

by Professor WILBERT STEFFY

U - M

INDUSTRIAL ENGINEERING DEPARTMENT

The evolution of the Industrial Engineering Department typifies the stages that any new curriculum goes through in its development.

The Industrial Engineering Department is the newest of all departments in the Engineering College. The beginning started with Professor Joseph Bursley of the Mechanical Engineering Department when he made the acquaintance of the Gilbreths and other leaders in the field of scientific management during a visit of the American Society of Mechanical Engineers to Germany in 1910.

After this initial exposure to scientific management, Professor Bursley between the years 1913 and 1915 made a study of applications in scientific management to various manufacturing plants. He felt that a study of this type would provide a foundation for instruction in the scientific management field in the College of Engineering. The outcome of this study by Professor Bursley resulted in the establishment, in 1915, of a course in scientific shop management and it was officially introduced to the curriculum at that time as Mechanical Engineering 35, which was the first instruction in this field to be offered by any American College or University. In 1917, during World War I, the demand for this type of instruction increased through Army requests for officer training in the Ordnance Department. After this, M.E. 35—Scientific Shop Man-

agement was used as a basis for establishing similar instruction in other institutions.

When Professor Bursley became Dean of Students in 1921, he suggested that Charles B. Gordy be brought to the University of Michigan to carry on the instruction in scientific shop management. When Professor Gordy arrived from Pennsylvania, he was given the title of Assistant Professor in Mechanical Engineering.

Professor Gordy was instrumental in getting Dean Mortimer E. Cooley of the College of Engineering interested in Engineering Administration Instruction, and asked that a committee be appointed to study this particular field of education. This committee reported favorably, and a sequence of elective courses was suggested to be offered in the field of Engineering Administration. These elective courses were to be given so that no interference would result in the fundamental engineering subjects.

Apparently some more thought was given to this field of instruction and perhaps some objections were discussed. In any event, Dean Cooley appointed a second committee, consisting of Professors Bursley, Gordy, and Airy to initiate a study in work then known as Produc-

Professor Steffy, who originally hails from York, Pennsylvania, received his B.S.M.E. from the U. of M. in 1937. From that time until his appointment to the staff in September of 1949, Prof. Steffy worked for Surface Combustion Corp. in Toledo, U. S. Steel in Pittsburgh, and Thompson Products in Cleveland. In between times, he has done private consulting work and in 1956, his industrial engineering handbook was published.



tion or Industrial Engineering. Professor Airey, at the time this committee was formed in 1921, was superintendent of shops in the University. In 1924, he resigned and went to work with the King-Seeley Corporation in Ann Arbor, for which company he served, later in his career, as President and Chairman of the Board.

The committee recommended to Dean Cooley that a separate department be established and that it be known as the Department of Industrial Engineering. This committee also recommended that the curriculum consist basically of five courses in Industrial Engineering and 18 hours of elective courses.

Nothing was done about the recommendations of the two Cooley committees until three years later in 1924. At this time Professor E. E. Day of the Economics Department showed some interest in combining studies in economics with studies in engineering to prepare students in the field of production. Chairman Henry C. Anderson of the department of Mechanical Engineering was contacted by Professor Day. As a result of this meeting, another committee consisting of Professors Degeman and Gordy to study suggestions made by Professor Day along with the reports of the two Cooley Com-

mittees. The outcome of these discussions resulted in a recommendation to establish a 5-year course in Mechanical and Industrial Engineering consisting of 173 credit hours of work. This recommendation was adopted by the Engineering College in May, 1924.

Eight years later, in 1932, the 5-year program in Mechanical and Industrial Engineering had graduated only 14 students. Since other degree programs required only 4-years of course study, the 5-year program became extremely unpopular and was doomed to failure. Therefore, a new degree was proposed to the Board of Regents in 1934 so that a degree in Mechanical Engineering would be awarded at the end of the fourth year and then upon completion of a year in graduate school a Master's degree in Industrial Engineering would be granted. This change resulted in more students taking this course which, at the end of 5-years of study, led to a master's degree in Industrial Engineering.

There were a few minor changes in the curriculum after 1934, but no important changes occurred in Industrial Engineering until 1946 when the degree designation was changed to Bachelor of Science in Engineering (Industrial-Mechanical). Thus, in 1946, the word "In-

dustrial" was added for the first time to the degree award at the end of 4 years of work.

Professor Gordy, in 1950, was instrumental in getting a representative from the Engineering Council for Professional Development to come to the University to evaluate the curriculum in Industrial Engineering. The representative from the ECPD made some suggestions in certain areas of the Industrial Engineering curriculum, and at the end of approximately a year these changes were incorporated, and the Industrial Engineering curriculum became one accredited by the ECPD. These changes resulted in some reduction in the requirements for graduation in the accounting field and some additions in the Industrial Engineering field in the areas of Engineering Economy, Wage Incentives and job Evaluation, Production Control, and Plant Layout. With these additional courses and with the accreditation of the ECPD, the Board of Regents in 1951 approved a program leading to the Bachelor of Science degree in Industrial Engineering.

As a result of the growing recognition in the field of Industrial Engineering, the department of Mechanical Engineering was changed to the Department of Mechanical and Industrial Engineering in

1952. At the time this change was made there were 4 teachers in the Mechanical and Industrial Engineering Department who were primarily associated with Industrial Engineering courses. These teachers were Professor Gordy, Associate Professor Vines, Assistant Professor Steffy, and Instructor Page. About this time the titles of these teachers were changed to Professors and Instructors in Industrial Engineering rather than Professors and Instructors in Mechanical and Industrial Engineering. Thus Professor Gordy became the first full professor of Industrial Engineering at the University.

The program in Industrial Engineering in 1952 consisted of two options, "A and B." "Option A" could be defined as the field of planning, job specifications, job evaluation, time study, motion study, rate

of existing in the plant in the industry using the most efficient methods in which labor strives to give the utmost instead of taking action to limit production. Also, that high wage rates can be paid when production per worker justifies them.

"Option B" was intended to meet the need of those students whose interest lies in the field of manufacturing operations and methods. It includes the study of such processes as casting, forging, rolling, die casting, stamping, molding, machining, and the related functions of production planning, factory layout, processing, jig fixture and tool design, estimating for production, and inspection. Fabrication of material into finished parts was stressed in this option.

In the fall of 1955 Wyeth Allen came

appeared. At this time there was set up an independent Department of Industrial Engineering with its own budget and Professor Allen as Chairman (he has also remained as Chairman of the Mechanical Engineering Department).

The summer of 1956 produced many changes. Early in the year the University of Michigan and Waseda University in Tokyo had signed an agreement sponsored by the International Cooperation Administration of the United States Government, whereby there would be an exchange of professors, and Michigan would help Waseda set up an institute for Research and Productivity. Professor Gordy and Assistant Professor Page, with their families, left for Japan in September on a two year assignment. Their teaching duties were taken over by three new men, Associate Professor James A. Gage, Assistant Professor Richard Berkeley, and Instructor Richard Wilson.

In the fall of 1956 a number of changes were made in the Industrial Engineering curricula; some Mechanical Engineering subjects were dropped and some of the newer Industrial Engineering subjects such as "Operations Research" and "Data Processing" were added. A very successful Operations Research Seminar for industrial executives was conducted in Detroit during the next year, and the extension course work of the department was considerably expanded. Several members of the Engineering Research Institute were used on a part time basis to handle this additional work.

During the past year there has been a continuous review and revision of all courses and the addition of some more new ones such as "Human Engineering." New textbooks have been adopted for many courses, and the whole program has been considerably strengthened.

Whereas most of the above applies to the undergraduate courses the graduate program has also expanded. In addition to the normal number of graduates on campus this year the department has started in connection with the Extension Division a series of courses leading to a Master's Degree in Industrial Engineering. There are eighteen men in a class at Flint. As a matter of historical interest, the first Ph.D. Degree in Industrial Engineering was received by Mr. Robert C. Carson, Jr., in 1953. Dr. Carson is now Associate Dean of the Engineering School at the University of North Carolina. The Industrial Engineering student population has increased from 98 in 1952 to 260 in 1957, and it would seem that this steady growth will continue.



Students in Industrial Engineering time and motion study class perform a time study under the professors supervision.

setting, incentive payment, plant layout, materials handling, production control, quality control, inventory control, employee rating, order procedures, packing and shipping, materials, salvage and waste reduction, and maintenance control. In explaining these functions of Industrial Engineering, Professor Gordy emphasized, on numerous occasions, that the real industrial engineer is an enthusiast about the need for producing industry's goods and services at the lowest possible cost. He further subscribed to the philosophy that high wage rates had the best chance

to the University as Professor of Industrial Engineering and Chairman of the Department of Mechanical and Industrial Engineering. For several years prior to coming to the University he had been the President of a large manufacturing company and before that was for many years the head of his own consulting management engineering firm.

At the end of the spring semester in 1956 the Department of Production Engineering was absorbed into the Mechanical Engineering Department, and "Option A" and "B" of Industrial Engineering dis-