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THE VALUE OF ENGINEERING TRAINING.

The resumption of technical instruction in the universities this week brings into touch with engineering courses a large and increasing number of men, among whom will be engineers of the future. The fact that engineering, although one of the oldest of the arts, has only within the past generation or two become generally recognized among the learned professions, makes it somewhat difficult for the student in engineering to choose between the courses which the calendar presents. There are no regulations existing such as are common to the oldest and most widely recognized professions, the scope and prospects of which are generally well defined. The field of engineering has broadened so much during the past twenty-five years that it is no longer possible to say just what it includes or excludes. It has no hard and fast lines of limitation, nor yet are the lines of division between its various branches quite distinct.

In the case of the three more important branches, viz., civil, mechanical and electrical, into which it has been frequently found convenient to roughly sub-divide the scope of the profession, there is often a considerable amount of overlapping, especially in the case with mechanical and electrical engineering. The boundary line is very indistinct, and it is difficult to say to which branch of the science many phases of development work belong. For instance, the mere replacement of a steam engine by an electric motor to drive the main shafting of a plant can hardly be called a piece of electrical engineering; but if special electric appliances are introduced to perform duties which cannot be done, or not done as well, by purely mechanical machinery, we have electrical engineering in the true sense of the term. The two branches are in many respects, upon the same general footing, nevertheless, and the majority of principles upon which the university courses are based, apply equally to both branches.

It will be readily noted, however, that while mechanical and electrical engineering have much in common they differ entirely from civil engineering. In this branch every new undertaking of any magnitude involves entirely new conditions, and introduces unforeseen problems, each of which may have to be approached with little precedent for guidance.

Opinion in the past has been very divided as to the best lines on which engineering training should be carried out. Formerly a purely practical training was preferred, leaving the young engineer to pick for himself such knowledge as he was able, of the science underlying his profession. With its expansion, and the rapid application of technical science, theoretical training has been brought to the fore, more or less at the expense of practical training. At the present time engineering authorities are fairly well in unison concerning the advisability of alternate periods of technical and practical training, although opinions differ as to arrangement of the courses.

This policy also applies with force to the other branches of the engineering profession. Its importance is such that a man who is beginning a course in engineering should be conversant with the general evolution of the nature of the training which he hopes to acquire. From a knowledge of its history the necessity will present itself to him of keeping always in mind the fact that the university course does not turn him out an engineer; but that by the practical application of the principles which he acquires thereby he may be better enabled to become an engineer.