Thomas Hamilton Chilton

1899-1972

By George E. Holbrook

Thomas Hamilton Chilton was born in Greensboro, Alabama, on August 14, 1899; he suffered a heart attack and died in Bonn, West Germany, on September 15, 1972. Tom Chilton grew up in Montgomery, Alabama, an area famous for Chilton County peaches. His grandfather, William Parish Chilton, was a member of the Congress of the Confederacy and Chief Justice of the Alabama Supreme Court. The Reverend Claudius L. Chilton, Tom's father, was a Methodist minister, as well as a writer and a poet. His mother, Mabel Pierce Chilton, conducted a school for young children, including her own.

Thomas Chilton, the next to the youngest of ten children, had six brothers and three sisters. His mother died when he was eleven years old, and his sisters then cared for the family. He was very close to his family and during his life maintained close touch with his brothers, sisters, nephews, nieces, and cousins. This led to his fond interest in genealogy. He even compiled a detailed record of the 400 direct descendants of his grandfather, William P. Chilton.

Tom's early education began in Montgomery at Starke's University School. During these early school days he worked in a printing shop-the Paragon Press in Montgomery-with his older brothers. Setting type by hand whetted his interest in printing and sharpened his eye for detail and accuracy. In later years his associates came to know and respect his penchant for exactness and detail, especially in written reports.

Tom Chilton's interest in chemical engineering began when, as a

senior at Lanier High School in Montgomery, he heard an employee of Thomas Edison explain the process of making synthetic phonograph records. Chilton attended the University of Alabama, but after two semesters he suspended his education for a year to earn his tuition. When he returned to college, in 1917, he went to New York City and matriculated at Columbia University. He graduated from Columbia in 1922 with the degree of Chemical Engineer.

Tom Chilton often said he entered chemical engineering during a productive period when the field was first being recognized as a very important profession. From the start of his long and successful career, he was involved in research and development. His first employment was as a research chemist with F. J. Carman in New York, where he worked in process development research on the chemical utilization of natural gas. It was with Carman that he received his first patent-a method of producing acetylene from methane.

He came to Wilmington on May 26, 1925, as a chemist in the Du Pont Company's Chemical Department. Assigned to Du Pont's Experimental Station, the company's headquarters for research and development activities, he engaged in studies of ammonia oxidation and sulfuric acid process development until mid-1929, when he was appointed chemical engineer in charge of Chemical Engineering Research.

Tom Chilton's group spearheaded Du Pont's early fundamental research in chemical engineering. Areas of responsibility included fluid flow, heat transfer, distillation, adsorption, and absorption. Many far-reaching engineering correlations and formulas were developed under his guidance. Also, he won wide esteem for his original work and publications in chemical engineering unit operations.

In 1931 a Technical Division was formed in the Du Pont Engineering Department to incorporate work on metallurgy and corrosion and to undertake research programs in the more mechanical aspects of chemical engineering operations. These included filtration, grinding, and agitation and mixing. Chilton's group worked closely with this Division on many company projects.

By 1935 the closely related scope of work of the Chemical Engineering Group and the Technical Division afforded an opportunity to merge them into a single group-the Technical Division-in the Engineering Department. Henry B. du Pont, a great-grandson of the founder of the company, was named Division Head and Thomas Chilton was Assistant Division Head. In 1938 Chilton succeeded du Pont as Technical Division Head.

During the seven years that followed this promotion, Tom Chilton was responsible for many significant strides in the Du Pont Company's progress:

- Analysis of extensive large-scale laboratory tests of the dynamic flow on distillation column plates led to design of more effective distillation columns for acetic acid recovery.
- Important advances were made in the fields of spray-drying, filtration, and pneumatic conveying dryers.
- In the field of materials of construction, notable progress was made in understanding the behavior of stainless steels. The usefulness of then new varieties of stainless steels-the extra-low carbon grades-was demonstrated.
- Procedures for fabricating alloy tubing were established and techniques for welding it were developed.
- The corrosion behavior of titanium metal-especially its superior resistance to sea water and wet chlorine gas-was demonstrated through laboratory research. Also titanium was found to be resistant to nitric acid at elevated temperature and pressure, surpassing the resistance of stainless steels then available.
- In the field of applied physics, reliable methods were developed for on-plant continuous analysis of process streams by means of physical measurements.
- Concerning optics and the quantitative measurement of color, a differential colorimeter was developed for precise measurement of small differences between samples and standards. The device gained wide use in company plants and laboratories where exact color-matching was required.

From 1937 to 1941 Tom Chilton gained his first experience as a

university lecturer. He made many visits to his alma mater, Columbia University, where he lectured to Chemical Engineering Department students and engineers from industry. In 1943 the University of Delaware conferred upon him the honorary degree of Doctor of Science in recognition of his achievement as a researcher and administrator.

During World War II Dr. Chilton was involved with the Manhattan District Project. He contributed personally to the solution of unusual and difficult technical problems of heat transfer and fluid flow for the original design of an atomic energy plant, the Hanford Engineer Works in Richland, Washington. For this work he received in 1948 the President's Certificate of Merit for service to the National Defense Research Committee. The certificate recognized Dr. Chilton's specific endeavors in the field of the production and use of oxygen.

Dr. Chilton was among a select group of scientists and engineers who witnessed the first self-sustaining nuclear reaction under the west grandstand of the University of Chicago's Stagg Field on December 2, 1942. Enrico Fermi, the great Italian physicist, headed this historic birth of the atomic age.

In 1945 Dr. Chilton was designated Manager and later Technical Director of Du Pont's Development Engineering Division (DED). This Division carried out all research and development for the Engineering Department. His work in the Technical Division and DED included the development of widely applicable design data for chemical processing and the development of equipment for mechanical processing of chemical products.

Dr. Chilton's eminence in the field of chemical engineering and his devotion to the profession were officially recognized when he was elected Vice-President of the American Institute of Chemical Engineers (AIChE) in 1950. He became President of AIChE in 1951.

By this time Dr. Chilton had become widely recognized outside the company for his achievements. In 1939 he received Columbia University's seventeenth Charles Frederick Chandler Medal for "his outstanding achievements in the discovery and formulation of principles underlying the unit operations of chemical engineering and in the application of these principles to process development,

equipment design and chemical plant construction and operation." Four years later he was honored again by Columbia as a recipient of the Egleston Medal of the Columbia Engineering School's Alumni Association.

In 1950, Columbia University President Dwight D. Eisenhower presented Dr. Chilton the University Medal for Excellence. He was the fourth national figure to receive this honor. He was cited for "outstanding achievements in chemical engineering research." In the early fifties, Dr. Chilton became an important figure in the development of the Savannah River Plant project. The largest Atomic Energy Commission plant ever built, the project was designed and built by Du Pont between 1950 and 1955.

It was during the fifties that Dr. Chilton's wanderlust began to take hold. As president of AIChE and later the Engineers Joint Council, he made numerous talks to professional societies and student groups. His lecturing and public presentations became important facets in fulfilling his career.

Dr. Chilton's ability as a public speaker was commensurate with his technical competence. He could hold the attention of an audience wherever he went. He was the example of sincerity and devotion to the chemical engineering profession. He told hundreds of audiences: "Chemical engineering is only one 'unit' in the engineering profession which has as its unifying bond the application of principles of the physical sciences in construction and manufacturing enterprises.... We can work as individuals, and as members of progressively larger 'units' for that better day when not only communities and states but nations will be united effectively in combatting disease and infirmity, poverty, and ignorance, prejudice and intolerance and war."

Until his early voluntary retirement from Du Pont in 1959, he continued to be vitally involved in research and development work. Also his output of technical articles never faltered. His work included the development of widely applicable design data for chemical processing and development of equipment for mechanical processing of chemical products.

Following his retirement, in 1959, he moved to the University of California at Berkeley as a Regents' Professor. His pace on the

university scene was perhaps the most ambitious of his entire career. But there could be no doubt that he had made the right decision. Academic work proved to be a continual source of fulfillment and satisfaction for him.

In 1960 he went to Japan and the University of Kyoto and Nagoya University where he was a Fulbright Lecturer. During the summer of 1961 he was Visiting Professor at the University of New South Wales, Kensington, Australia. The 1961-62 year found him in France as a Fulbright Lecturer. His fluent French impressed all who heard him at the universities of Nancy and Toulouse. He was Visiting Professor of Chemical Engineering at Georgia Tech in 1962 and came home to the University of Delaware in 1963-64.

The Chiltons often returned to "Mitylene," their Country home near Hockessin, Delaware. "Mitylene" was named for a small town in Alabama, where Dr. Chilton's wife, Cherridah McLemore, had been raised. The Chiltons enjoyed the company of their friends and hosted many social affairs at "Mitylene." Most popular were those parties having cultural themes.

A biographical account of Thomas Chilton would be incomplete if it did not mention the "Chilton comma." He was very particular about punctuation and couldn't resist inserting commas in a series when one was missing. At his retirement from Du Pont his fellow employees presented him a book containing no punctuation whatsoever. In the back of the book was a page of periods, commas, colons, semicolons, and other punctuation marks along with an invitation for Dr. Chilton to insert them at his discretion.

Chilton's hobbies included photography-he prized his collection of slides from many lands-and classical music. But his main hobby interest was his collection of auto license plates. He was a founder of the Auto License Plate Collectors of America and his famous collection contained license plates from all over the world. He was once introduced at a lecture as the only man in the world with 45 lines in *Who's Who* and 4,500 license plates in his garage.

After his assignment at the University of Delaware, Dr. Chilton went south to the University of Virginia, where he was Visiting Professor of Chemical Engineering during 1965-66. Subsequent tours were to the Birla Institute of Technology, Pilani, India, in 1967 and the University of Washington, Seattle, in 1968. He

lectured at the University of Alabama in 1969, where more than a half-century before he had embarked on his chemical engineering career. The 1969-70 year was divided between the University of Massachusetts and the University of Puerto Rico.

He joined the Chemical Engineering Department at the University of Natal, Durban, Natal, South Africa, in 1970. He was Visiting Lecturer at the University of South Carolina in 1971.

While Dr. Chilton was in Tuscaloosa, Alabama, in 1969 his wife of forty-six years died suddenly of a heart attack. The loss of Cherridah greatly affected Dr. Chilton's adventuresome spirit, and he planned to end his academic travels after his stay at South Carolina.

On January 2, 1971, Dr. Chilton married Elizabeth C. Rinehart. She and her deceased husband, H. Wade Rinehart, had been close friends of the Chiltons for nearly forty-five years. After a successful visiting professorship at South Carolina, Dr. Chilton and Elizabeth retired to their home in Cragmere in Wilmington. However, "retirement" to Tom Chilton meant continued activity with AIChE, the Engineers Joint Council, and even professional and Governmental consulting work.

In September 1972 the Chiltons went to Paris, where Dr. Chilton spoke on "The Abatement of Pollution of the Atmosphere from Stationary Combustion Sources." He made the presentation on September 5 on the occasion of the 116th Event of the European Federation of Chemical Engineering, sponsored by the French Society of Chemical Industry. Its theme was Chemical Engineering in the Service of Mankind.

Two weeks later, on September 15, while visiting a stepdaughter in Bonn, West Germany, Dr. Chilton suffered his fatal heart attack.

During his seventy-three years Thomas Hamilton Chilton earned the respect and professional recognition that many men strive for but few achieve. He was an inspiration to his colleagues and the many young engineers he came in contact with during his extensive tours. He was a model of ethics to the profession. His dedication to chemical engineering is unparalleled. Above all, Thomas Hamilton Chilton was a gentleman, a scholar, and a humanist. For all these things he will long be remembered.