures.

Clarence Knudson lived a life of dedication to the University of Denver. He demonstrated an academic professionalism of the highest caliber. His full life ended at the age of 88 on February 10, 1989 in Denver.

Frank Raymond Blood

As we have seen, World War II and the immediate post-war period were extremely disruptive to colleges and universities throughout the nation. First there was a paucity of teachers and students, and then a glut of both. **Frank Blood** was one who bridged both times. In addition, he joined that large group of faculty who started their higher education careers at the University of Denver and eventually returned, if only for a relatively brief period.

Born on September 13, 1910 in Denver, he took a Bachelor of Science degree in Chemical Engineering at DU, but completed his graduate training with a Ph.D. in 1940 in Biological Chemistry at the University of Michigan. Following assistantships at Denver and Michigan plus jobs in Chemistry with the Dupont Corporation in Delaware, he returned to the University of Denver in 1942 as Assistant Professor of Chemistry. In 1947 he became Associate Professor and Associate Chair of the Chemistry Department. The next year he was promoted to Professor.

It was apparent from the beginning of his professional career that Frank Blood was a researcher. He joined with Fred D'Amour of the Zoology Department in five sophisticated studies that were published in the American Journal of Physiology, a solid first line journal. In addition, he and D'Amour wrote a Laboratory Manual for Mammalian Physiology that went through multiple editions.

Past friends describe him as a short, blonde slight-of-build individual with a shy, soft-spoken manner. They state that he was an extremely precise teacher who worked hard to help his students understand the course work. Outside of class, all found him to be highly personable and an easy relaxed conversationalist. In quite a different setting, he was a dedicated poker fan who played who played weekly with the older students, invariably veterans.

By 1950, the vets bulge had essentially ended, and Frank Blood left DU for Vanderbilt University where he worked in the Medical School in Biochemistry and Toxicology for the next two decades. He died in January 1971.

George Howard McCormick

Usually known as **Howard** or **Mac**, McCormick came to the University of Denver in 1946 as an Assistant Professor. Thirty years later he achieved a full Professorship. This capped a career of teaching high school Chemistry, then becoming a public school Superintendent, and finally two years of Chemistry instruction at a small Montana college.

McCormick was born on July 8, 1909 in Proctorville, Ohio. His collegiate career eventuated in a Bachelor's degree at Marshall College in Huntington, West Virginia in 1931. While an undergraduate he emphasized Chemistry, Geology, and Education. The last prepared him for high school teaching, and interestingly, for 11 years he taught Geology at DU. In 1941, he took a Master's in Science at Ohio State University. Though he pursued course work toward a Doctorate, primarily at the University of Colorado, he never completed their degree program.

His field was radiochemistry and he stressed radioactivity and radiation effects and hazards. This also opened the door to nuclear research, and to actuate this prospect he conducted studies at the Oak Ridge National Laboratory in Tennessee. At DU he taught courses in Radioisotope Methodology, founded the Radiochemical Laboratory, and became the University's Radiation Safety Officer. Well regarded by the Atomic Energy Commission, they approved his proposals for funds for research equipment. Others recognized McCormick's knowledge, and he soon became Chair of the Colorado State Radiation Advisory Committee, a consultant to the Johns Manville Corporation Safety Committee, and further to the Atomic Energy Commission. In Colorado, McCormick was considered the expert on the complexities and dangers of radiation.

Though he became a researcher early in his career, he shifted his energies into radiation safety work and teaching. He was considered the mainstay of the General Chemistry program, and was further recognized for the rigor with which he organized his courses and the excellence of his teaching. He was

well-liked by the students and his colleagues, and put a great deal of effort into counseling Chemistry majors. An associate called him “a friend to the students.”

In his personal life, his hobbies of photography, hunting, and fishing maximally utilized the potential of our region. In addition, he was a strong supporter of DU’s athletic teams. After he retired in 1977, he and his wife moved into such mountain communities as Winter Park and Estes Park. This enabled him to be in the natural environment he loved. Not one to idle away his time, Mac became Winter Park’s first bookkeeper/accountant.

On April 27, 1986, Howard McCormick died of Leukemia. One wonders if this may have been an effect of his work as this illness has been known to be a correlate of radiation exposure.

Clinton M. Kelley

Since Chancellor Alter was himself a chemist, it was natural for him to include among his “Peaks of Excellence,” the Chemistry Department. He chose Clinton Kelley, a man with a previous history at DU to come back and build a new scholarly, research-oriented department.

Kelley was born on July 19, 1913 in Portland, Oregon. He graduated Oregon State College with a Bachelor of Science degree in Chemistry in 1934. He also emphasized course work in Mathematics and Education. Moving on to the University of Washington, he completed his Doctorate in Physical Chemistry in 1941. In 1946, he became an Assistant Professor at the University of Denver, gained a rapid promotion to Associate Professor, but in 1949 left DU for Texas A & M. Up to this time, he seemed to have some kind of wanderlust for he rarely stayed at one place for more than a year or two. Now he rapidly moved on to the Stanford Research Institute where he stayed for the next 12 years. In 1962, he came back to DU as Professor and Chair of the Department of Chemistry. In the time between his leaving the University and his return, he seemed to be reasonably active as a researcher, but much of his time was involved in administration

On arriving in Denver, Kelley was immediately burdened with administering not only Chemistry but also Physics for his first year. He began talking of a combined Chemistry and Physics Department relating to the Denver Research Institute, but others had different views, and this dream went nowhere. Though quite busy, he also worked with graduate students on their research projects. His efforts were favorably judged.

He soon ran into another ever present DU problem, namely marked constraints on money. Higher administration acquainted him and the new head of Physics with information on possible sources of funding from the National Science Foundation. Even though a proposal was submitted, this hope was not realized. Unable to get outside funding for the kind of equipment that experimental research demanded, he decided to build a theoretically oriented Chemistry Department. This required a top notch specialized faculty and students that were likely to go to much bigger and better known departments. In the judgment of some, the result was a withering of the Department that countered scholarly productivity.

Clinton Kelley was a man with big ideas and high aspirations, possibly too idealistic for the University at the time he took over and for some years afterwards. In a preliminary version of a proposal to the National Science Foundation, he wrote of “a combined outstanding center in Chemistry, Mathematics, and Physics.”^{xxxvii} Enthusiastically, he referred to a “center of excellence,” and terms like excellence and outstanding are repeated. The rhetoric was there, but these ideas may have been ahead of their time for DU. It is as if he wanted the Department to be everything for everyone within the first five years of his coming to the University. The University certainly could not afford his visions. A much more focused and measured program was needed. He was frustrated and so were those above him in the administrative hierarchy.

Things were simply not working out as Clint desired. The money was not coming in; he was spending much time away from the Campus at professional meetings and in other activities. Possibly as

an antidote to his own frustrations, Clint became a committed environmentalist very much concerned with the damage people and pollution were imposing on his much loved mountains and nature in general.

Concurrently, top administration officials expressed their unhappiness with the situation, and discussions took place with the Dean among others. Unfortunately, the desired improvements did not materialize, and in 1970, Clint made it clear that he had felt it was time for him to leave DU, take a break from his present situation, and pursue other goals. He retired from the University on June 30, 1971, at the age of 58.

Clinton Kelley was a tall, lanky, athletic, down to earth individual with a ready smile for everyone. Needless to say he was personally well-liked by all. Colleagues indicated that he always wanted to be an outdoorsman for he loved going into the mountains, and was an avid mountain climber. Tragically, on June 20, 1982, he died from a fall while climbing Mount Shuksan in Washington.

Summary and Commentary

Over the years, many Chemistry faculty seemed either to put in a brief appearance at the University or to move on to administrative positions. Of the seven discussed here, Wilber Dwight Engle, Alfred Nelson, and Clarence Knudson made their reputations as Deans and acting Chancellors. Reuben Gustavson and Essie White Cohn left indelible impressions for the excellence of their teaching. Both also engaged in research though this was an especially strong characteristic of Dr. "Gus," yet he too moved on to top administrative positions elsewhere. Consistent high scholarship was not representative of this Department as a whole in its first century. Recent years has increasingly realized its research and teaching goals.

ⁱ Hansen, J. E. (1977). *Democracy's College inn the Centennial State: A history of Colorado State University*. Fort Collins, CO: Colorado State University, p. 121.

ⁱⁱ Minutes of the Executive Committee meeting of the Board of Trustees, March 29, 1886, p. 18.

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- Minutes of the Executive Committee meeting of the Board of Trustees, June 2, 1887, p. 205.
- ⁱⁱ Minutes of the Executive Committee meeting of the Board of Trustees, June 7, 1887, pp. 207-208.
- ⁱⁱⁱ Minutes of the Executive Committee meeting of the Board of Trustees, February 15, 1887, p. 143.
- ^{iv} Minutes of the Executive Committee meeting of the Board of Trustees, May 24, 1887, p. 199.
- ^v Minutes of the Executive Committee meeting of the Board of Trustees, June 2, 1997, p. 205.
- ^{vi} Ibid. p. 206.
- ^{vii} Minutes of the Executive Committee meeting of the Board of Trustees, June 7, 1887, pp. 207-208.
- ^{viii} Ibid. p. 208.
- ^{ix} Minutes of the College Dean's meeting June 5, 1887.
- ^x Minutes of the Executive Committee meeting of the Board of Trustees, June 12, 1888, pp. 347.
- ^{xi} Annual Report of the Board of Trustees, June 7, 1888, p. 348..
- ^{xii} Minutes of the Executive Committee meeting of the Board of Trustees, June 22, 1888, p. 371.
- ^{xiii} Op. cit. Hansen, pp. 180-181.
- ^{xiv} Davis, W. E. (1965). *Glory Colorado: A history of the University of Colorado*. Boulder, CO: Pruett Press, p. 24., Allen, F S. , Andrade, E. Jr., Foster, M. S., Mitterling, P. I., & Scamehorn, H. L. (1976). *The University of Colorado: 1876-1976*. New York: Harcourt, Brace, Jovanovich.
- ^{xv} Ibid. Allen et al., p. 32.
- ^{xvi} Mumey, N. (1967). Joseph Addison Sewall. In W. D. Powell (Ed.). *The 1966 brand book*. Boulder, CO: Johnson publishing co., 93-117.
- ^{xvii} *The Mount Olympus*, 1895, p. 17.
- ^{xviii} "The Gas House Gang," *The University of Denver Chemist*, April 1924, II(1), p. 15,
- ^{xix} "Chemical Department," *The University Clarion*, October 13, 1909, 13(1), p. 7.
- ^{xx} Dr. Engle's first name is variously given as Wilber or Wilbur. In his history of DU, Allen Breck uses the more traditional Wilbur. My research indicates that Engle and his familial successors employed the –er ending. The University never did make up its mind which spelling was correct.
- ^{xxi} University of Denver Annual Report of the Chancellor to the Board of Trustees, May 1929, and Minutes of the Executive Cabinet meeting of Sept. 5, 1928..
- ^{xxii} Minutes of the Board of Trustees for August 19, 1937, October 11, 1937, January 21, 1943.

^{xxiii} Tribute to Wilbur Dwight Engle signed by the Chairman of the Board of Trustees and Chancellor of the University, undated.

^{xxiv} McDonough, R. P. THAT REMINDS ME: a personal history of the University of Denver, Unpublished manuscript, 1963, p. 23.

^{xxv} *The Denver Clarion*, January 18, 1934, 38(15), p. 2.

^{xxvi} Interviews with Mrs. Clara Armstrong, June 8, 2004, and Mrs. Alberta Iliff Shattuck on July 6, 2004.

^{xxvii} A letter from Dr. W. D. Engle. *The University of Denver Chemist*, May 1923, I(1), p. 3.

^{xxviii} "Dr.Engle renders expert testimony in liquor selling case." *The University of Denver Clarion*, December 15, 1910, 14(13), p.3.

^{xxix} *University of Denver Bulletin 1917-1918*, p. 19.

^{xxx} Smith, D. A remembrance of Earl Engle, Funeral oration, June 4, 1985.

^{xxxi} From an interview with Mrs. Dorothy Roberts Mizer.

^{xxxii} From an interview with Mrs. Dorothy Roberts Mizer.

^{xxxiii} Essie White Cohn in *The National Cyclopedia of American Biography* (1969), Vol. 51, p. 10.

^{xxxiv} Letters from Keith Sadler (undated), and George M. Dunklee (February 7, 1959). Interview with Dr. Hyman Zuckerman.

^{xxxv} Faculty Personnel Record of Clarence Knudson for November 11, 1960.

^{xxxvi} Letter from Clarence Knudson to Chancellor Chester A. Alter, April 25, 1959.

^{xxxvii} Kelley, C. Chemistry. This was to be part of a proposal to the National Science Foundation, August 11, 1966.

Part 2, by Gareth R. Eaton

History of the faculty of the Department of Chemistry (later, Chemistry and Biochemistry), starting with faculty present in 1972.

Those in italics are no longer in the Department.

Dates are “best recall” of current faculty, and are sometimes based on concurrent documents. A Five-Year Plan was prepared by the Department in 1984 at the request of Dean Purcell. It contained a lot of quantitative detail on the 1972-1984 period. The Plan seems to have been discarded.

Year hired	Name	Teaching area	Year departed*	Notes	Total faculty
before 1972	total				8.5
“	<i>William Stickler</i>	<i>organic</i>	<i>retired 1985</i>	1	
“	<i>John Riter</i>	<i>physical</i>	<i>resigned 1980</i>		
“	<i>E. Robert Weiner</i>	<i>physical</i>	<i>retired in 1994</i>	2	
“	<i>George H. McCormick</i>	<i>inorganic, radiochemistry</i>	<i>retired in mid- 1970s</i>		
“	<i>Gene Barnett</i>	<i>physical</i>	<i>not tenured, left in 1972</i>		
“	<i>Clinton Kelley</i>	<i>physical (Chair)</i>	<i>retired 1971</i>		
“	<i>Carl Gottschall</i>	<i>inorganic, radiochemistry</i>	<i>retired in 1986</i>		
“	<i>Joseph Schmidt-Collerus</i>	<i>organic</i>	<i>retired</i>	3	
1970	<i>Joseph Hornback</i>	<i>organic</i>			
1972	Renewal under Dwight Smith as Chairman	Expanded to include biochemistry			
1972	<i>Dwight Smith</i>	physical/analytical	Retired in 2015	4	
1972	<i>Sheldon York</i>	<i>biochemistry</i>	<i>Resigned in 2007</i>		
1972	Gareth Eaton	Inorganic, biophysics			
1972	total				9.5
1974	<i>Eric Wickstrom</i>	<i>biochemistry</i>	<i>not tenured; left in 1981</i>		
1974	<i>Jack Newkirk</i>	<i>materials</i>	<i>retired in 1984</i>	5	
1976	<i>Don Leyden</i>	<i>analytical</i>	<i>resigned in 1981</i>	6	
1976	total			7	12.5
1978	<i>J. Keith Grime</i>	<i>analytical</i>	<i>resigned in 1981</i>	8	
1981	<i>T. Greg Dewey</i>	<i>biochemistry</i>	<i>resigned in 1998</i>		
1982					12.5
1983	<i>Donald Stedman</i>	physical/analytical	retired in 2008; deceased in 2016	9	
1982	<i>David Bolton</i>	<i>analytical</i>	<i>resigned in 1986</i>		
1981	<i>Robert Coombe, resigned</i>	physical	Chancellor	10	
1984	<i>William Choy</i>	<i>organic</i>	<i>resigned in 1988</i>	11	
1985	<i>John Kice</i>	<i>organic</i>	<i>retired</i>	12	
1985	total				10
1987	<i>Julanna Gilbert resigned</i>	physical	Director, CTL	13	
1989	<i>Bruce Bowler</i>	<i>biochemistry</i>	<i>Resigned in 2006</i>	14	
1989	total			15	11
1990	Sandra Eaton	inorganic/physical, biophysics			
1995	Andrei Kutateladze	organic	Dean, NSM		
1997	Balasingam Murugaverl	Organic	Teaching Assoc. Prof.		
1999	<i>Andy Ternay resigned</i>	organic	Research Professor		
2000	total				10
2000	Lawrence Berliner	biochemistry		16	

2001	Todd Wells	biochemistry	Teaching Assistant Prof.		
2003	Keith Miller	environmental		17	
2005	total			18	12 TT total
2005	FTE tenure-track teaching faculty			19	8 + 3x1/3
2006	<i>Bruce Bowler resigned</i>	biochemistry		20	
2007	<i>Ron Nohr resigned</i>	organic	Hired as lecturer		
2007	<i>Sheldon York resigned</i>	biochemistry			
2007	<i>Sheref Mansy resigned</i>	biochemistry			
2007	Martin Margittai	biochemistry			
2008	<i>Byron Purse resigned</i>	organic			
2008	Michelle Knowles	biochemistry			
2008	total				10 TT 2 lecturer
2011	Brian Majestic	environmental/analytical			
2011	Alex Huffman	environmental/analytical			
2012	Bryan Cowen	organic			
2014	Brian Michel	organic			
2014	Debbie Mitchell	teaching faculty			
2015	John Latham	biochemistry			
2016	Eric Chapman	biochemistry			
2016	Emily Barter	teaching faculty			
2016	Ogar (Leo) Ichire	organic			
2017	Scott Horowitz	biochemistry			
2019	Sunil Kumar	biochemistry			

* retired or resigned; some stayed on in emeritus status beyond this date.

Notes

1. Bill Stickler stopped teaching in 1985-6, but remained in the Department as Professor Emeritus until ca. 2003, when he moved to Germany.
2. Bob Weiner was on leave of absence for a couple of years before his formal retirement. He was teaching as late as 1992-93, and retired May 31, 1994.
3. Schmidt-Collerus did his research in DRI, and taught courses such as mass spectroscopy. He retired before 1981. He is counted as 0.5 faculty in 1972 in this list.
4. Dwight Smith began as Chair in 1971, although his tenure began during the year that he was at Scripps Institute of Oceanography, during which time William Stickler served as Acting Chair. Smith stopped teaching while Chancellor, and subsequently returned to the Department, formally retiring in 2001. He continues performing research as Professor Emeritus and Research Professor.
5. Jack Newkirk transferred to Chemistry when the Engineering School was closed. He was the holder of the Phillipson Chair, but the chair was pulled out from under him, and re-established as a partially-funded environmental analytical chemistry chair.
6. Don Leyden replaced Newkirk as Phillipson Professor and then left the Phillipson Chair to go to CSU, and later to industry. Newkirk stayed in the Department after the chair was taken away from him.
7. The number of faculty in 1976 is based on a list dated October 15, 1976. In addition to the 12 regular faculty and ½ of Schmidt-Collerus, Paul Predecki was listed.
8. Keith Grime was offered the position in May 1978. He left before the tenure decision to go to industry, because of low salary and lack of research support at DU.
9. Don Stedman replaced Leyden as Phillipson Professor. He is supported by the Department for teaching at only ca. 1/3 of his appointment. The rest of his salary comes from the Phillipson

endowment or research grants. He retired effective July 2008. He will remain active as a Research Professor.

10. Bob Coombe replaced John Riter. After Coombe became Dean, he taught two and then one quarter of physical chemistry. He stopped teaching in ca. 2000. He became Provost and now is Chancellor.
11. William Choy was the organic chemist hired to replace Stickler upon Stickler's retirement. Choy left in 1988 prior to tenure decision, when he was told that it was unlikely that he would be given tenure.
12. Budgetarily, John Kice's position was a replacement for Jack Newkirk. John came as Chair, and then replaced GRE as Dean. When Kice retired, Coombe replaced Kice as Dean.
13. Julanna Gilbert was hired to replace Keith Grime as an analytical chemist, but subsequently has taught primarily physical chemistry, so she is listed as physical. After she became head of CTL she taught two and then one quarter of undergrad physical chemistry.
14. Bruce Bowler's replacement of Bill Choy was a conversion of the position from organic to biochemistry so that the undergraduate major in biochemistry could be developed.
15. In 1989, Dwight Smith and Gareth Eaton returned to the Department for "full-time teaching and research" Bob Coombe was Chair and John Kice was Dean. John Kice continued teaching in the Department. Bob Weiner was still teaching.
16. Larry Berliner replaced Greg Dewey.
17. In one sense Keith Miller replaced Dwight Smith, but the Smith position was taken away from the Department, and we "re-justified" the position based on the new program in environmental chemistry.
18. Count Bob Coombe, Julanna Gilbert, Don Stedman and Ga Eaton regardless of current teaching.
19. In 2005 there are 8 regular tenure-track teaching faculty (S. Eaton, Wells, Miller, York, Bowler, Hornback, Kutateladze, Berliner), plus Stedman, Gilbert, and G. Eaton each teaching ca. 1/3 time. Coombe does no teaching. Starting in the mid-1980s the Department converted the "stockroom manager" position to a "lab coordinator" position, and the occupant of that position has increasingly moved from laboratory instruction to classroom instruction over the intervening years. Maybe this position should be counted as a teaching position, but for the purposes of this list we count here only tenure-track faculty. Thus, the adjunct faculty, lab coordinator, etc. are not in this faculty count.
20. Bruce Bowler resigned and went to Montana.