

AN EARLY HISTORY OF CHEMISTRY AT TEXAS TECH UNIVERSITY, 1925-1970*

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Introduction

Chemistry got its start at Texas Tech with the founding of the institution. This account is not a complete history of the department, but covers its evolution from its earliest days up to the 1970s. Thus, this is the history of a department's evolution, a narrative that is sometimes anecdotal and sometimes personal. The City of Lubbock dates from the 1890s, and Texas Tech, itself, was founded only in 1923. Consequently, the history I write about is relatively new, but it is about the beginning of higher education on the frontier, in West Texas, a vast part of Texas quite different from the then better developed and better known regions of east and central Texas. I have chosen to write about the first 45 years, the period 1925-1970, when, except for the last part of 1969, the department was under the leadership of just three men, Drs. William Thornton Read, Robert Cabannis Goodwin, and Joe Dennis. Having been on the faculty of Texas Tech for about two thirds of its life (and of mine), I find it easier to write about the early days of Texas Tech than about its later and current days, for I am still part of those, and they are not "history" for me. At the same time, in writing this history, I am conscious of the personal stake that I have in it. In writing about the beginnings of my own department, it is as if I am writing about my own beginnings in academia. The Chemistry Department was one of the first departments in a newly created institution for higher learning in West Texas, Texas Technological College. In my mind, then, it is not possible to separate the be-

ginning of the Chemistry Department from the beginning of its host, the college, itself. I shall start, then, with the founding of Texas Tech, how it got its name, and why it was located in Lubbock.

The Founding of Texas Tech

In writing this portion of this history, I have drawn heavily from the 1939 thesis for the M. A. degree in History (1) by Clifford L. Gibbs, a student at Texas Tech, and a history by Homer D. Wade (2). Texas Tech was born in 1923 after a long gestation period and a number of aborted conceptions. Movement to establish an Agriculture and Mechanical College in West Texas began in the 1890s. At that time, West Texas was viewed as stretching from the panhandle, past Lubbock, down through Snyder and Sweetwater and farther out to the country of the Pecos River. Institutions of higher learning already existed in the eastern part of the state, prominent among which were the University of Texas at Austin (UT) and Texas A and M (TAMU) at Bryan (now at College Station). There were also already a small teachers college at Canyon in the panhandle (3), two private, religiously affiliated colleges at Abilene, and a third on the way (4). But, the people and politicians of West Texas wanted a state college of their own. The movement toward an Agriculture and Mechanical College was based in part on the claim that the land and agriculture of West were different from those of East Texas, so that there was a need for a place of learning for the people of

the West. Early attempts to introduce bills into the State legislature, in 1896 and 1911 failed to get beyond the committee stage. More serious movement began gathering momentum in the years 1915-1916. At that time, the most likely way of securing passage of a bill in the state legislature was to have its content included in the platform of a State Democratic Convention, and this was achieved for the West Texas A and M College in the Democratic Convention in Houston in August, 1916, when James E. Ferguson became the Party's nominee and eventually successful candidate for Governor of Texas. The likelihood of getting legislative approval for a college in West Texas was now almost certain, and, in fact, such a bill passed both House and Senate in 1917. Nothing now seemed to stand in the way of securing for West Texas its own college of higher learning. But something strange happened on the way to this forum. Although the college was approved, its location had yet to be chosen, and the competition for location was fierce. A locating committee was established, consisting of Gov. Ferguson (chair) and four other members, namely, Frank O Fuller, William P. Hobby, Fred W. Davis, and Walter F. Doughty. The committee travelled to candidate towns to assess their capabilities of supporting a college, and then met on June 28, 1917, in Gov. Ferguson's office to cast secret ballots. These, collected by the Governor, were declared by him to have chosen Abilene as the location of the new college. Abilene celebrated with great joy. Subsequently, however, other committee members canvassing among themselves, realized that at least three of them had not voted for Abilene. The Governor, it seems, had pulled a fast one over them. Much outcry and a move to undo the choice followed. Gov. Ferguson was in jeopardy with the state legislature for other reasons, too. He was impeached and deposed by the legislature, and among the charges was that of misuse of location ballots. The legislature that had created the bill to establish West Texas A and M College now threw it out in a special session. The establishment of a college in West Texas was now back to square one.

Out of the attempts to promote the establishment of a college in West Texas had grown, in 1918, an orga-



Paul Whitfield Horn, first president of Texas Technological College. Archives, Southwest Collection TTU

nization called the West Texas A and M Association, comprised of representatives from various towns in the west. This organization continued with the efforts. It failed to get a plank for its objective in the platform of the 1920 Democratic Convention, at which Pat Neff was nominated as the candidate for Governor, but the Association carried its campaign directly to the state legislature and was able to get a bill passed in 1921. It is interesting to note that the college would be for white students, co-educational, and that its courses would be prescribed by the Board of Directors of Texas A and M College. The latter limitation illustrates the influence that East Texas had in trying to obstruct the founding of a college in the west. That bill, however, was vetoed by

Governor Neff, partly on the grounds that it had not been included in the Democratic platform.

Once more, the West Texas group began its efforts at the Democratic Convention in 1922. This time it was successful, and a plank for having a college as a branch of Texas A and M was included, even though that connection was not to the liking of legislators from West Texas. Again, something strange was to occur that remodeled the character of the proposed college. At the same time that bills had been introduced into the Senate (by Bledsoe of Lubbock) and the House (by Baldwin of Slaton), representatives Carpenter and Irwin from Dallas introduced a bill to create a College of Technology and Textile Engineering in Texas. Their motivation was a belief that these subjects were not yet well enough represented in the state's colleges and universities. This bill gathered so much support that West Texans were afraid that it would derail the bills for a West Texas A and M. A conference of the authors of the various bills was called, at which the Dallas representatives, supportive of the West Texas aim, agreed to the drawing up of a substitute bill combining the interests of both groups. In order to satisfy the interest from Dallas in technology, the name Texas Technological College (TTC, Texas Tech) was proposed by Carpenter for a new college to be located in West Texas. The earlier, proposed West Texas forename was dropped because that was possessed

already by West Texas State Teachers College in Canyon. This bill was passed by the legislature and was signed by Gov. Neff on February 10, 1923. Thus was created the college in which the new chemistry department was to begin its life. That is how Texas Tech got its first name, which it retained until 1970 (5). There were no ties to Texas A and M. Again, a location committee was appointed, and from among 37 contending cities, Lubbock was chosen in August, 1923. That choice was surprising, because the early drives for a new college in West Texas had originated in cities such as Amarillo and Sweetwater. A Board of Directors was soon appointed, and just as soon, chose as President of TTC on November 22 Dr. Paul Whitfield Horn, President of Southwestern University in Georgetown.

Paul Whitfield Horn was charged with the formidable task of building a college from scratch. This he set about doing, first from a rented home in Lubbock and later from the president's home, one of the first six buildings to be erected on the campus. As can be seen in his voluminous correspondence (6), Horn appears to have worked single-handedly in supervising the construction of buildings and the hiring of faculty. The overall plan of the campus-to-be was designed by the architect William Ward Watkin, who had designed the plan for Rice Institute (later Rice University) in Houston and was, in 1923, the Head of the Architecture Department at Rice. Watkin's overall plan was eventually abandoned, but the early buildings at Texas Tech show a remarkable resemblance to the early buildings at Rice. The first buildings to be erected were the Administration Building (to house also all liberal arts and science departments), the Home Economics Building, the Textile Engineering Building (to house all engineering departments), a Stock Judging Pavillion, a Dairy Barn, and the president's home. These buildings illustrate the rationale for establishing TTC, namely agriculture of the region, textiles and technology, and subjects of a first-class college. It is interesting, impressive, sometimes amusing and sometimes touching to read Horn's correspondence in his endeavor. No detail escaped his eye. On May 12, 1925, for example, he wrote to Watkin that (6):



William Thornton Read, copied from La Ventana yearbook-1926, TTC

In looking over the stone for our Administration Building today, I observed two errors in spelling. (1) The name Hippocrates, instead of being spelled as here shown is spelled 'Hipocrites.' This of course does serious injustice to the father of medicine. (2) The name Pestalozzi is spelled 'Pespalozzi.' So far as I know, no one ever bore this latter name and certainly the great schoolmaster did not.

Later, on August 31, 1927, when TTC was well on its way and more buildings were under construction, he again wrote to Watkin to propose a compromising solution to the complaint from 'ex-confederate friends' that a plaque (*sic*) of Abraham Lincoln had been placed on the Administration Building, but not one of Jefferson Davis.

In the hiring of faculty, Horn both advertised and sought out academic contacts. The number of applications for faculty positions was huge, often from teachers in high schools and from other universities. A member of the Music Department at the University of Texas wrote on April 6, 1925 (6):

The entire Music Department of the University has been eliminated by reason of the veto of the Governor of Texas and I am in consequence seeking an appointment.

A graduate student at the University of Chicago, whose work for the Ph.D. degree was "practically all completed" and who was then "reviewing for the final examinations," applied for "a position in West Texas Technological College as head of the Chemistry Department (6)." Alas, neither the music nor the chemistry applicant made the grade.

Creation of the Department

William Thornton Read, Head, 1925-1930

Insofar as positions in the Chemistry Department were concerned, Horn began with William Thornton Read, an assistant professor in the Department of Chemistry at Yale. The story of his hiring is told by Read in a 1968 letter from Read, then retired and living in Houston, to Clifford B. Jones, then President of Lubbock National Bank and former President of TTC (7). Read had

grown up in Texas. He was, in fact, born on a campus, the first baby to be born (in 1886) to a faculty member at Texas A and M College (8), where his father was the first college physician from 1883 to 1891 (7). He was an undergraduate at Austin College and had earned an M. A. in organic chemistry from UT. He had gone on to Yale for his Ph.D. (1921), where he remained as an instructor and assistant professor. His mentor at UT was J. R. Bailey, who suggested to Read that he might be interested in coming back to Texas. Bailey, himself, lobbied Horn on Read's behalf, sending Horn letters of recommendation that Bailey had gathered (9). Read was unsure of his future at Yale, writing that he knew the road to promotion was long and hard and that he was older than most of his colleagues. Read knew of Horn, having met him first as a sixth-grader in Sherman when Horn was visiting his school as the superintendent of schools. Later, when Read was in his junior and senior years at Austin College, he worked as a part-time reporter for the *Sherman Democrat*, covering schools and churches, and would meet Horn for a few minutes every week in Horn's office. They became good friends. Thus, the circumstances were ideal for an offer to join TTC, and this was made by Horn on December 12, 1924 (6). The offer was for a full professorship beginning in September, 1925, at the salary of \$3,750 for 9 months, that being the maximum allowed by legislative appropriation. The offer made no mention of a headship. It is not clear when Read accepted the offer and when he was offered the headship. But, it is quite clear from the many letters exchanged with Horn that Read was working on setting up the Department of Chemistry while he was still at Yale. He was corresponding with supply houses and had drawn up a budget for supplies and equipment for the future laboratories. Read, wanting to move to Lubbock in the summer of 1925, asked Horn whether he could supply a salary that would let Read assist Horn with his work. But, money was not available and Read had to stay in New Haven, where he worked on his book *Industrial Chemistry*. He arrived in Lubbock in August, 1925. Two other appointments were made in chemistry. One of these was of a full professorship for William Lamkin Ray, who had an M. A. from UT and Ph.D. from Chicago. This appointment was made by Horn, and it is clear that Ray, then on the faculty of Stephen F. Austin State Teachers College, was brought to Horn's attention by Prof. Schoch of UT (10). Ray was offered a salary of \$3,600 for nine months. The second appointee was Freeman Dent Galbraith as associate professor, but no record seems to be available of who made the appointment and at what salary. Ray stayed at TTC until

1933, after which any trace of him has been lost. Galbraith stayed only for one year, having been discouraged from staying longer by Read (11). Galbraith went on to spend the rest of his academic career at Potomac State College in Keyser, West Virginia, where he had a beloved and honored career. He died at the age of 57 on April 18, 1938 (12).

Thus, when TTC opened for business in the fall, 1925, it had a chemistry faculty of three. At that time, Horn had hired a total of 44 persons. They are listed in the 4th Bulletin of TTC, issued for the opening of the College (13). It is interesting to note that the faculty members in this group were either full (24) or associate professors (9). There were no assistant professors. Two adjunct professors and six instructors were appointed, several of the latter being wives of full professors. Neither Horn nor any of the four academic deans (Liberal Arts, Agriculture, Engineering, and Household Economics) had a Ph.D. degree. Among the full and associate professors, seven had Ph.D. degrees and 17 had master's degrees. Two professors (Studhalter in biology and Qualia in Spanish), however, completed their Ph.Ds. later. Thus, the Chemistry Department was well off with two thirds of its faculty holding doctorates. The college was proud of its student enrollment, amounting to 642 men and 272 women. They comprised 730 freshmen and 184 sophomores. The Bulletin notes that this enrollment placed TTC "fifth among 15 state supported colleges in the number of students enrolled for work of collegiate grade." The college in West Texas had arrived. One wonders, though, how few students the trailing 10 institutions may have had.

The task of the three chemists was to devise and teach all of the courses. These are set out in the First Annual Catalog 1925-1926, dated April, 1925, as comprising General Chemistry, Advanced Theoretical Chemistry and Analytical Chemistry, Organic Chemistry, Physical Chemistry, Industrial Chemistry, and Technical Analysis. By January 26, 1926, the First Annual Catalog had changed, however, and the courses in chemistry had been given course numbers, were expanded, and described in detail (Table 1). The course numberings were derived from a three-term year (Fall, Winter, and Spring) that was in effect at TTC in its early days. The chemistry curriculum seems to have been a hefty undertaking for a three-man department. There were no teaching assistants, in the graduate student sense, to help with the teaching loads; but the catalogs of January, 1927, 1928, and 1929 each list by name nine or ten "chemistry assistants." Their duties are now unlikely to be

Table 1. Courses in Chemistry, 1926

Course Name	Course Numbers CHEM-	Hours per week	
		Lecture	Laboratory
Elementary General Chemistry ^a	141, 142, 143	3	3
Theoretical and Analytical ^b	231, 232, 233	2	3
Advanced Inorganic Chemistry	234, 235, 236	3	-
Analytical Chemistry ^c	237, 238, 239	-	9
Organic Chemistry Short Course ^d	331, 332	2	3
Organic Chemistry Long Course	343, 344, 345	3	3
Industrial Chemistry ^e	336, 337, 338	3	-
Power Plant Chemistry ^f	339	-	9
Technical Analysis ^g	431, 432, 433	-	9
Physical Chemistry	441, 442, 443	3	3
Physiological Chemistry	437, 438	2	3
Mechanical Chemistry ^h	321, 322	-	6 ^h
Principles of Chemical Engineering ⁱ		3	

^aDivided into two categories for students with or without high school chemistry and required for students in engineering, agriculture, and home economics. ^bDesigned for students who could devote a limited amount of time to the study of chemistry. ^cConsisting of qualitative and quantitative analysis. ^dFor students in agriculture and home economics. ^eDivided into two groups, one of which was for students majoring in chemistry, and consisting of a study of leading chemical industries from the point of view of chemical engineering operations, the fundamental theories and principles of chemistry involved, and economic and business principles. ^fRequired of students in engineering. ^gDivided into thirds, any one of which could be taken, to cover commercial methods of analysis of foods, stock feeds, fertilizer and soil, animal and vegetable oils, petroleum products, water, and fuel. ^hChemical plant design, six hours of drawing and calculation. ⁱPreparation for further courses in chemical engineering in other institutions.

known. They were undergraduates because a number of them (E. W. Camp, Jr., Marion Green, T. M. Binnion, Loy B. Cross, La Thaggar Green, G. Robert Martin, and Andrew Jenkins) went on to receive B. A. degrees in chemistry at TTC. Chemistry assistants ceased being listed in the 1930 catalog; instead, in 1931, we see for the first time the listing of teaching assistants, one of whom (Cecil H. Connell) was the department's first M. A., 1933 (14), and another of whom (Charles C. Galbraith) remained in the department for many years as an instructor without, apparently, making it to the master's level (14, 16).

The courses in industrial chemistry, power plant chemistry, and technical analysis reflected Read's own interests, for during 1916-1918 he worked at UT in the Division of Chemistry of the Bureau of Economic Geology and Technology, which had been established under E. P. Schoch in 1915, and from which Read published a bulletin on boiler waters (17). Read, furthermore, was writing a book on industrial chemistry; but that, not surprisingly in view of his workload, was not

finished until after he had left TTC (18). The courses with chemical engineering content were a forerunner of the formal introduction of chemical engineering into the department in 1933, when the Department of Chemistry and Chemical Engineering was created. Until 1933, chemical engineering was an option within the Department of Mechanical Engineering (14). Apart from their teaching loads, the three chemistry hires carried college-wide committee assignments: Read on those for registration, student help, publicity, religious life among students, and course of study for liberal arts; Galbraith on student help; Ray on boarding houses (19). Read's assignment to the committee on religious life reflected, too, Horn's view of him. Read, like Horn, was a devoted member of the Presbyterian Church, a connection that Horn brought up in their early correspondence (20); and while at TTC Read was instrumental in setting up a branch of the YMCA (21).

In its first years, the Department of Chemistry was housed in the basement of the Administration Building.



The periodic table, Chemistry Building North wing, TTU, designed by former professor of physical chemistry, William M. Craig, 1926.

We can get a glimpse of the pioneering way of life there from the 1927 and 1928 catalogs, which say (19):

Two laboratories are devoted to elementary inorganic chemistry and are completely equipped with desks, lockers, gas, water, current, hoods and all the apparatus and chemicals necessary for the course. A smaller laboratory has been provided for advanced courses. The Department of Chemistry also has a stock and preparation room, a storage room and a cellar outside the main building for certain chemicals.

The overall plan for continuing campus construction in 1927 was to add a wing to the Administration Building and to construct two academic buildings, Chemistry/Science and Engineering. But, with a shortage of legislative money, only parts of the plan could be carried out. A conflict arose about the choices. On the one hand, the president and board preferred to complete the Administration Building. On the other hand, Read, Dean W. J. Miller of Engineering, and Prof. E. F. George, Head of Physics, supported by one member of the board, H. T. Kimbro, pushed for the academic buildings. The choice of academic buildings prevailed and the Chem-



New Chemistry building, Texas Technological College, 1929

istry/Science Building was erected in the center of the campus, just west of the Administration Building (7). It was occupied on January 1, 1929, and the January 1929 catalog now tells us (with evident pride) that (19):

The Chemistry Building is 240 feet long and 60 feet wide, with one wing extending back 100 feet. There are two stories, a full basement, and at the east end a low tower. Although designed primarily as a Chemistry Building, it houses for the present the Departments of Biology, Geology, Physics and Chemistry.

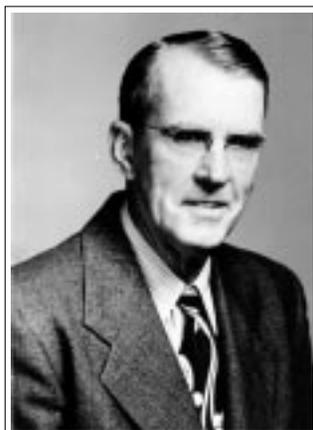
Read marveled that Horn bore him no grudge nor exacted any retribution for having had to give up his plan for a fine looking, completed Administration Building. Read had designed the Chemistry/Science Building with removable partitions and with all utility services in place, so that when the other science departments would move out, anticipated to be in two stages, each of two years, it would be relatively easy to convert the building into full use for chemistry. That move did not occur, however, until 1951, 22 years later. In the meantime, chemistry occupied the east end of the basement and first floor, and physics the west ends of those floors. Geology and biology shared the second floor, and geology also had the Tower Room, a beautiful room that later, under the headship of Joe Dennis, was to become a faculty lounge and conference room, in time, named "The Dennis Room."

Read stayed at TTC until 1930, when he was attracted away to serve as Dean of the School of Chemistry at Rutgers University. During his five years at TTC he set the Department of Chemistry on a sound foundation and with little increase in the number or character of the faculty. In 1926 he replaced Galbraith with William Moore Craig, an inorganic and physical chemist who was to spend the rest of his academic life at Texas Tech. Craig had been a student at Harvard, working on the atomic weight of gallium under the famous Nobel Laureate, T. W. Richards. He was an instructor at Rice when Read invited him to join TTC. While at Rice he worked with W.

W. Watkin to incorporate alchemical figures of the elements into the newly constructed chemistry building. Craig did the same for Texas Tech's building. Those symbols can be seen in what is now called the north wing of the chemistry building. On the face of that wing can be seen chiseled into the roofline stone work the symbols of the periodic table. All of Craig's classes had to memorize those symbols, and many survivors can still recite the beginning line that sounds like "Heliebibcanoff." The only other appointments to help Read in his work were of Hulda Wilde Marshall and Roxie Clark Read in 1926, and of William Mackey Slagle in 1928. Roxie Clark Read was Read's wife, who had an M. A. degree (1918) in chemistry from UT. Her appointment at TTC was negotiated by Horn in order to avoid the criterion of nepotism that prevented Read himself from hiring his wife (6). Horn arranged for the appointment to be made directly by the Board of Directors. One wonders, though, how, in 1926, Ruth B. Studhalter remained an instructor in biology while her husband, Richard A. Studhalter, was listed as Head of Biology; that appointment has yet to be researched. Here, then, is the story of the first five years of Texas Tech's Chemistry Department. Much had been accomplished on what was once cotton fields, some farmed, in fact, by Slagle himself, just west of the town. The next 20 years, embracing the Depression and Second World War saw little real growth. The numbers of faculty and students increased, surely, but the character of the department remained essentially that of a teaching one.

**Robert Cabaniss Goodwin, Head,
1930-1950**

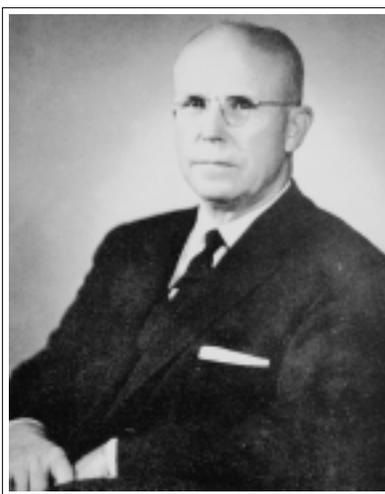
In order to replace Read as Head, Horn turned again to J. R. Bailey at UT (7), who recommended Robert Cabaniss Goodwin, then an assistant professor at the University of Florida, who had done research for his master's degree with Bailey. Like Read, Goodwin was from Texas. He was born in Brownwood in 1898, obtained a B. A. degree in English and history from Howard Payne College (1917), M. A. in organic chemistry from UT (1923), and Ph.D. from



William M. Slagle, ca. 1949.
Faculty file, TTC

Harvard (1928), where he studied with E. P. Kohler. Goodwin's task was not an easy one in the cramped quarters of the Chemistry/Science Building and with sparse funding. The task was made no easier when chemical engineering was added to the department in 1933. Furthermore, Goodwin took on a succession of other administrative positions in addition to keeping the headship of chemistry. Thus, he was Dean of the Graduate School (1938-1945) and Dean of the College of Arts and Sciences from 1945 until 1950, when, under changing college policy he had to choose one administrative post or another. Goodwin chose to be Dean of the College of Arts and Sciences (1950-1959) and went on to become Acting President of Texas Tech (1959-1960) and President (1960-1966). While he was both head and dean, the administrative work of the department was shared with an assistant head, either Craig or Oberg. Even while in the deanships, Goodwin continued to teach the main undergraduate organic chemistry course. He returned to Gainesville, FL, in 1967 and died there in 1993, age 95.

Faculty were hired by Goodwin to take care of the increasing burden in teaching. Few but Joe Dennis (1938) had much inclination or, really, opportunity to do serious research. The climate in the department can be understood from letters that Goodwin wrote to or about applicants for posts. For example, on June 17, 1940, he wrote to Prof. G. L. Clark at the University of Illinois (22):



Robert C. Goodwin, presidential inauguration photograph, 1960.
Archives, Southwest Collection.

It may be that we shall have an opening on our staff next fall. The position will be that of an instructor with a salary of \$1,800.00 for the nine-month term. The position will probably be permanent. The possibility for rapid advancement in rank and salary is slight. Opportunity for summer teaching will practically be nonexistent. On the other hand we do all we can to encourage research by the faculty. Our facilities are quite limited but are gradually improving. If complicated or specialized apparatus is not involved, we can usually provide the materials needed. Our attitude toward our instructors is that of aiding them in all ways to se-

cure better positions—at other places if not with us.

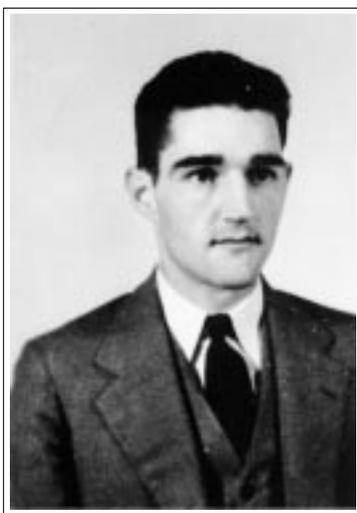
If you think that Mr. Rowan, about whom you wrote us earlier, would be interested in such a position, kindly have him furnish us with his credentials. Please have him include a picture and complete personal data such as race, religion, personal habits, marriage, etc.

It is notable that the position offered to Rowan, who was finishing the Ph.D. at Illinois, was that of an instructor. A change seems to have occurred at TTC since its very first permanent faculty were hired in 1925, all of whom, Ph.D. or not, were appointed as either full or associate professors. As can be seen from the letters of Goodwin and Horn, a large drop in salaries occurred, too. The TTC catalogs a few years later show that appointments in all areas were heavily at the instructor level. In the Department of Chemistry and Chemical Engineering, this applied not only to Rowan but also to Oberg (1936) and Rolf (1937), the first “senior” appointees since 1933. Later, Ph.D.s were again appointed at higher ranks, for example, Jones (1948) as associate professor and Watson (1948), Detman (1949), and Tinsley (1949) as assistant professors. Rowan did join TTC, possibly because he, too, was a Texan, who had been born in Waco and took his B. S. degree at West Texas State College (1934). But he stayed at TTC just one year, leaving, seemingly wisely, to go into industry. Goodwin wrote to Dean J. M. Gordon on June 20, 1941 that he had (22):

...just received a telegram from Dr. Robert Rowan. He is getting married and felt it would be necessary for him to accept an industrial position where he will receive a considerably higher salary.

Eventually, in 1962, Rowan returned to academia at New Mexico State University for a long career in analytical chemistry. This example gives an idea of the situation at Texas Tech in Goodwin’s years. Even Joe Dennis was hired, not so much for his research potential, but because he had the experience in biological chemistry which Goodwin wanted to establish in the department (23). It turned out, however, that Dennis would become the spearhead of research in the future.

Many of the faculty appointed in the period 1925-1950 had been educated in Texas and had some connection with UT, as is shown in Table 2. Perhaps this stemmed from a feeling of security in the department



Robert Rowan, Jr., ca. 1940.
faculty file, TTC

by hiring from a known locality or perhaps it was the easiest way of bringing people to a rural and academically unknown part of Texas. Some of these appointments lasted a lifetime (Craig, Marshall, Slagle, Goodwin, Dennis) and others were for brief periods. During Goodwin’s headship, 28 faculty appointments were made. They and their terms of service are listed in Table 3. Seventeen of the 28 did not have doctorates and were hired, no doubt, only to help with the burgeoning post-war load of undergraduate teaching. Many were involved with laboratory supervision (24). Most of the latter type short-term appointees (Melton, Bruton, Baker, Cohea, Menaul, M. L. Bryant,

Hardey, Plemmons, Work, Brock, Dodge, Crow, Hufstedler) could not be traced after their departure from TTC. Others of that period left and continued their careers elsewhere. Valerie Schneider is said to have become wealthy in local real estate and retired. Neil Berst went into industry. Charles Galbraith went into the Civil Service. Dysart Holcomb, who was, in fact, Dean of Engineering and held his faculty appointment as a chemical engineer in the department, became President of Texas Western College and later went into upper administration in industry. Fred Rolf joined the U. S. Air Force. Sam Tinsley joined Union Carbide, from which he retired in 1986 as Director of Corporate Technology. James Watson went to Northeastern Louisiana State College and later to Southeastern Louisiana State College. Gus Oberg, Oscar Southall, and Margret Stuart each died some years after retiring, Oberg and Stuart after life-long service to the department.



Frederick W. Rolf, ca. 1937.
Faculty file, TTC

Joe Dennis, Head, 1950-1969

The career of Joe Dennis was particularly significant for Texas Tech. Born in Sherman, Texas, in 1911, he

Table 2. Texas Tech's Early Faculty Connections with the University of Texas

Name	Years at Tech	UT Connection
William T. Read	1925-1930	M.A., 1915
William L. Ray	1925-1933	B.A., 1918; M.A., 1920
Freeman D. Galbraith	1925-1926	B.A., 1922; M.A., 1923
William M. Craig	1926-1958	M.A., 1916
Hulda W. Marshall	1926-1947	B.A., 1909
Roxie C. Read	1926-1930	M.A., 1918
William M. Slagle	1928-1960	M.A., 1928
Robert C. Goodwin	1930-1966	M.A., 1923
Valerie Schneider	1933-1944	B.S., 1926; M.S., 1928
	1927-1930	Chem. Eng.
Joe Dennis	1938-1976	M.A., 1933
Joseph W. Melton	1941-1944	M.A., 1941
James A. Watson	1948-1951	B.A., 1940

received the B. A. degree from Austin College and the M. A. and Ph.D. degrees from UT. Research for the Ph.D. was carried out at Texas Tech, itself, because Dennis joined the faculty in 1938, invited there by Goodwin, while Dennis was an instructor in the UT medical branch at Galveston. Indicative of Goodwin's willingness to help young appointees to do research, as can be read in his letter to Clark in 1940 (22), he set up a laboratory for Dennis in the attic of the Chemistry/Science Building. Certainly, there was no space anywhere else. Dennis kept that laboratory for a number of years afterward, long after he himself became head. His research was carried out during the long semesters under the long-distance guidance of Prof. B. M. Hendrix of the UT Medical Branch in Galveston. Coursework was taken in the summers in Austin under the care of Prof. H. R. Henze, and the Ph.D. in biochemistry was awarded by UT in 1942. When Goodwin chose to give up the headship of the Chemistry Department, Dennis succeeded him. Dennis had the ambition of turning the department from essentially undergraduate teaching into one in which research and graduate studies would be emphasized. He wanted to model his approach on that which, in his mind, Roger Adams had used so successfully at the University of Illinois; that is, of bringing in young people capable of developing research and teaching careers (23). He was the first of the science heads at Texas Tech to embark on such an objective. The existence of two other powerful, well-funded universities in Texas (UT and TAMU) as well as a plethora of other universities and colleges did not make Dennis's objective easy. Nor, in fact, did Lubbock's location and the

general lack of the spirit for research at Texas Tech help Dennis. Nevertheless, he became dedicated to his objective. When the Departments of Biology, Physics, and Geology moved to the Science Building in 1951, relatively ample space was freed up in the, now, Chemistry Building, although there was little money to do much with it. Dennis created a carpentry shop and a machine shop in the basement and received TTC funds to employ a carpenter (Jesse Truman) to build furniture for the laboratories and newly needed offices. Dennis himself took a large part in the design of the furniture. Later, he employed an incredibly good Jack-of-all-trades, Warner Kendall, as a combined carpenter-machinist-plumber to keep the department's laboratories, shops, and building in repair. Kendall was joined in this by his equally skilled brother-in-law, Jimmy Hall, who succeeded Kendall after his death in 1976. These appointments were made in an era, apparently, when maintenance of the building was not restricted entirely to TTC's central building-maintenance departments. Hall remained with the department until he retired in 1999. Although the entire building was freed up for use by chemistry in 1951, it still proved to be too small for the growing needs in research and student laboratory space, even after a thorough renovation in 1956-7. For some years, in fact, the laboratories for general chemistry were housed in temporary war-surplus buildings that were brought to Lubbock and placed directly south of the chemistry building. In the mid 1960s, Dennis began pushing for an extension to the building, and permission to plan an addition for research was given in 1967. The plans for a small addition drawn up by the chemis-

try faculty were, it seems, deemed too unimaginative by one of the members of the board of directors, Harold Hinn of Plainview, Texas. It also seems that Dennis was in direct contact with Hinn (23), a practice which was then not in accord with Texas Tech policy. In any event, a magnificent addition was



Joe Dennis, copied from La Ventana yearbook -1960

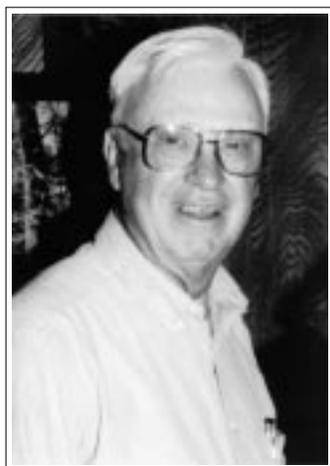
planned, not by the faculty alone, but by the faculty and a firm of experienced architects, Pitts, Phelps, and White, at a projected cost of the then unheard of figure of five million dollars. The "addition" was, in fact, larger (81,000 sq ft) than the original building (58,000 sq ft) (14). It was completed in 1970, about a year after Dennis stepped down from leading the department. His resignation was prompted by the change in titles that occurred in 1968. All heads of departments, who had had until then indefinite terms of office, were re-designated chairs, with terms renewable after review. Dennis's response to that was, "If I couldn't have the authority, I didn't want the responsibility (25)." He had served 17 years as head and two as chairman. In 1969, H. J. Shine was selected as chairman. Dennis retired in 1976, moved to Kerrville, Texas, in 1999, where he died on October 15, 2001. The Chemistry Department owes a great deal to his devotion to its welfare.

The building of an "addition" to the Chemistry Building has a side story that is part of the history now being recorded, although it occurred in the years 1972-1973. Plans for a medical school on TTU's campus were formulated in 1970. Because buildings for the medical school were to be erected long after the school had begun accepting students, the science departments of the school were spread out among the science departments of TTU. The new addition to the chemistry building was a prime choice because there was as yet quite a lot of unused space available. Therefore, the Departments of Biochemistry, Anatomy, and Pharmacology were placed temporarily in the addition. While it was still

under construction, it became evident that not enough money would be available to build the splendid facility that had been planned and to furnish it completely, too. The department was given the choice of going without some furniture or cutting down the size of the addition. The department chose the former, arguing that there might always be a chance to get the furniture later. Each new research laboratory, therefore, was only partially furnished. After three of the medical school's science departments were housed in the addition, claims for more space in the addition were made constantly by the biochemists. Consequently, the Chairman of the Chemistry Department, this writer, made the case to TTU that the proper way of providing more space for research in the addition was to require the medical school to complete its furnishing. Because at that time the president of TTU was also president of the medical school, this was done, with a grant from medical school funds. In this way, TTU acquired a fully furnished chemistry building, and Dennis's push for an addition to the chemistry building for the furtherance of research was not only achieved but the addition was also beautifully furnished.

During Dennis's long period of leadership, 38 faculty appointments were made or initiated. These are listed in Table 3. In contrast with the trend in appointments under Goodwin's leadership, most of those of the Dennis era held doctorates. In the early 1950s, Dennis did the hiring without much evidence of input from the existing faculty. In this author's case, he was offered a position by a Texas Tech faculty member who had interviewed him at an American Chemical Society meeting, far from the Lubbock campus. Two of the appointments (Stubbs and Guerrant) were made specifically to serve as coordinators of the freshman chemistry program. Holcomb's and Bradford's appointments were as chemical engineers because they were, successively, Dean of Engineering. McPherson managed the logistics of the freshman laboratories. Most of the other appointments were for researchers who were to fulfill Dennis's hopes for building a research-oriented department. Of the 38 appointees, 13 stayed on to retirement (Adamecik, Anderson, Draper, Guerrant, McPherson, Mills, Renard, Rekers, Shine, Shoppee, Stubbs, Wilde, and Wilson). Some retired to other careers: Adamecik to a law degree from TTU's School of Law, McPherson to introduce vineyards to the region and to start a winery, Mills to become a restaurateur in Hawaii, and Stubbs to become Professor and Dean at the University of Albuquerque. Charles Shoppee, the department's first Welch

Professor, returned to Australia, to continue part-time research as Honorary Professor at LaTrobe University. Among those who left the department, David Carlyle chose high school teaching and farming in his home state; Bertha Delaney returned to nursing at a local hospital; George Estok went to St. Edward's University in Austin; Patricia Fain went to Mallinckrodt in St.



Clinton M. McPherson, on the occasion of his retirement, September, 1988

Louis; James Fresco to a long career at McGill; Harry Hecht to Los Alamos National Laboratories and later to South Dakota State University; Dick Hendry to Westminster College; William Herndon to become Chairman at the University of Texas at El Paso; Irving Lipschitz to Lowell Institute; Lynn Marcoux to industry; Roy Mitchell became a wine master at a local winery and then joined TTU's College of Agricultural Sciences to teach oenology; Tom O'Brien went on leave and then to industry; Pill-Soon Song became chairman at the University of Nebraska; Don Scott went into industry with Lockheed-Georgia; Richard Thompson to the Bureau of Criteria and Standards; Fred Trusell to Marathon Oil Co.; Randolph Wilhoit went to Highlands University in Las Vegas, NM, and later to the API project at TAMU. Three members of the early faculty were untraceable (Franz, Gryder and Thoma), and two (Marx, Redington) remain in the department.

My last words about these Dennis-era appointees concern William Wesley Wendlandt, who joined TTC at the same time as the author. "W³", as he signed himself, was an innovator in the evolving department. He began his productive research life by setting up a thermogravimetric balance in his office. Eventually, he designed more sophisticated balances and went on, at the University of Houston, to become the founding editor of *Thermochemica Acta*. At TTC Wendlandt also became the first coordinator of the freshman chemistry program. Until then, almost every member of the faculty taught freshman chemistry, in classes of about 30 students. Each teacher had two or three sections and was responsible individually for course content and ex-

aminations. Wendlandt introduced the system of large classes with fewer teachers. The course content was centralized, as were examinations, which were made up by Wendlandt from questions submitted by the several teachers. From this system evolved the concept of appointing a coordinator for general chemistry (Stubbs, Guerrant) and the establishment of a Division of Chemical Education in the Department, overseen by a faculty member of the Division, but whose logistics for several thousand general chemistry students are managed by a staff appointee. Wendlandt moved in 1966 to become Chairman of Chemistry at the University of Houston, a position he held until 1972. He retired in 1991 and died on June 30, 1997.

Research grants made their appearance in the department also during Dennis's early years as head. Perhaps the first grants made by external agencies were from The Robert A. Welch Foundation (now The Welch Foundation) of Houston. These grants came about in a historically interesting way. Early in 1955, Dennis told this writer (25) he had heard about an agency in Houston that was giving grants for research in chemistry, and that, in some way, Henry Eyring, the renowned chemist at the University of Utah, was involved. An enquiry was made to Eyring, whose response (26) named the Welch Foundation, on whose advisory committee he served, and its awards of grants to the three major research institutions then in Texas, UT, TAMU, and the (then) Rice Institute. This information was followed up by Dennis, who later carried a number of research proposals from TTC to Houston. Of these, two were funded, one to Patricia Fain and the other to the author, each for two years. The author's grant, totaling \$18,450, enabled him to advertise for and bring to TTC two Ph.D. students (Robert Snell and John Trisler), with research support of \$200/month. This was the beginning of the department's life as a research department, and of research support by The Welch Foundation that has continued and expanded until the present day.

Thus during the years 1925-1969, the department was in the hands of three men. Under Read, tremendous progress was made, and with very few faculty and little else. The progress was relative, of course, to having started with nothing. Yet, one wonders: had Read stayed in the department, would it have had a different history? Read went to Rutgers as its dean to establish a research school of chemistry in which task he eventually felt disappointed, having soon encountered both a change in administration and the Great Depression (7). One might think that, had he stayed at TTC, he might

have tried to establish a research department there. It is worth conjecture, too, had he stayed would he have been content to house the other science departments in "his" building for 22 years? Goodwin seems to have been cut from a different cloth. It is recognized that the Depression came just when he, too, began his headship of the department, so that he may well have been faced with keeping the department going at best. It is my own assessment that Goodwin was not driven (as was his successor, Dennis) to build a research department. This opinion is based partly on the character of the department during Goodwin's headship, and also on his views on my own early progress in the department, when, as a new president of TTC, he expressed his concern to Joe Dennis that my getting so many research grants, as I then had, might interfere with my teaching (25). Joe Dennis was determined to have a research department. He had to contend with holding a lone objective on a campus more inclined toward teaching. Teaching loads remained high for years. In time they were reduced for researchers; salaries for researchers, each perk solely in the hands of Dennis, were raised. In those early years, too, there was no such thing as start-up funds for research, and there were very few teaching assistantships for graduate students. On the other hand, there were no charges for supplies by the department either; what was available was free for use. I regard Dennis as the founder of our research department. He set the stage for what would come later under the leadership of various chairmen and the participation of faculty who, themselves, were there for careers in research and teaching. The

history of the later times awaits its assessment and telling.

A word about degrees is in order. In Table 3 are listed the numbers of degrees awarded, in increments of years. The numbers show that for the first 25 years of its life the department was mainly in the undergraduate teaching mode. Eleven master's degrees were awarded in that period, as compared with 460 bachelor's degrees in chemistry and chemical engineering.



Henry J. Shine, United States Rubber Co. research laboratory, Passaic, NJ, 1953

The slow increase in numbers of graduate degrees from 1950, when Dennis became head, can be seen. The dominance of B. A. as compared with B. S. degrees reflects the influence of pre-medical and other health-science students. Dennis was committed to nurturing students who were interested in medical careers, so much so, that he managed a pre-medical advisory committee himself for many years and then persuaded Margret Stuart into doing that, some-

Table 3. Numbers of Degrees in Chemistry and Chemical Engineering 1925-1970^{1,2}

Period	B.A.	B.S.	B.S. CE ³	M.A.	M.S.	Ph.D.
1927-1930	19					
1931-1935	46	1	15			
1936-1940	45	13	41	1	4	
1941-1945	27	16	53		1	
1946-1950	54	41	89	1	4	
1951-1955	46	29	82		9	2
1956-1960	53	30	83		7	3
1961-1965	67	51			16	8
1966-1970	80	70			22	13

¹ Taken from the compilation of Joe Dennis (14). ² The first B.A. was awarded in 1927; the first B.S. in 1932; the first M.A. in 1933 and the last in 1949; the first M.S. in 1936, the first Ph.D. in 1953. ³ Supplied to Joe Dennis by Prof. A. G. Oberg. Data for 1936 were missing. Chemical Engineering separated from Chemistry in 1959.

thing she continued until retirement. Dennis was adamant about keeping that committee in the Department of Chemistry. The premedical advisory committee later became the Health Sciences Careers Office with separately paid staff but supervised by one of the faculty—and still housed in the department. The gradual increase

in numbers of B. S. degrees can also be seen in the Table. It is astonishing to see how many B. S. in Chem. E. degrees were awarded, inasmuch as very few of the faculty were teaching chemical engineering, primarily Professors Oberg and Renard after Valerie Schneider left in 1948. It is small wonder that little research in chemical engineering was carried out.

Table 4. Faculty of the Department 1925-1970¹

Name	Highest Degree and Place		Area ²	Began	Ended
Read, W. T.	Ph.D.	Yale	O	1925	1930
Ray, W. L.	Ph.D.	Chicago	O	1925	1933
Galbraith, F. D.	M.A.	Texas		1925	1926
Craig, W. M.	Ph.D.	Harvard	P	1926	1958
Marshall, H. W.	M.A.	TTC		1926	1947
Read, R. C.	M.A.	Texas		1926	1930
Slagle, W. M.	M.A.	Texas		1928	1960
Goodwin, R. C.	Ph.D.	Harvard	O	1930	1966
Schneider, V.	Sc.D.	MIT	CE	1933	1948
Galbraith, C. C.	B.S.	Trinity		1934	1948
Oberg, A. G.	Ph.D.	Michigan	P/CE	1936	1959
Rolf, W.F.	Ph.D.	Iowa	A	1937	1942
Dennis, J.	Ph.D.	Texas	B	1938	1976
Rowan, R., Jr	Ph.D.	Illinois	A	1940	1941
Melton, J. W.	M.A.	Texas	O	1941	1945
Bruton, B. J.	M.A.	Southwestern		1942	1944
Southall, O. C.	M.A.	TTC		1944	1962
Allen, R. T.	B.A.	-		1946	1947
Baker, E. B.	B.A.	-		1946	1947
Cohea, B.	B.S.	-		1946	1948
Menaul, M.M.	B.A.	-		1946	1949
Stuart, M.R.	M.A.	TTC	A	1946	1979
Bryant, M.L.	B.S.	-		1947	1948
Hardey, C.E.	B.A.	-		1947	1948
Plemmons, A.E.	B.S.	-		1947	1949
Work, M.L.	B.A.	-		1947	1948
Jones, P.T.	Ph.D.	MIT	P	1948	1951
Watson, J.A., Jr	Ph.D.	LSU	B	1948	1951
Brock, J.	M.S.	TTC		1948	1954
Dodge, E.H.	M.S.(CE)	Washington		1948	1951
Crow, B.C.	B.S.	TTC		1948	1949
Detman, R.F.	Ph.D.	LSU		1949	1951
Hufstedler, R. S.	M.S.	TTC		1949	1951
Tinsley, S.W.	Ph.D.	Northwestern	O	1949	1950
Holcomb, D.E.	Ph.D.	Michigan	CE	1950	1955
Berst, N.W.	Ph.D.	Penn State	O	1950	1951
Estok, G.K.	Ph.D.	Notre Dame	O	1951	1961
Lee, S.H., Jr	Ph.D.	Ohio State	O	1951	1975
Renard, J.	Ing. Chim.	Nancy	CE	1951	1970
Thoma, R.E., Jr	Ph.D.	Colorado		1951	1952
Kimball, M.D.	B.S.	-		1952	1953
Wilhoit, R.C.	Ph.D.	Northwestern	P	1953	1957
Gryder, D.Y.	B.S.	Southeastern State		1953	1954
Bryant, J.M.	B.S.	St. Mary's		1954	1955
Fain, P.	Ph.D.	TTC		1954	1957
Franz, G.E.	Ph.D.	Columbia		1954	1955
Shine, H.J.	Ph.D.	London		1954	
Tilton, P.C.	M.S.	TTC		1954	1955
Wendlandt, W.W.	Ph.D.	Iowa	I	1954	1966
Bradford, J.R.	Ph.D.	Case Western	CE	955	1959
Rekers, R.G.	Ph.D.	Colorado	A	1955	1986

Freasier, B.F.	M.S.	Texas A & I		1956	1957
McPherson, C.M.	Ed.D.	TTC		1956	1984
Tidwell, K.G.	B.S. Ed	TTC		1956	1957
Adamcik, J.A.	Ph.D.	Illinois	O	1957	1988
Hendry, R.A.	Ph.D.	Baylor	B	1957	1959
Wilson, C.E., Jr	A.B.	Missouri		1957	1967
Crosthwait, A.A.	B.S.	Eastern NM		1959	1961
Draper, A.L.	Ph.D.	Rice	P	1959	1985
Morris, M.L.	Ph.D.	Ohio State	I	1960	1961
Anderson, J.A.	Ph.D.	Oregon State	B	1961	1993
Trusell, F.C.	Ph.D.	Iowa State	A	1961	1964
Hecht, H.G.	Ph.D.	Utah	P	1962	1966
Thompson, R.J.	Ph.D.	Texas	I	1962	1968
Stubbs, M.F.	Ph.D.	Chicago	FC	1963	1968
Wilde, R.E., Jr	Ph.D.	Washington	P	1963	1991
Fresco, J.M.	Ph.D.	Arizona	A	1964	1965
Scott, D.R.	Ph.D.	Houston	P	1965	1967
Song, P.S.	Ph.D.	Cal.	B	1965	1987
Herndon, W.C.	Ph.D.	Rice	O	1966	1972
Lipschitz, I.	Ph.D.	VPI		1966	1968
Mitchell, R.E.	Ph.D.	Purdue	I	1966	1989
Delaney, B.H.	B.S.	Kent State		1967	1974
Marx, J.N.	Ph.D.	Kansas	O	1967	
Redington, R.L.	Ph.D.	Washington	P	1967	
Guerrant, W.B.	Ph.D.	N. Carolina	FC	1968	1984
Carlyle, D.W.	Ph.D.	Iowa State	I	1969	1974
Marcoux, L.S.	Ph.D.	Texas	A	1969	1974
O'Brien, T.J.	Ph.D.	Wisconsin	P	1969	1979
Shoppee, C.W.	Ph.D.	London	O	1970	1975
Mills, J.L.	Ph.D.	Texas	I	1970	1995

¹ The list of names in this Table has been drawn for the most part from a brief history of the department (14) written by Joe Dennis for the symposium that accompanied the opening of the addition to the chemistry building in 1970. There were some gaps in Dennis's list, and they have been filled by consulting the TTC catalogs year by year. There appears to be no other cumulative list of the department's faculty in the University's archives. ² Area refers to the teaching specialty: A, analytical; B, biochemistry; CE, chemical engineering; FC, freshman coordinator; I, inorganic; P, physical; O, organic. Where a specialty is not listed, the information could not be found.

ACKNOWLEDGMENTS

The writing of this history began with an invitation by Dr. E. Thomas Strom to participate in a symposium "History of Chemistry in the Southwest" at the 1998 American Chemical Society meeting in Dallas. Strom's ambition was next to persuade each of the speakers who described a chemistry department to write up the talk for publication. I apologize to Tom Strom for being so tardy, and I thank him for his patience. Much of the information on which this history is based came from the archives of TTU's Southwest Collection (SWC), in which early bulletins, catalogs, and correspondence of P. W. Horn, C. B. Jones, and R. C. Goodwin are housed. I thank the staff of the SWC for their help in locating letters and photographs, the latter for the ACS presentation. Mary Ellis in TTU's Office of Institutional Research was especially helpful in finding files on early

faculty members, getting permission for me to read them, and for providing lists of graduates in the period of interest. In the Department of Chemistry and Biochemistry, Cheryl Blasinghame and Kathy Jones were always ready in filling gaps in faculty and student data. During 1997-1999, conversations with and letters from Joe Dennis were the sources of much of the anecdotal history. His memory was remarkable. Dr. C. M. McPherson, whose own relationship with TTU began as a student in 1938, was also very helpful in filling gaps in records and memories. McPherson's student career, interrupted by wartime service flying supply missions "over the hump" between India and China, was resumed in 1947 when he received the B. S. Chem. E. degree. My ability to hold a post-retirement appointment as Research Professor at TTU, as well as to be Paul Whitfield Horn Professor Emeritus, allowing me to continue research in chemistry and have the opportunity to write this history,

is made possible by the continued support as a Horn Professor by the University and by the support of my research from The Welch Foundation (Grant D-0028).

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*Based on a paper presented at the 215th national meeting of the American Chemical Society, Dallas, TX, Spring, 1998, HIST 017.

1. C. L. Gibbs, "The Establishment of Texas Technological College," M. A. Thesis, Texas Technological College, 1939.
2. H. D. Wade, in E. H. West, Ed., *Establishment of Texas Technological College, 1916-1923*, Texas Tech Press, Lubbock, TX, 1956.
3. West Texas A & M University, so named as a branch of TAMU on September 1, 1990, an irony that would not go unnoticed by the early advocates of a State College in West Texas. Formerly, West Texas Normal College, established in 1909 by a bill from the Legislature to "establish a State Normal School for the education of white teachers west of the 98th meridian," named West Texas State Teachers College in 1922 and West Texas State University in 1963. This information is taken from the WTAMU website.
4. Hardin-Simmons University, established 1891; Abilene Christian University (1976), established as Childers Classical Institute in 1906, accredited as a junior college in 1914, a senior college in 1919, and named Abilene Christian College in 1920; McMurry University, opened in September, 1923. This information is taken from the respective websites.
5. There was a general consensus in the late 1960s that Texas Tech was no longer a technological college and was more suited to being called a university. The change to Texas Tech University was made in 1970. The name was derided by a large segment of the faculty, particularly those not in the science and technological departments, as being meaningless and misleading to the collegiate colleagues beyond Lubbock. The name was chosen mainly to retain the abbreviation Texas Tech and the double-T symbol entrenched in Texas Tech's history. The middle name Tech was described by its proponents as not connoting technology, because it was not followed by a period. The writer of this history has given up trying to educate correspondents from England that Tech is not followed by a full stop (i. e., period).
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24. C. M. McPherson, conversation with H. J. Shine, May 12, 2002.
25. J. Dennis, conversation with H. J. Shine, undated.
26. Letter from H. Eyring, Dean of the Graduate School, University of Utah, to H. J. Shine, February 9, 1955.

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