

(6) PRACTICAL TRAINING OF PROFESSIONAL ENGINEERS

133. So far in this section consideration has been given mainly to the academic aspect of a professional engineer's training. It is necessary to consider now the equally important question of practical training. Although adequate academic training is a basic necessity for an engineer, his is essentially a practical calling. Academic training is not an end in itself. It gives background, meaning, and system to the skills of his profession which an engineer will continue to acquire throughout his career.

134. The Committee is not directly concerned with all stages of practical training. It is interested to a certain extent in the training which traditionally ran currently with study. It has had to consider also whether any recommendations which it is making affect the carefully built up system of practical training of the British Institutions of Engineers. Moreover, the Committee's view that an increasing number of professional engineers should be and will be trained through the University schools of engineering implies that an increasing number of trainees will be taken from their working environment for up to four years. The diploma courses proposed in Section 12 at present require only one year as a full-time student, a break from industry that is relatively short. If for any reason it becomes necessary to extend the full-time period of the diploma courses then the question of separation from industry will have to be faced.

135. The engineering problems that will face the engineer after completion of training will rarely be found to be capable of statement in terms similar to those in which problems encountered during his academic training are expressed—that is, textbooks will not provide the required solution. Instead, the engineer must determine the problem and then seek its solution. This will usually depend upon the organization and methods used in the particular branch of industry with which he is dealing. In order, therefore, that the engineer may be equipped to handle such problems it is necessary that he receive a carefully planned practical training, so that he will be acquainted with the techniques of the trades with which he will later be concerned.

136. For this purpose the practical training should be planned along broad lines. The Committee considers that much of the present practical training is far too restricted in scope and that those responsible for the direction of training should correct this weakness and direct the practical effort of students into channels that are more useful to the future engineer. It is unnecessary that the trainee acquire any marked degree of manual dexterity at the various trades with which he comes into contact, but he ought to know the potentialities and the limitations of each. He must, however, be more than an observer of the activities of tradesmen and must actually perform a wide variety of trade operations. By so doing, and through his contacts with tradesmen, he will gain an insight into the processes of thought of men whom he may one day have to control, at a time when these men will be willing to discuss their problems with him.

137. There will be two groups requiring practical training—(a) degree students and (b) students taking the diploma courses discussed in Section 12. The period available for the degree student is nine months, which embraces vacation periods at the ends of the three professional years. The diploma student will have longer as his study is on a part-time basis, except for the third year. It can be assumed to be four years of 49 weeks each, a total of 196 weeks.

138. So much for general principles; the requirements for a satisfactory practical training may now be considered in further detail.

(a) CIVIL ENGINEERING

139. For many non-degree students practical training has been wholly confined to civil engineering works or office training, whereas degree students are required to spend six months in approved workshops. All students should be given a period of workshop training. For diploma students this period should be at least six months.