

drafting rooms and sales offices. A contract is signed by the student, the University and the firm. This contract has a blank space to be filled out with the shop work the student is to receive during the six years of the course. In all cases the Dean of the engineering college and the professor of electrical, mechanical or chemical engineering, as the case may be, confer with the manufacturers in planning this course of shop work, so that the students get a logically and carefully arranged shop and business training.

There is no Co-operative course in civil engineering.

Students are paid for their services while in the shops on the following scale of wages:

For the first period*.....	10	cents per hour.
For the second period.....	11	" " "
For the third period.....	12	" " "
For the fourth period.....	13	" " "
For the fifth period.....	14	" " "
For the sixth period.....	15	" " "
For the seventh period.....	16	" " "
For the eighth period.....	17	" " "
For the ninth period.....	18	" " "
For the tenth period.....	19	" " "
For the eleventh period.....	20	" " "
For the twelfth period.....	21	" " "

The University expenses for tuition and laboratory fees are about as follows:

First year.....	\$90 00
Second year.....	80 00
Third year.....	65 00
Fourth year.....	65 00
Fifth year.....	65 00
Sixth year.....	65 00

Total..... \$430 00

The total earnings for the shop work approximate \$2,000 for the six years.

Students desiring to enter this course are required to begin work in the shops on or about the first of July preceding their entrance to the University. Their admission to the University in September is in a measure dependent upon the character of work they do during this probationary period from July 1 until the college opens.

The entrance requirements for this course are precisely the same as for the regular four-year course. The theoretical work given at the University is exactly the same as the work given in the regular four-year courses except that it is given over a period of six years.

The number of positions is limited each year and an announcement will be made on or about the first of April of the number of openings for student-apprentices in this course.

THE MANUFACTURERS' VIEWS.

This system of co-operative education was inaugurated by the University of Cincinnati and the Cincinnati branch of the National Metal Trades Association. The University Proposed the plan to the manufacturers and the manufacturers were interested. Their attitude towards the proposition at the time is well expressed in the words of Chas. S. Gingrich, M.E., of the Cincinnati Milling Machine Co., in an address before the Society for the Promotion of Engineering Education:

"The manufacturers of my city have for some time past been face to face with the very serious problem of getting the right kind of men. Our industries are diversified,

including machine tool, steam pump, steam engine and electrical shops. The machine tool industry predominates. We are rapidly becoming known as the chief machine tool manufacturing centre of the country, but we need more technically trained men in the further development of this industry. It is our good fortune to have the University of Cincinnati centrally located among us. When it proposed to us Professor Schneider's plan of a Co-operative Engineering Course, it appealed at once to the business sense of each individual manufacturer. The plan looked attractive from the business standpoint. It promised us an immediate supply of boys of a much higher grade than those who take up the regular apprenticeship. It held out the prospect of our getting, in a few years, engineering graduates with practical shop experience. We have all tried to give a shop training to young men from the colleges, but it is never entirely successful. A man who has put in four years of his young manhood getting a university education cannot get into the shop atmosphere even if he does don overalls and work at the bench or run a machine as a regular hand; such men have passed beyond the age and experience at which boys freely ask questions and learn quickly all those little details which are such an important part of the training and experience of shop men. They feel that they cannot afford to be laughed at. They do not want to expose their ignorance. Therefore they get at best only a very superficial knowledge of what is going on inside of the shop."

This attitude made it possible to arrange with the manufacturers of the city in all sorts of mechanical, electrical and chemical industries whereby the co-operative student is put into the shop as an apprentice in the way outlined in the plan. The plan has the united and enthusiastic support of all the manufacturers.

NO OPPOSITION FROM LABOR ORGANIZATIONS.

There has been no opposition to this system from the labor unions. The judgment of the labor leaders in the city showed them that the plan provided opportunities for the sons of workingmen; and therefore it was for them to support and not to oppose.

WHAT THE UNIVERSITY PRESIDENT SAYS.

Chas. William Dabney, President of the University of Cincinnati, says:

"The great advantage of the co-operative plan is that it gives an opportunity to test the candidates fitness for the profession in the beginning."

"For the present our standard is that of the best engineering colleges—sixteen units—including all the customary mathematics, liberal studies, elementary sciences and modern languages. If so accepted the young man is put in a factory the 1st of July and works as a regular apprentice under the observation of the superintendent of the shop and our supervisor throughout the summer months. He usually finds out very soon for himself what he is fit for; if he does not the superintendent and the supervisor do. When the college opens in September, the young men to be admitted finally have been selected and paired up for the factories. The result of this test is a class of students superior in physique, mind, energy, initiative, and 'engineering sense.' Naturally and unconsciously they do at least twenty-five per cent. better in the college classes than other engineering students. Their attitude is entirely different. Others need to be led if not driven; the co-operative students come nearer leading their teachers than any we have ever known. They are keen to know the application of everything taught, but are still appreciative of the cultural studies."

*A period is approximately 990 hours.