81. The Committee thinks that, though there is a continually increasing demand for professional engineers as industries develop, the above forecast of future requirements must be regarded with some reserve. The difference between the present inadequate figure of 630 per million, and 935 per million in five years' time seems too great to be accepted without further evidence, but in any case it would be virtually impossible to bridge the gap over such a short period. Even if it could be done, there are considerable drawbacks to attempting such a plan. The school population in the higher forms of our post-primary schools is not likely to increase materially for another ten years. Continued enrolment of engineering students at a high figure is therefore unlikely to be possible. If it could be achieved it would tend to defeat its own object through the greater proportion of failures that would occur. Moreover, once the shortage had been overcome it would be necessary to reduce the output very considerably. Violent fluctuations of this kind are disturbing and inefficient at the time, and by creating similar difficulties in, say, thirty to thirty-five years, when large numbers would retire over a short period, they tend to perpetuate themselves. There is, too, always the danger that changing economic conditions might result in supply overtaking demand with very large numbers of students still undergoing training.

82. A long-term plan is therefore much to be preferred, designed to overcome the shortage within a reasonable period and providing automatically for a gradual increase in the proportion of engineers per million of the population. There should be sufficient flexibility to allow for an increase in the number completing training if altering conditions make this necessary: and, if possible, the number in training during the plan should be related as nearly as may be to the output which will be required when shortages have been overcome and conditions become stable.

83. The details of such a plan are set out later in this section. At this stage it may be stated that the Committee, after taking into account all the above factors and the figures available showing the proportion of professional engineers in other countries, considered that the number should be increased not to 935 per million in five years, but to 850 per million in ten years.

(6) OUTPUT OF PROFESSIONAL ENGINEERS TO DATE AND ANTICIPATED IN THE FUTURE

84. Over the ten-year period 1928–37 (both years inclusive) the total number of engineering graduates was 213, an average of 21·3 annually. Over the ten-year period 1938–47 (both years inclusive) the total was 215, or 21·5 annually. The first period covered included the depression, when not many students could afford to take a B.E. course, and the second period included a period of war. In 1947, the last year of the second period, there were 55 graduates. The increase is largely on account of the return of servicemen with partially-completed courses. There were 74 graduates in 1948, and in 1949, which will be the peak year, there should be as many as 100. After that there will be a drop to about 75 graduates. The numbers may stabilize at something approximating 55 graduates a year without any special action being taken, but it is too early yet to forecast this with any certainty.

85. The numbers of students qualifying for Institution membership have also to be taken into account. Figures have been supplied to the Committee by the New Zealand representatives of the British Institutions, who point out, however, that the raising of examination standards robs the figures of much validity for our purpose. These figures, too, have been affected by the war.

86. Institution candidates do not complete their qualification until they pass in Section C. Section C is, however, taken by degree students so that, in order to exclude them, it is necessary to consider the figures for Section B. Table C shows the position for the last three years. The figures in the Mechanical Branch are estimates, while those showing the approximate total number of students studying Institution examinations beyond the Common Preliminary are taken from the results of a questionnaire sent out by the New Zealand Institution of Engineers.