

# UNIVERSITY OF WASHINGTON

R. W. MOULTON, *Head*

## History (1900-1968)

In 1895 the University of Washington moved from downtown Seattle to its present location about 4 miles northeast of the city center. Denny Hall was the first structure built and in its basement there were facilities for what was known then as the Chemistry Department. Chemical Engineering at the University of Washington had its roots in the Chemistry Department. In 1904, Dr. Henry K. Benson joined the faculty of the University and while his educational background was in chemistry his interests were motivated strongly toward industrial chemistry.

Dr. Benson was interested in the application of chemistry to agriculture and he was a leader in the chemurgy movement in the Pacific Northwest. He was extremely conscious of the pulp and paper industry locally and throughout the world. He did much research during his lifetime in fields related to the production of pulp from wood and other forest products. In 1919, Dr. Benson was appointed executive officer of the Department of Chemistry and Chemical Engineering as it was known at that time. He served in that capacity until 1947.

In 1911, an organization called the Chemical Engineering Club was formed at the University of Washington. At that time leaders from chemical industry in the Pacific Northwest together with appropriate faculty members at the University of Washington established the first chemical engineering curriculum. This curriculum was somewhat weighted toward pulp and paper and also coal and gas technology. This curriculum was the precursor of the chemical engineering program as it is known today.

In 1922, Professor Warren L. Beuschlein joined the faculty of the department. Professor Beuschlein had received his Bachelor of Science in Chemical Engineering degree from the University of Washington and his Master of Science degree in Chemical Engineering from the California Institute of Technology. Professor Beu-

schlein became a dominant figure in the thinking of the faculty of the department during his tenure on the campus. He died suddenly in September 1944. Professor Beuschlein's research interests were quite broad. He made important contributions in the areas of the manufacture of charcoal from wood waste, the high pressure hydrogenation of coal, the fixation of nitrogen from air, and in the manufacture of pulp from forest products.

The first doctorate degree in Chemical Engineering on record was that awarded to Dr. Calvert D. Wright in 1931. Dr. Wright joined the faculty at Pennsylvania State University and was active in research dealing with the utilization of coal during his tenure there. During the 20's the department graduated a considerable number of individuals, some of whom obtained significant national prominence in their professional careers. Among these are Mr. Samuel G. Baker, Dr. Olaf A. Hougen, Mr. Victor Mills, and Dr. Waldo Semon. Mr. Baker had important responsibilities with the DuPont Company before his retirement. Dr. Hougen became a leading educator and spent most of his professional life at the University of Wisconsin. Mr. Mills was employed at the Procter and Gamble Company for most of his professional life and made significant contributions to their new product development. Dr. Waldo Semon was associated with the Goodrich Rubber Company and was their research director before retirement.

Accreditation of chemical engineering departments was initiated originally by the American Institute of Chemical Engineers in 1925. The University of Washington's department of Chemical Engineering became the first department accredited in the Pacific Northwest and this action took place in 1926. In the middle 30's accreditation was first carried out by AIChE for the new organization, the Engineers Council for Professional Development.

In 1930, Dr. Kenneth A. Kobe, a new PhD in Chemical Engineering from the University of Minnesota joined the faculty. Dr. Kobe was a very energetic, enthusiastic faculty member. Du-

**Many prominent  
chemical engineers,  
including Olaf Hougen  
received their  
education at the  
University of Washington  
in Seattle.**



ring his eleven years on the faculty he published well over 100 significant papers dealing with his area of research and related works. Dr. Kobe resigned from the department in 1941 to accept a position on the faculty of the Department of Chemical Engineering at the University of Texas.

Dr. Frank B. West joined the department in 1939. He left later during the war years. The author became affiliated with the department in 1941, as did Dr. Joseph L. McCarthy. Both Dr. McCarthy and the author are still active members of the Chemical Engineering faculty.

The post-war years have produced extensive changes in the department. There has been a dramatic increase in the number of faculty members, the size of the undergraduate classes, the size of the graduate program, and the amount and kind of facilities devoted to the department. These changes have created the department as it exists today.

#### **Chemical Engineering Today**

The faculty of the Department of Chemical Engineering now number fourteen individuals. Four of these men have joint appointments; two with Nuclear Engineering, and two with Forest Resources. The College of Forest Resources has developed within the last few years a Bachelor of Science degree program in Pulp and Paper Technology. Because of the long and deep interest of the Department of Chemical Engineering in the field of pulp and paper these two joint appointments were established and serve to maintain close and good working relationships in this area.

The Department of Chemical Engineering played a significant role in the formation of a Nuclear Engineering Department at the Uni-

versity of Washington. The first courses in nuclear engineering on this campus were given by the Department of Chemical Engineering. An early interest in the facilities at Richland, Washington dating back to about 1950 initiated some of this enthusiasm for the nuclear industry. Nuclear Engineering evolved into a group effort of five engineering departments and was eventually established as a separate department wholly at the graduate level. Dr. A. L. Babb, a member of the Chemical Engineering faculty, serves as its chairman. The joint appointments in Nuclear Engineering serve to emphasize the close tie of chemical engineering to nuclear engineering.

In 1953 the Department of Chemical Engineering was established as a separate department. Prior to 1953 there had been what was then called the Department of Chemistry and Chemical Engineering under one chairman who reported to the Dean of Arts and Sciences for Chemistry and the Dean of Engineering for Chemical Engineering. While this was a reasonably good arrangement it was decided in 1953 to formally separate the two departments. After separation the two departments occupied the same facilities and for all practical purposes continued in the same manner as before. The Department of Chemical Engineering owes much of its tradition and strength to the Department of Chemistry which has always been a strong department at the University of Washington.

After literally decades of effort in planning and study a new building for the Department of Chemical Engineering was authorized and completed in September 1966, in time for the 1966-67 school year. This new building increased the gross square feet allocated to the department from 30,000 square feet to 72,000 square feet.

The first courses in Nuclear Engineering were given by the Department of Chemical Engineering . . . Dr. Babb's involvement in the development of the artificial kidney has received international recognition.

Not only was there an increase in space but the space was now functionally suited for the needs of the department. Each faculty member now has his own office, and his own research areas. There are also many types of specialized research areas built into the building for the needs of the department. The philosophy followed in the design of the building was to provide for a maximum degree of flexibility. The building committee and the faculty as a whole felt that it was unwise to be highly precise about how space would be used five and ten years in the future.

The undergraduate program in the department has undergone a major revision in the last few years. The changes that have been made in the curriculum provide for more options in planning the students' programs. There is a core of required courses for the department (which is not common to all engineering departments). On top of this quota of required courses both in chemical engineering and related fields the students have the option of choosing technical electives amounting to 15 quarter credits and electives in the area of humanistic and social sciences amounting to 30 quarter credits. By judicious choosing of electives the student can plan his undergraduate program to be a foundation for graduate work or alternatively he can plan for direct employment in industry following graduation. Following this latter course he can specialize to some extent depending upon his interests. If he so chooses, he can take some courses in the field of pulp and paper technology, or he can enhance his background in fluid mechanics, heat transfer, or other selected chemical engineering areas.

The graduate program of the department is the one that has changed most significantly in the last twenty years. At the end of World War II there were from four to six graduate students. At the present time there are of the order of sixty graduate students in attendance. Current research activities of the faculty encompass the areas of reaction kinetics, transport phenomena, fluid mechanics, heat transfer, mass transfer, bio-engineering, interfacial phenomena, polymers,

cellulose and lignin, thermodynamics and phase equilibria, process dynamics and control, and applied mathematics. None of the faculty members exactly duplicate each other's interests, although there is some overlapping. The fourteen faculty members received their doctorate degrees almost entirely from different schools. **Schools represented are the University of Illinois, the University of California, Yale University, the University of Minnesota, Massachusetts Institute of Technology, Princeton University, the University of Wisconsin, McGill University, the University of Washington, the State University College of Forestry at New York, and the University of Michigan.** It is obvious from the spectrum of research interests and the backgrounds of the faculty that there is a considerable breadth built into the faculty of the department.

#### Future Trends

It is risky to predict the future with any degree of definiteness. Within the College of Engineering and within the Department of Chemical Engineering there is considerable interest today in various interdisciplinary areas. The most prominent of these at the present time is the cooperative programs being developed with the medical school. Fortunately, the University of Washington has on the same campus a very good medical school. This school has been developed since World War II. Many cooperative programs are already established. A prominent example of one of these is Dr. Babb's involvement with Dr. Scribner in the development of the artificial kidney. This work has received national and international recognition. Other research areas are being jointly prosecuted at the present time and it is certain that this work will expand in the future.

The area of marine sciences is another interdisciplinary area that is receiving a high degree of support on the campus at this time. The University has an outstanding department of oceanography and has recently received federal funding through a sea-grant award. A new division of marine science has been established with various segments of engineering being a part of this program.

Other areas of cooperation will certainly develop. About the only thing that can be stated with some conviction is that chemical engineering will be different in the future than it is today.