

forward who want to be professional engineers. At least some of those who do offer will be of only moderate ability. It is probable, therefore, that a lowering of standards would result if the University schools of engineering attempted to cater for all entrants to the profession. It seems clear that for some years to come other methods of qualifying must be left open and, where necessary, improved upon. The principal steps which the Committee proposes to take in this direction are set out in Section 12, which is an elaboration of the following recommendation.

#### RECOMMENDATION—

*That for some years a proportion of professional engineers should be trained by means of courses leading towards Diplomas in Professional Engineering.*

#### (b) THE UNIVERSITY SCHOOLS OF ENGINEERING

125. While not even the staunchest supporters of the traditional form of training would go so far as to suggest that no engineers should qualify through the University, there are some, however, who consider that all engineers should qualify in this way. Some of those who favour the method of entry via the University do so wholeheartedly. They regard other ways as second-best methods which have become out of date and which can be accepted, if at all, only by making a virtue of necessity. The New Zealand Institution of Engineers has the following in its evidence :—

The Institution's Committee on Engineering Education and Training is well aware that there exists a section of thought holding that qualification in engineering should be exclusively by University degree. This opinion has indeed been debated and deliberated upon at great length, and the opinion of sub-committees in the various centres sought and co-ordinated to ensure that the Central Committee's final conclusion on this aspect should be truly representative of engineering thought in the Dominion.

However praiseworthy the principle of exclusively University preparation may be, the Institution's Committee has been obliged to realize that conditions rule out such a possibility at the present time. The considerable expansion of University buildings called for, one factor alone, is obviously outside the realms of possibility for some time to come.

126. There was considerable evidence from people of standing to leave no room for doubt about the truth of the first sentence in the quotation. The figures in the questionnaire show the increasing number of graduates period by period, until to-day approximately 42 per cent. of all engineers are graduates. There are more vacancies for graduates than for Institution members, and this increase is reflected in the figures for 1953, when it is anticipated that there will be 48 per cent. of graduates if they can be made available. This means that the proportion of graduates among those entering the profession must be considerably higher.

127. The arguments of those who favour training via the University may now be summarized. The increasing complexity of the demands now made on professional engineers is such that it is no longer possible, if it ever was, for engineers to have a detailed knowledge of all of the problems which they may encounter. Conditions are changing rapidly, and adjustment to these changing conditions can be adequately made only by men who have a broad and profound knowledge of the basic principles in mathematics and the physical sciences on which all branches of engineering depend. This knowledge of the fundamental principles can be gained only within the atmosphere of a University. Perhaps because of the attitude adopted by the University towards broad principles, it attracts within its walls a highly-qualified staff, each of whom by specializing in his chosen field acquires an outstanding knowledge of that field. At the same time the University lecturer is constantly able to refresh his teaching by day-to-day contact with gifted specialists in other faculties.

128. There are many other advantages in taking the degree course quite apart from the calibre and the content of the tuition. The student does his study while the knowledge which he has acquired at the post-primary school is still fresh in his mind.