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Technical Education and Industry.

If any apology were needed for our return to the third volume published by the Committee on Industry and Trade,¹ we would refer our readers to the articles and reports dealing with education and industry which have appeared in our columns during the last two years or so. If those articles and reports be carefully scrutinised, it will be seen that we have attempted, very deliberately, to show not only the necessity, but also the origins, directions, and even deflexions of the rapidly growing tendencies towards a scientific view of education in relation to the structure of modern society. We venture to suggest, too, that our interpretation of the term 'scientific education' has been wide and liberal enough to satisfy the most suspicious guardian of the delectably elusive qualities which are covered by the word 'culture.' Perhaps at another time we shall demonstrate the possibility of realising some of the classical ideals which are still inherent in the life of a community developing under an apparently grey and formless industrialism. In the meantime, the attitude of the present volume towards technical education has a special attraction from the point of view of its significance to the educational movements we have been observing.

Whatever may be our notions of the contributions which are made towards the solution of the problems before the Committee, we believe that its attitude towards the relationship of technical education to industry will do much to strengthen that relationship, and so aid, not only in the industrial reconstruction which lies ahead, but also in the general intellectual progress towards a less anomalous civilisation than exists at present.

It would be easy, perhaps, to criticise the chapter on technical education on certain grounds, the chief of which might be that it is based upon memoranda supplied by government education departments, and that it presents the usual shortcomings of memoranda from such sources, namely, a certain timidity and a platitudinous repetition of possible improvements. But it must not be forgotten that what is platitudinous to the expert may be illuminating and inspiring to the layman; and this volume is primarily for business men rather than for educationists. The charge of timidity, too, loses much of its power when we read the Committee's warning that the volume "is not concerned

¹ Committee on Industry and Trade. Factors in Industrial and Commercial Efficiency: being Part I. of a Survey of Industries. With an Introduction by the Committee. Pp. v+544. (London: H.M. Stationery Office, 1927.) 5s. net.

with recommendations. Its aim is to assemble and analyse facts and tendencies, and by so doing to narrow the range of economic controversy and prepare the way for the intelligent study of the problems by which British industry is confronted."

Three necessities are, however, made clear : expansion of the scope and number of technical classes ; the better adjustment of their relationship with industry ; and the constant need to adjust the relations of general and technical education.

Further, if the Committee does not profess to give detailed recommendations, its survey of the present relationship of technical education to particular industries, and its suggestions as to possible improvements, will be greatly helpful to any national industrial organisation, group of employers, or individual employers. Clearly the Committee is doubtful whether full co-operation can be reached by local advisory committees alone. It realises that as yet there has been little serious study on the side of industry of the possibilities of a considered policy of technical school training for young employees ; and it is certain that substantial improvements could be suggested if each industry would survey, from its own point of view, the existing facilities, see what gaps need filling and what developments are desirable, take an active interest in the schools and give effective assistance to their conduct. That assistance could take many forms. Lectureships could be founded or subsidised where the public provision is inadequate ; grants to part-time teachers to help them to gain wider experience or to improve qualifications ; scholarships to promising students ; consideration of the methods of filling the more responsible posts ; consideration of the number of men needed annually, and the kind of qualifications they should possess ; allowance of 'time-off' during working hours to students who have shown diligence and ability to profit by instruction in technical schools.

Three other serious weaknesses of the present system are indicated. The connexions between universities and technical schools are accidental rather than systematic, even though some technical institutions are of university rank and function as technical universities. Premises, too, are unsatisfactory, and work is sometimes conducted "under conditions which are tolerated rather than approved." Finally, the training of teachers presents a difficult problem. Obviously men of experience and skill in trades and processes they teach are essential. But more than such experience and skill is necessary if the highest results

are to be attained. Vacation courses have proved extremely valuable ; but these, in themselves, are not sufficient. By what other means can this vital problem be settled ?

The Committee's view of its problems is shown excellently in some passages which are worthy of reproduction :

"The vitality of modern industry, like that of an organism, is measured by its power of response to external stimulus and of self-adaptation to modern environment. Mobility (in this sense of the term) does not imply incessant and purposeless movement or change. . . . But it does imply the power of spontaneous reaction to changes in economic conditions and of internal modifications and rearrangement to meet such changes. . . . It applies to modes of preparation for industry and the right adjustment between the functions of school education and workshop training which demand continual modification and re-adaptation both to fit the changing needs of modern large-scale industry and to counteract some of the dangers of excessive sub-division of employments."

Following this line of thought, the Committee does not fail to observe that in our age of flux and transformation, no plan of educational development can be justified which does not maintain unimpaired initiative, flexibility of temperament, powers of adaptation and capacity for co-operation among all the partners in production and distribution. Such a view ought to show very clearly to those who may be fearful, that mere vocational instruction is by no means what the Committee understands by the term 'technical education.'

It would, after all, be too much to expect from a single committee—and particularly from a committee with such wide terms of reference—a solution of the delicate, far-reaching, and many-sided problems presented by an attempt to examine the relationship of technical education to industry. It must not be forgotten that other bodies are also making their contributions to these problems ; and if we indicate only some of the activities which we have been observing, it will be sufficient to justify the remark we made above concerning "rapidly growing tendencies."

The Board of Education's Consultative Committee has presented its report on the education of the adolescent ; a Committee on Education and Industry (under Mr. D. O. Malcolm) has presented the first part of its report, and is preparing the second part ; a Ministry of Labour Inquiry into the general question of apprenticeship is not yet completed ; the League of Nations recently held a conference on conciliation in industry, and will shortly continue that conference at Geneva ;

finally, the committee brought into being by the many learned and professional institutions and teaching associations under the chairmanship of the late Lord Emmott, is now in the stages of compiling its report on the relationship of technical to other forms of education and to industry. When such activities are reviewed the importance of the present volume may be rightly judged, especially when it is recalled that the President of the Board of Education informed a deputation of the Emmott Committee, last May, that not until he had before him the reports of at least four of these bodies could he begin to formulate the changes which may be immediately necessary.

The contribution of the present volume, too, falls further into its place when we note that it divides its educational problem into three main parts: industrial output is not a mere question of volume, but depends essentially on quality; under modern industrial conditions the relative range and potency of apprenticeship have tended to diminish; school education before entering, and concurrently with, employment has increased in importance.

There is not yet any consensus of opinion, however, as to the mutual relations and limits of workshop training and school education, looked upon as complementary factors. In making its surveys of technical education and apprenticeship, the Committee hoped to be "of assistance in arriving at clearer views on this vitally important question." That the volume achieves that object is beyond all doubt.

Politics as a Science.

The Science and Method of Politics. By Prof. G. E. G. Catlin. Pp. xii + 360. (London: Kegan Paul and Co., Ltd.; New York: Alfred A. Knopf, 1927.) 12s. 6d. net.

THIS is an able and interesting volume, in which there is at once great learning and considerable power of speculation. Prof. Catlin has an important thesis to maintain, and his urbanity of manner will not conceal from the reader that he is prepared to maintain his ground against all comers. The field, indeed, is already, as if in advance of conflict, strewn with the illustrious dead; at least I seem to discern there the scalps of Plato and Aristotle, Kant and Hegel, exposed as a warning to prospective combatants.

In a sense, Prof. Catlin's book is difficult to review; for it is to be followed by a book already in preparation in which the thesis he here lays down is to be applied to our problems. Obviously,

therefore, we shall not fully know what the method he advocates can do until he himself has applied it; and conclusions upon his analysis must be provisional until he has given us the full opportunity to see it at work. But as I understand his views, his purpose is to construct a science of politics which shall seek to do for man in society what the early economists did for the phenomena they survey. It will be abstract and deductive; it will have its axioms and postulates; and the test of its validity will lie in the verifiability of its predictions. Such a science, he argues, must free itself from the shackles which the historian and the philosopher have sought to impose upon it. For values it will have no concern. It will be concerned only with the observed behaviour of men. Assuming that there is a political man with the appetite for power, it will seek to construct the laws of his behaviour in adjusting means to purpose. With right or wrong it will have no more concern than the chemist with the moral qualities of hydrogen. It will be quantitative in character in that, upon the basis of its assumptions, it will seek from observation the largest possible number of examples from which to draw its conclusions. Having made abstraction of ethics, it will be able to approach the facts without a *parti pris*; and, instead of offering futile sacrifices upon the altar of teleology, it will be able to say (p. 199) that the "social situation only admits of certain appropriate measures." For studying what men do, it will be able to tell us what they will do; between the two Prof. Catlin injects a formidable *therefore*; and as this science of politics is refreshed by the constant accumulation of facts about the behaviour of men in their desire for power, as, also, such sister sciences as psychology contribute their due quota of knowledge, we may hope for the discovery of truths which will have value and influence of the same magnitude as those to which the economists have given birth.

There is an air of promising certitude about these propositions, which have at least the merit of interesting audacity; though I observe with a little surprise that Machiavelli is appealed as their benevolent compurgator. For if ever a man had a definite end in view (which, as a passionate Italian patriot, he would have regarded as ethical), if ever, also, a man selected his facts to suit the thesis his experience dictated as best suited to his end, that man was Machiavelli. Perhaps the best thing one can do is to indicate, though with appreciation, some of the doubts to which Prof. Catlin's argument gives rise. The victories of