of the more influential speakers at the January meeting of the Association of Scientific Workers. "Then research will not be conducted for itself, as an end in itself"—was stated in an authoritative summary of the aims set by that meeting².

I am not concerned primarily with the future effect of these principles in Great Britain, the great civic tradition of which may protect her indefinitely from their ill effects. Nor would I wish to intervene in this respect. What I am concerned with are these principles themselves, and the prospect of seeing them spread on the wings of Allied victory all over a dislocated world, helping to destroy even further the ideal—which I hold to be essential to our civilization—of scientific truth pursued and upheld for its own sake.

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¹ *Mem. Proc. Manchester Lit. and Phil. Soc.*, 85, 19-38.

² "Planning of Science" Association of Scientific Workers, p. 110 (London, 1943).

Future of Technical Colleges

Messrs. Barrer and Andrews have referred¹ to the very important question of the training of students in technical colleges for external degrees, which is raised in the Institute of Physics Report on "The Education and Training of Physicists". Their interpretation of this Report as hoping to relieve the technical colleges of the necessity of preparing students for external university degrees is not perhaps quite fair to the carefully considered wording of the Report. The Report does not deny, or imply, the right of the technical college to give the highest training to the young technologist or to transfer the higher flights of technology to the universities. The actual wording of the Report reads: "It is desirable that the distinction between the functions of the Universities on the one hand and of the Technical Colleges on the other should be clearly recognized and that the Technical College should not be deflected too much from its own important field by the necessity of training students for External University Degrees", and concludes that the training for such degrees should not be a primary function of a technical college.

I am sure that no educationist will disagree with Messrs. Barrer and Andrews in their view that Great Britain requires a number of technological institutes capable of carrying out technical studies to the highest grades, including the creative work of research departments and, it may be added, 'cultural' studies and recreational activities as well. It is not right, however, that the coaching of a relatively few people for examinations run by an outside body, which body dictates a syllabus and a standard with little or no regard to methods of training and opportunities for social development of the individual students, should come to be regarded as the highest function of a technical college and should unduly influence its educational aim.

A planning committee such as that of the Institute of Physics is working in the realm of *educational ideals*, and it is therefore appropriate that it should review the existing provision of university courses in the sciences in order to determine what arrangements may be made so that all those capable of benefiting from a university course may be provided with full facilities for a proper university education. Degree courses in technical colleges are makeshift courses, and have grown out of a makeshift system

designed for a period when (1) few universities existed in Great Britain, and (2) the cost of university courses was almost prohibitive for the average individual. While acknowledging their value in the past, and admitting their possibilities to a limited extent in the field of adult education, we may well doubt whether external degrees are adapted to form a serious factor in modern technical education.

Many technologists would prefer to see the larger technical colleges capable of carrying out education and training to the highest standard based on technical subjects, and awarding their own diploma, which should be comparable with a university degree. The courses in such colleges would be complementary to those of the universities, and some university graduates would by arrangement proceed to such colleges for their post-graduate technical training after having completed their degree courses at the university. Then again, within the technical colleges, at a lower level, the National and Higher National Certificate schemes are capable of further development (even on present lines) and should be extended to cover the newer industries, for example, plastics, radio and production engineering, etc. Indeed, there seems no limit to what the technical colleges might achieve in their own particular sphere without duplicating courses which can in general be done much better in the universities.

I feel that the technical colleges are in grave danger of losing their way. At one end of the scale they are flirting with what is essentially secondary school work, at the other with university education, while tending to neglect their most important work, which lies between and covers both full-time and part-time courses up to the highest level of achievement, of a character most in accordance with the needs of the 'real' world, together with the vast field of adult education, cultural, social and spiritual values not being neglected on the way—the whole constituting a 'people's university' in the fullest sense of the term.

Never before has the technical college been such a centre of popular interest in Great Britain as it is to-day—thanks to the opportunities it has had of serving national war-time needs. We who are engaged in this work have surely no longer any need to preach the importance of technical education as had our predecessors, Huxley, Roscoe, Thompson, etc. We failed to take advantage of two previous opportunities to put technical education on a proper footing, namely, in 1889 and 1902. Let us, therefore, not cast away our new opportunities which are on the rising tide, by yielding to the specious attractions of external degrees. We have all to gain and nothing to lose by leaving the universities to do their own particular work (even if it does include what we have come to regard as technological subjects). The technical colleges will best serve the community by developing their special field, which is determined by industry, commerce and the professions, without the restraint of external degree examinations. Nevertheless, it is not desirable that the technical colleges should pursue an isolationist policy, but rather that they should work in co-ordination with the universities, for only in this way can the activities of each be best directed to the establishment of the ideal educational world.

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¹ *NATURE*, 152, 80 (1943).