

. . . ENGINEERING MECHANICS

by Professor RUSSELL DODGE

Although one of the smaller units of the College, Engineering Mechanics is steadily increasing in scope and enrollment.

We quote from the minutes of the Meeting of the Engineering Faculty, July 11th, 1911:

"Present—

President Hutchins, Professors Cooley, Campbell, Ziwet, Lorch, Hobbs, Allen, Guthe, Anderson, Glover, Greene, Wait, Goulding, White, Tilden, Ford, Smith, Pierce, Running, Field, Bragg, Henderson, Ellis, Moyer, Bursley, Parker, Zowski, Bird, and other members of the Faculty.

The reading of the minutes of the past meeting was omitted.

The following resolution was presented from the Standing Committee:

July 19, 1911

To the Faculty of the Department of Engineering:

At a meeting of the Standing Committee July 8th, 1911, the following actions were passed:

1. It was moved and carried that it be the sense of this committee that the Faculty of Engineering recommend to the Regents to establish a department of Engineering Mechanics.

(Signed) H. J. Goulding,
Acting Secretary

It was moved and carried that resolution No. 1 be adopted and that the Board of Regents be asked to put it into immediate force."

Then followed a second motion approving a committee report which im-

plemented the change, showing how the new courses were to be placed in the several curricula. A minority report was rejected and the report was adopted by the faculty and approved by the President with his signature affixed.

By this action the "Department of Engineering and Architecture" took a then bold step forward in engineering education by placing the teaching of theoretical mechanics in the hands of a special group. At the same time it adopted a new title, Engineering Mechanics, for the general area, a name now generally accepted and just recently has been adopted by several schools to designate programs and departments.

Although the action of the faculty seemed smooth enough, the presence of the President, his unusual signature of approval, and the minority report, hint that the birth of the new department was not without pain. It was in fact preceded by two years of discussion in which men of strong convictions opposed and advocated the action. Only an old grad will realize that those present at the meeting constituted an august group. But the very old grad probably will also believe that the change was brought about by the students' difficulties with a course known as S and R, Strength and Resistance, now better known by a popular misnomer as Strength of Materials. He may still believe that it was not a great French

Professor Dodge received his B.S. in Civil Engineering and his M.S. from the University in 1916 and 1917 respectively. Since 1921 he has been a member of the engineering faculty here and was made a full professor of Engineering mechanics in 1921. Until recently Prof. Dodge was Chairman of the Departments of Engineering Mechanics and Engineering Drawing. Now as Chairman of Engineering Mechanics alone he will better be able to devote his full attention to the advancement of this field.

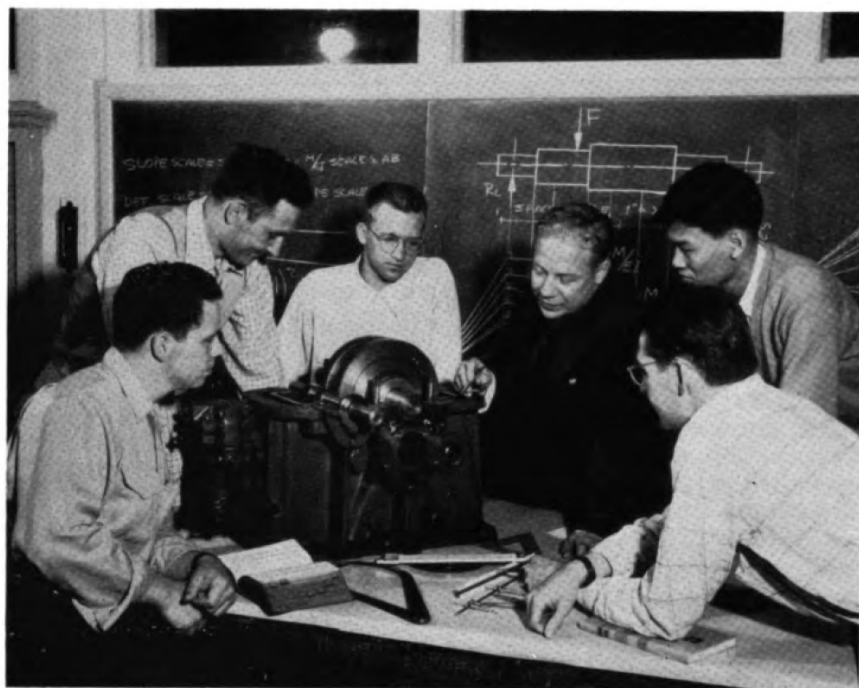
Some of the many organizations of which he is a member include Tau Beta Pi, Phi Kappa Phi, Sigma Xi, ASEE, and ASCE. He has done considerable consulting work on construction and design of sewage systems, drains, and water works.

marshal but teachers of S and R who first used the motto, "They shall not pass." Those who knew these men will stoutly defend them as strong men, earnest and sympathetic teachers, but demanding.

It seems fair to believe that the creation of the Department of Engineering Mechanics was merely the response to an established need, a progressive movement led by a forward-looking dean, but accompanied by misgivings like nearly all such changes.

In his communication to the Regents, Dean Cooley said, in part, ". . . there has grown up the belief, now general in the Department (College) that it is too much to expect of a group of men, all special-

Getting a little help on a problem in design.



ists in one branch of engineering, to present the several subjects in applied mechanics in a manner best suited to the varied needs of the Department, (College) made up, as it is, of a large number of branches in engineering.

Applied mechanics is fundamental to all branches of engineering, but some branches require a more extended treatment of portions of the subject than others. . . . It is therefore, proposed to embrace in engineering mechanics the courses required by all students alike, leaving each department to supplement the general courses along a desired line; or, if preferred by any department, there will be offered under engineering mechanics additional courses to meet the special needs of that department.

In this way two important objects will be accomplished: First, the keeping together of all the students of the different branches for a longer period, and in consequence, a greater homogeneity in the Department (College); . . ."

The foregoing words of Dean Cooley, urging the establishment of a Department of Engineering Mechanics, seem nearly as appropriate today as ever.

The uninitiated student or the lay reader will understand the position of engineering mechanics in the field of engineering much better after a brief description of its content. The term mechanics when used by a physicist refers

to a division of science which deals with laws governing mass, motion and force. The expression, Engineering Mechanics, is used to designate the same scientific material when expanded and rearranged to emphasize its relation and application to engineering problems. The subject embraces a large quantity of scientific material which is based on physics and mathematics and which, in its elementary phase, occupies a place in the curriculum between those two subjects and engineering design. It is understandable that most engineers think of mechanics as the modicum of material to which they were exposed as undergraduates. Actually the subject is as broad and as deep as one wishes to make it and its boundaries are quite undefined.

In 1929 the Faculty and Regents pioneered again when they authorized a program leading to the degree of BSE, Engineering Mechanics, and the degree was granted for the first time in June 1930, to one man. Since then there have been many, but only a handful each year.

The graduate program has existed from the beginning and many more advanced degrees than bachelors degrees have been granted. The first of these was appropriately the doctorate awarded to Jan A. Van den Brock, now Professor Emeritus, in 1918. The next was in 1928, and since then there has been a steady output of masters and doctors. All of these seem

well satisfied with their choice. Although the graduates have entered many fields of engineering and business, the greatest impact has been made on the teaching profession and the Department of Engineering Mechanics is particularly proud of the comparatively large number of outstanding engineering educators numbered among its alumni. These men and the many more who have gone into industry, research, and management have demonstrated that mechanics is an excellent preparation for any line of technical endeavor. To name a few of these or to name a few of the teachers would be unfair to the many. Hence, for a complete history, the reader is referred to "A Century of Engineering Education," University of Michigan Press, 1954.

The engineering graduate of today may find himself eventually in almost any conceivable line of work. Even after one has decided to enter a conventional professional division it is impossible for one to train for all types of employment. He can scarcely anticipate the future educational needs even for well defined specialty. For that reason many feel that acquiring a strong basic training is one of the best ways to prepare for the wide variety of responsibilities which may come and to keep the doors open to future opportunities in many fields. The program in Engineering Mechanics is designed to provide that basic training.