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Education for the Engineering Industry.\*

THE triumphs of engineering science and technique are reflected by every development of modern civilisation, and further development will depend, to a large extent, upon the continued supply of qualified and capable engineers. Here, then, is constituted a need which must be provided by engineers and educationists of to-day. It depends on them whether the engineers of the next generation shall be trained and educated in a manner suited to the importance of their calling.

The import of this has been realised in some quarters for a considerable time. In 1928 the Engineering and Education Sections of the British Association held a joint discussion upon "School, University, and Practical Training in the Education of the Engineer". Later in the same year, the President of the Board of Education appointed a Committee to inquire into technical education for the engineering industry. The detailed and thorough nature of this investigation is shown by the Committee's report, which has been recently published by H.M. Stationery Office under the title "Education for the Engineering Industry".

In effect, this report is the expression of a general consensus of industrial opinion, and as such deserves careful consideration. The tendency to direct attention to the practical or works executive side, almost to the exclusion of the office or administrative side, should be noticed. Also, in accordance with the Committee's terms of reference, the report is, in the main, a review, interspersed with many valuable suggestions, but with no definite schemes for the amelioration of the evils noted. To those interested in the subject, this last fact must cause real disappointment, for one cannot but feel that, if the duty had fallen within the scope of such a strong committee, some decisive and practicable schemes would have resulted. Such recommendations would have received widespread and most careful attention.

Considerable emphasis is brought to bear upon the subject of recruitment, and it might be well to review the sources of supply as reported. About ninety per cent of the recruits come to the industry straight from the elementary school at the age of fourteen years; of the remainder, the majority probably come from junior technical schools at ages ranging from fifteen to sixteen years, while a smaller

\* Education for the Engineering Industry. 1: Report of the Committee on Education for the Engineering Industry; 2: Comments on the Report by Education Bodies. Pp. vii+67. (London: H.M. Stationery Office, 1931.) 1s. 3d. net.

proportion are recruited from secondary schools at ages from sixteen to seventeen years. This neglects the comparatively small number received from universities and technical colleges.

From the report, it would appear that, in general, recruitment is still carried out in a fashion quite haphazard, with little or no discrimination between the various types cited. This alone renders the problem of subsequent training most difficult for all but very large industrial concerns, since no clearly defined regulations exist to guide individual firms. Surely, as was suggested at the British Association in 1928, a standard national scheme of apprenticeship could be set up—a scheme which would be readily adaptable to suit the distinguishing features of at least the three main grades of recruits. This is vitally an industrial concern; and that such an obvious opportunity should have passed unheeded forms a fit subject for regret.

Industrial opinions on the merits of the three types of recruit are interesting. The elementary school type is labelled satisfactory, with the caution that intelligent selection, preferably from central schools, is advisable; the junior technical school type would appear to have found unqualified approval; and recruitment from secondary schools is considered intrinsically sound. Regarded as types, the first evidently finds least favour, but as the other two sources of supply cannot hope to cope with the demand, the problem of improving the general personnel of the engineering industry must centre in the betterment of the elementary school type. This is in itself a task. At the outset it must be realised that the majority of this section are not likely to profit by any serious degree of technical education. Their subsequent learning, then, must consist almost entirely of purely descriptive work, with the aim of improving their ideas of the industry in particular and their outlook upon life in general. The progress made during this course of descriptive work would readily indicate the minority capable of further advancement. These remarks may, to a large extent, apply also to the junior technical school type of recruit. The explanation of the favour bestowed upon this class may well lie in the fact that, in effect, these boys are highly selected; the slight vocational bias in their training, even if it has no lasting effect, will certainly facilitate proper selection.

The secondary school boy falls into quite a different category. He is usually the pick of the elementary school type, advanced by a few years of higher education, and generally capable of assimilating a fair degree of technical instruction.

Unfortunately, in the report, he is all but maligned for showing a distinct preference for so-called 'black-coated' positions. Assuming this to mean a preference for the office and, ultimately, the administrative side, is it not a quite natural tendency? Surely a certain incompatibility exists between higher education and manual labour. A good grounding on the practical side is undoubtedly necessary for those aspiring to administrative posts, and apprentices with this aim in view will not object to gain their experience in the workshops. On the other hand, perhaps the most progressive suggestion of all in this report concerns this class of recruit. It is proposed that the period spent at school between the normal age of entry to apprenticeship and actual entry should be treated as part of the apprenticeship period. It is also of interest to note that vocational training in secondary schools is not advocated; this conforms to general academic opinion.

Regret is expressed at the divorce of men with high technical qualifications from the practical side of the engineering industry. Such a situation is, however, not surprising if the note appended to the report by one of the members of the Committee is a true indication of the feelings of employers. He states that he does not think that the average employer in general engineering works of Great Britain would be likely to train university students and afterwards offer them positions in productive departments. No reasons are given. Is this further evidence of the persistence of that old reluctance of the industrialists to admit the need for technical training? It is surely fundamentally right that the higher posts in industry should be filled by well-trained men. How one can hope to become highly trained in these days without attending the university or technical college is difficult to understand.

Finally, the admirable part of the report is that in which concerted action between industry and college, extension of part-time education, active encouragement for the boy with ability, and rational methods of promotion are all enthusiastically recommended. Here we have evidence that these subjects are at last receiving sincere attention. It is, however, unfortunate that no schemes are drawn up to show how these desirable objectives may be reached. It can only be hoped that these recommendations will receive the immediate attention of all to whom they are directed. Here the valuable suggestions appended to the report by Mr. A. E. Berriman might well serve as guidance for a definite line of attack.