SATURDAY, JANUARY 14, 1928.

CONTENTS.

Editorial and Publishing Offices:
MACMILLAN & CO., LTD.,
ST. MARTIN'S STREET, LONDON, W.C.2.

Editorial communications should be addressed to the Editor.
Advertisements and business letters to the Publishers.

Telephone Number: GERRARD 8830.
Telegraphic Address: PHUSIS, WESTRAND, LONDON.

No. 3037, VOL. 121]

Education and Industry.

"INTELLECTUAL forces are . . . broken and unco-ordinated. Stores of rich material and reservoirs of valuable experiences have been accumulated in national and local collections, and in the professional and other scientific and commercial associations. But the channels of communication . . . are scanty. . . . Each of some 140 local education authorities provides technical education suitable to its own local needs and limited by a generous or a parsimonious financial policy. Is the total effect a patchwork or an organic whole? Wasteful or efficient? . . . how can industrial organisations . . . and local industrial experience be brought into closer co-operation with those who provide the funds and control the schools and colleges? . . . Finally, there is left the question of which Central Authority is to direct the operations of the intellectual forces. . . . Some half-dozen government departments are engaged, directly or indirectly, in the application of education and research to industrial (including agricultural) problems. But there does not appear to be any minister in any department whose duty it is to see that these departmental efforts are duly co-ordinated."

These extracts from a recently published Report [1] give some indication of the problems which faced the committee responsible for its compilation. The Report falls into three main divisions. The first, from which we have already quoted, briefly summarises the history of the wide problem of education and industry. Inevitably it recapitulates the arguments and conclusions to which other bodies, dealing with similar tasks, have been forced; arguments which are so simple that it is a matter for astonishment that they should fail to be grasped and applied. Their base has been outlined in these columns over and over again when we have urged a revision of traditional educational philosophy. It is that within a relatively brief period we have passed from a non-scientific to a scientific age. The face of industry has changed: its conditions have radically altered; and these conditions and changes have had their reflection in the ordinary national life. "Life itself has been extended," says the Report. "The engineer, the chemist, and the medical officer have broadened the basis, protected our food supply, and safeguarded the public health. The statistician and the press register daily records of the temperature, the pulse, and the blood-pressure of national existence. Science has given us a new era."

The second division assumes a particularly high value. It is a report collated by the Federation of British Industries, and may therefore be regarded

[1] Report of an Inquiry into the Relationship of Technical Education to other Forms of Education and to Industry and Commerce. Pp. 50. (A.T.T.I. Offices, 29 Gordon Square, London.) 1s.

as the industrial view of the Committee's problems. Too frequently, when efforts have been made to bridge the gap between education and industry, has the charge been made that it is the prejudiced voice of the educationist which speaks, and not the voice of those daily in practical touch with industrial and commercial activities. This division of the Report to which we now refer is, we understand, solely the work of the F.B.I., and is the result of "replies of a number of Associations and also individual opinions of manufacturers in all trades throughout the country." At least in one respect it ought to destroy the notion, still cherished in some academic circles, that industry refuses to recognise its own weaknesses, and shelters them behind loud criticism of the educational system. For, although it does not fail to criticise "the incomplete nature of elementary education" and asks for closer consideration to the question of securing suitable teachers in technical institutions (here, indeed, another popular charge against industry is upset, for "it is suggested that the emoluments are in some cases not sufficient to attract those best equipped for the training of our technical school students"), it states quite frankly that a complete expression of industrial opinion is difficult to obtain, since, "generally speaking, there has been no formulated policy regarding technical education, and in many trades it has not even been considered."

Clearly, it is difficult for busy manufacturers to prepare detailed educational schemes for their individual business, and the very sensible suggestion is therefore made that a memorandum should be prepared "covering the main features desired in any technical training. This memorandum, being of a national character, could then be expanded by trades in consultation with the technical authorities into comprehensive courses." Although industry may regard itself as unable to give a complete solution to the educational problems it desires to have solved, there are two outstanding points in its contribution to the Report. First, in reply to the direct question, "Do you regard technical education as essential to the conduct and development of your industry?" the replies showed "an overwhelming body of opinion as to not only the desirability, but the absolute necessity of an adequate technical education." Then comes the suggestion, which shows clearly that no mere vocational training in separate processes is confused with the term 'technical education': to be complete, it "must envisage not only the technique of production, but also the selling and distribution and the interlocking of these three aspects with costing and other statistics leading to management and administration."

The third division of the Report consists of summaries of the answers received in reply to special *questionnaires* sent to local education authorities, technical institutions, and schools of art in England and Wales. Since these summaries embody the results of thirty-eight searching questions, space precludes any attempt to deal with them at length. It is to be noted, however, that the difficulty of recruiting staffs composed either of teachers experienced in industry who understand the art of teaching, or experienced teachers with a wide knowledge of industry, presents a special problem.

While advisory committees are the usual means of linking schools and industries, employers serve on many governing bodies, but employees (as such) rarely do so. This question of a stronger link was further emphasised when information was sought as to whether technical education should be organised by local education authority areas or by industrial areas (*e.g.* cotton, heavy chemical trades, coal mining, printing, etc.). The replies included such suggestions as (*a*) a joint board of local education authorities and representatives of industry (over industrial areas); (*b*) the centralising of teaching at new faculties of modern universities; (*c*) advisory committees; (*d*) central colleges for advanced courses (costs to be apportioned over the area served); and (*e*) inter-county arrangements. Obviously, however, the value of technical colleges as places of research is of vast importance in the further co-ordination of education and industry, and here the Report expresses astonishment at the rarity of any relationship with research institutes. There are, of course, outstanding examples, such as the close relationship at Manchester and Bolton with the British Cotton Industry Research Association; at Bradford and Nottingham with the British Research Association for the Woollen and Worsted Industries; and at Loughborough with the Iron and Steel Institute.

Much remains to be done, however, in this direction. Outside consulting work done by colleges helps to some extent, but that there does not appear to be any general method of its organisation, and that it is subject to varying conditions and regulations in different places, is shown by the dissimilar arrangements for the allocation of fees charged to authority and teacher. But the main obstacle to research appears to lie in the conditions of the Teachers' Superannuation Acts. "The

London County Council suggests that the reaction on both staff and students, of actual contact with works problems, is of considerable importance; that the arrangements in force regarding superannuation . . . makes official recognition of research impossible." The importance of this matter is shown strikingly by the fact that, prior to present regulations, this authority had in view the adoption of a rule making the carrying out of some research work by individuals a condition of employment. Not only in London is research appreciated. A "considerable amount is conducted" at Loughborough, and the "governors are anxious to develop" it; in Leicester it is strongly "encouraged"; "every facility" is afforded in Nottingham (University College); at Bristol (Merchant Venturers) it is "encouraged in all departments"; Bradford provides "ample facilities and every encouragement"; Hull Education Authority is "considering relieving staff from teaching duties to undertake research."

In spite of the valuable information which is presented by the Report, however, it is, at first sight, disappointing in that it puts forward no definite conclusions. Certainly, in a brief paragraph the essentially liberal qualities of technical education are emphasised, but no attempt seems to have been made to sketch out the kind of new educational philosophy which must, in view of our changing and complex modern life, take the place of the older traditions. Present relationships between technical schools, secondary schools, and universities are shown rather by implication than by definite clear-cut statement, and there appears to be no suggestion as to what should be the next step. After collecting such valuable evidence, the Committee seems content to submit "that the facts set out in this Report and in the documents which accompany it, justify its appeal for taking stock of the present condition of technical education, its relationship to general education, and, above all, of the obstacles to closer co-operation with industry."

We presume that this appeal is made to the Board of Education, and we are, of course, aware that already an influential deputation, led by Lord Gainford, and consisting of representatives of education, employers, and trade unions, has already presented the Report to the President of the Board, who has promised to see the Committee again after he has read it. But if the next move lies with the President, it becomes difficult to reconcile that with industry's view that "it would appear to be of very doubtful value to press for any further Government activity in the immediate future until efforts have been made to establish the closer relationship" of technical education and industry. Clearly, the Committee has itself established unique machinery; for we do not remember when, in the educational and industrial history of Great Britain, so many powerful bodies were drawn together to attempt the solution of this imperative question. We would therefore have expected that some suggestion might have been made as to how this present machinery might have been used to reach the ends desired.

When, however, we consider the history of this movement to link education and industry, we realise that the Committee may have done wisely in avoiding the temptation to map out definite schemes. The problem is so wide and far-reaching, and already some aspects of it have been discussed by the Hadow, Malcolm, and Balfour Reports. We recall, too, that when the present Committee submitted its purpose to the President of the Board of Education more than two years ago, the latter hinted that until he had before him the findings of all the committees concerned he would not be able to give any pronouncement concerning the steps which ought to be taken to accomplish the end all of them had in mind. The Hadow and the Malcolm Committees have already presented certain definite proposals. The Balfour Committee, like the present Committee, hesitated, in the first part of its industrial survey of "Factors in Industrial and Commercial Efficiency" (see NATURE, April 9, 1927, p. 517 *et seq.*), to make any definite recommendations. Its aim was rather to assemble and analyse facts and tendencies and so to prepare the way for further intelligent study of issues which are so supremely important to national well-being. Definite recommendations from various committees are apt to be mutually cancelling.

Still, there are now four reports available for the President of the Board of Education (our own comments on the Hadow Committee appeared in NATURE of Feb. 5, 1927), and we shall await with some anxiety any official pronouncement of their effect upon future progress.

In the meantime we congratulate the Committee responsible for the Report before us, not only on the collection of its invaluable evidence, but also upon its own unique constitution. We would emphasise that that constitution includes, in addition to all types of teaching bodies and learned and professional organisations, the Federation of British Industries and the General Federation of Trade Unions. Surely here is machinery which must not be allowed to cease functioning.