

102. There were 381 degree students in the two University schools of engineering during 1948 and there were 82 candidates for Institution membership examinations, a total of 463. The plan therefore makes no fresh demands and, in fact, gives some relief from a difficult situation.

103. Sufficent has been said to indicate that the plan outlined above is possible of achievement, though there may be room for doubt whether sufficient graduates can be obtained. Something ought to be said about the inception of the plan. In the ordinary course the recommendations of the Committee, if implemented, could not be fully effective until five years hence. Some of the improvements suggested will bear fruit earlier. Fortunately, however, the influx of students during the war years, which has created many problems, is already providing numbers equal to those set out in the plan. It is therefore virtually in operation to-day.

The Committee recommends :—

RECOMMENDATION—

That the number of professional engineers be increased to 850 per million of the population in ten years time, and thereafter, as opportunity offers, to 950 per million during the following fifteen years.

9. BY WHAT WAY SHOULD A PROFESSIONAL ENGINEER QUALIFY ?

104. The question of how a professional engineer should qualify is one that the Committee has asked a number of witnesses ; it was asked not so directly in the questionnaire referred to in Section 8 ; and it is a question which members have been asking themselves and each other. It is fundamental to this inquiry. It is not likely that there is any one answer that would cover all circumstances or satisfy every one.

105. In a discussion of this question there are three fundamental aspects to be covered. First to be considered is the education which the prospective professional engineer should receive at the post-primary school stage—that is, as a pre-requisite to entry to the profession. Next there is the academic training during the professional course, and, finally, there is the practical training in his chosen calling.

(1) PRE-REQUISITE EDUCATION

106. A good deal of evidence was heard by the Committee about the qualifications desirable for entry to the profession. It was interesting to note that the majority of witnesses from the ranks of professional engineers expressed themselves in favour of a broad general education and so were in agreement with the views of the New Zealand Secondary Schools' Association, which was opposed to early specialization.

107. The principle underlying the opposition to early specialization is, of course, that the broader the education the further a student can go. There is no doubt that, in the professions at least, for the man who will reach the top, the longer his general education can be continued the better. Professional knowledge rests more easily on a broad base of general culture. Although an occasional specialist reaches great heights with a relatively restricted education, the general concept is of a broad pyramid rather than of a narrow spire. There would be general agreement with this principle. The difficulty, of course, is to decide in any particular case how broad the base should be, and, because students cannot be taught individually, some average base has to be found which suits the majority.

108. Without drawing invidious comparisons, it is perhaps true to say that in the past secondary schools have tended to attract a great proportion of those for whom the base should be wide and the technical schools a large proportion for whom the base might well be narrower. Both types have, of course, a large number of students of average ability. The secondary schools have frowned on what may be termed vocational specialization. The technical schools, which have the facilities necessary to