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Technical Education and Industry.

REPEATEDLY in these columns we have urged a revision of traditional philosophies of education. We have shown that, as a result of the transition from a non-scientific to a scientific basis of civilisation, vast powers have been placed in man's hands—powers by which life can be freed from unnecessary toil, and denuded of the harmful mysticisms, superstitions, and pruderies which cramp its social, political, and ethical qualities. Far from making recommendations which would tend to a system of education built merely upon an arid, mechanical efficiency, we have insisted that a knowledge of the truth of the natural world as shown through physics, chemistry, astronomy, and like subjects, and a knowledge of the truth of man's place and relationships in the scale of life as shown through subjects such as biology, is not incompatible with, but the sound basis of, an appreciation of beauty whether enshrined in literature, art, or an ordered state which understands race experience sufficiently to be able consciously to control its future experience.

So much for what might be called fundamentals. They may be regarded by an instinctively (and, in some respects, rightly) conservative academia as involving changes too sweeping to be practised until the present machinery of civilisation can absorb them. We agree that there may be something in the objection. We realise that the vast body of new knowledge which science has produced during the last twenty years or so and thrust into practical use in social, industrial, and commercial fields has not yet been grasped by legislators, teachers, and business men. We cannot avoid noticing, for example, the unconscious legal cruelty which may arise from failure to discern the dividing lines between the scopes of law, medicine, and sociology. Nor can we fail to observe how great issues which will shape the future are constantly fogged or misdirected by ignorance. The vast forces of science have not yet been co-ordinated and absorbed by the dominating operators of our social mechanism so that the community may reap the benefit. But although it is clear that, in spite of a recent suggestion, it is impossible to call a temporary halt in the world of science, we can sympathise with the view that its discoveries and implications must be more widely understood if order is to be brought out of the present chaos.

Obviously, the production of that order will be a slow progress: obviously, it must depend upon a system of education carefully planned with the

view of a better social order. These are facts which must be faced steadily. But a carefully planned system of education will not, in itself, solve our difficulties. The welfare of Great Britain and its institutions rests ultimately on the success of its industry. That is another incontrovertible fact. Teachers have been reminded of it frequently; but it must be faced equally by those responsible for the successful development of industry itself.

For the benefit of the mind careful to the point of fearfulness, we would point out that, in urging a revision of educational notions, we have not presented suggestions which have been unduly hurried. Those suggestions have found reflection in the reports of bodies appointed to examine important aspects of our present discontents. We have, for example, commented in previous issues upon the findings of the Hadow, Malcolm, and Balfour Committees. In all these reports the need for strengthening the link between education and industry has been emphasised. That emphasis has not come only from official committees. On all sides enlightened teachers and leaders of industry have been seeking to join forces. The Emmott Committee of Inquiry into Technical Education and Industry has been, perhaps, the venue of the most varied representatives desiring to commence the solution of this particular problem; and at the recent meeting of the British Association, education and industry was a subject to which a complete session was devoted. Papers read by educationists and industrialists showed clearly that their interdependence is realised by both sides. Especially was it made clear that educational machinery, capable of great development, already exists to supply the requirements of industry, even though no national administrative machinery, through which both sides can adequately express their needs, has yet been formulated. Clearly, however, the *rapprochement* of education and industry has commenced.

The papers to which we have referred were well selected. From the educationist's point of view, arguments were presented for the grouping of social, industrial, and educational problems; the work, general difficulties, and possibilities of a typical technical institution were outlined; the results and advantages obtained by a college which trains engineers on a definite production basis rather than an 'exercise' basis were described. From the industrialist's point of view, criticism of present elementary and secondary school curricula was advanced and a plea was made for a revision

which might give capable managers and workers to industry no less than balanced and thoughtful citizens to society; suggestions were made as to industry's contribution of forms of essential education not always included in the formal processes of the school. Altogether, we gained a very satisfactory impression that ancient antagonisms are disappearing, and that, since the industrialist has now realised the value—commercial as well as social—of education to his industry, and since the teacher—at least on the technological side—is prepared to shape his work in the wide interests of industry, it appeared to be but a matter of time until the resulting benefits will be enjoyed by student, worker, teacher, and employer.

We must pause here, however, and examine present facts, and not be swept away from them by pleasant speeches and urbane agreements. Industry has commenced to demand men and women soundly educated and expertly trained for its tasks. The educationist has answered by producing from his universities and technical institutions the type of student the industrialist tells him, and which he believes, is required. But if industry has correctly expressed its needs, and education can fulfil those needs, there ought not to be the slightest difficulty in placing every properly qualified student. That is surely an 'acid test' of the relationship between school and employment.

What, however, are the present facts? In chemical industry, for example, we have been told that there is an almost unlimited field for the technically trained man or woman. But those of us who have some knowledge of the number of graduates in chemistry leaving universities and technical institutions also know the difficulties they often have in securing satisfactory employment. How many graduates in engineering, too, have been able to secure positions in which their training can be adequately used? On the commercial side we recall the demand made by employers for highly trained and broad-visioned employees which resulted in the institution of the Bachelor of Commerce degree; but we have not lacked evidence that possessors of that qualification have not found it easy to secure posts in competition with applicants of no other training than that of commercial experience since the age of fourteen years. It is not to be doubted, we think, that there are well-qualified men and women unable to find openings in industry and commerce, and although we realise that the problem of employment has many aspects, we feel bound to ask

whether employers are prepared *now* to take advantage of education's newest product.

It would clearly be a doubtful move to extend the facilities for special training if the present output cannot be absorbed. Are there, then, sufficient openings at present to justify the extension of facilities for which employers ask? Do the majority of employers sufficiently realise the advantage of securing the well-trained recruit? The employer who has done so seems to be the established and, perhaps, leading industrialist who presents what is assumed to be a complete industrial view before public meetings and official and other committees. But what of the employers of whom we hear but little and who have not yet understood the sound benefits which can be secured from trained workers? If it be answered that all employers understand those benefits, then the difficulty of securing employment must be traced to a weakness lying elsewhere. For, clearly, while the present position continues we cannot avoid the conclusion that the weakness lies either in education or in industry. If it be in education, the employer should indicate it with all speed: if it be in the organisation and methods of industry, they must either be altered or else clear instructions, based upon them, must be submitted for the consideration of educationists.

There is certainly one point arising out of the organisation of industry which was touched upon during the British Association discussion by an educational and by an industrial representative. The former referred to the growing impression that promotion to the higher posts in engineering proceeded more readily from the office than from the works, and that this industry is already losing heavily by bribing its best boys into the administrative rather than the production side. The latter underlined the same complaint. No amount of inducement, he said, seemed able to overcome what appears to have become a distinct difference in status. This fault of shaping the bright boy to the black suit was regarded as belonging to parents and teachers rather than to employers. But are parents and teachers to receive all the blame? Is it not generally true that difference of status exists? Is it not generally true that in times of bad trade it is the production side which suffers while the administrative side enjoys something very like permanence? Can the employer help to avoid this—a very real threat to the future skill and welfare of industry?

We hope we shall not be misunderstood. We have sketched the need for an educational system

which shall fit modern civilisation particularly through its effect of wiping away the ignorance which may fog and warp the issues which are shaping the future. We have insisted that the linking of education and industry is an essential part of that new system. We have welcomed the evidence which shows that its necessity is being more and more realised; and if we have paused to examine present difficulties which tend towards the nullification of the promise that evidence holds out, we have not done so merely to apportion blame or praise to any particular quarter. It is simply that, in our earnest desire that these new and beneficial movements shall proceed unhampered, we have attempted to indicate some barriers which need speedy removal.

### Science and Theology.

- (1) *Concerning Man's Origin, being the Presidential Address given at the Meeting of the British Association held in Leeds on Aug. 31, 1927, and recent Essays on Darwinian Subjects.* By Sir Arthur Keith. (The Forum Series.) Pp. ix + 54. (London: Watts and Co., 1927.) 1s. net.
- (2) *Religion without Revelation.* By J. S. Huxley. (What I Believe Series.) Pp. 392. (London: Ernest Benn, Ltd., 1927.) 8s. 6d. net.
- (3) *The Church and Science: a Study of the Interrelation of Theological and Scientific Thought.* By Dr. Hector Macpherson. (The Living Church Series.) Pp. 254. (London: James Clarke and Co., Ltd., 1927.) 6s. net.

(1) SIR ARTHUR KEITH, in a foreword to his presidential address to the British Association, just published by Messrs. Watts and Co., makes a notable observation. He writes that although the outburst in the public press which followed his defence of Darwinism indicated "that Daytonism is very much alive throughout the land, and that the only science people are prepared to accept is that enshrined in the book of Genesis," yet, that he was encouraged by the reception given to his address by the leaders of religious thought. The words in which he places this upon record are sufficiently important to quote in full:

"Far from being in opposition, they want to know all that can be known of the universe in which we live, and of that remarkable aberrant product of Nature which we call Man. They have grown up in the post-Darwinian period, and no longer regard the great army of science as an enemy, but as a friendly power. They realise that religion cannot stand still, that it too must evolve, and that it is the duty of theologians not to expect scientific men