

of even the poorest parents should not, by reason of his leaving school at fourteen, lose his opportunities of reaching the very top of the educational ladder; and I am anxious to lay the greatest stress on the desirability of extensively drafting the very best evening students into the technical universities.

The second alternative for the boy of fourteen is to continue his school life in a trade school to his seventeenth year, when the final certificate will give him access to the technical university after an apprenticeship or pupilage of at least one, better two, years. This would be the easiest and the more general road to the technical university; but, again, on leaving the trade school the student may be apprenticed for three years, attending also the evening classes, and he may qualify for the second year of the technical university, or even obtain a maintenance scholarship.

The third way of reaching the technical university would be through the grammar school or equivalent secondary schools. The certificate of having passed a certain standard either on the modern or the classical side would, again, without further entrance examination, be accepted as sufficient proof of adequate education, though for engineering, building, and textile departments at least one, but preferably two, years' practical work should precede the university studies.

The above forms an outline, though a very rough and compressed one, of my ideas. Let us, in conclusion, consider the most important question as to how the general introduction of any such national scheme would affect existing schools, and also the position of the technical teacher.

The majority of the existing technical day institutions would cease to exist as such; they have given conclusive proof that they have no right of existence. They would be transformed into trade schools for the daytime. The evening technical classes, however, would not only be maintained, but further developed, as they would grow enormously in general importance.

A number of the existing colleges and universities, spread at sufficiently large intervals over the country, would be developed into technical universities of the highest order, challenging comparison, not only as regards equipment, but in every other respect, with the very best institutions of other nations. According to the nature of the district, such technical university might be split up, where necessary, and an engineering college be established in one centre, a textile college in another, a mining college in a third, &c. Thus regard could be paid to local requirements to a considerable extent, while at the same time abolishing the present disastrous multiplication of efforts. The technical university should in its management be independent of local authorities; it should be entirely self-governing, and be under the direct control of the Board of Education. It should be permeated by a thoroughly democratic spirit, and those recruited from the technical evening classes by means of maintenance scholarships should form a very large percentage of its students.

Now, as to the position of the technical teacher, will it suffer or improve under such a scheme?

The answer is obvious if we will only consider what it is at present. The technical teacher is overburdened with day and with evening work, in addition to which, as is well known, he must spend a great deal of spare time in private study if he wishes to keep up to date in his rapidly progressing subjects; but, in spite of this, his salary, on the whole, is hardly better than that of the elementary teacher. In the endeavour to economise at all costs, corporations seem more and more inclined to consider the salaries of technical teachers as the most appropriate subject for curtailment; and, further, it seems to me, the technical teacher does not stand very high in the estimation of either the general public or the employer of labour.

Summing up, I find that his position is far from being in accordance with the importance of his work with regard to the life and development of an industrial nation. The reason is obvious. As yet technical education itself occupies a position far below that which is its due, and, of course,

the technical teaching profession is inseparably connected with it. By lifting technical education up to its proper level and making it a national affair you would make the technical teacher a national one, to use the ordinary term, a Civil Servant, and the technical teaching profession would receive the recognition which it deserves, and which it receives in other countries.

That is, in my judgment, the only way in which English technical Education may be enabled to exercise that amount of guiding and enlightening influence which it must possess if this industrial country wishes to maintain its front seat in the council of the nations.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

At a meeting of the East Lancashire Branch of the Association of Teachers in Technical Institutions on April 17 at the Municipal School of Technology, Manchester, Prof. W. W. Haldane Gee will open a discussion on "The Optical Lantern and the Microscope, with Special Reference to their Educational Uses."

DURING the last three years an investigation has been in progress in the United States to trace the cause of the failure of the physics teaching in the secondary schools of the country, and the educational journals have devoted much space to the question. It now seems possible to give a summary of the most important facts which the inquiry has brought to light. When physics was first introduced into American secondary schools, a distinct effort was made to present it as a means of explaining the various natural phenomena witnessed by the pupil in his daily life. Few experiments were performed, and those by the teacher with the simplest possible apparatus. Then came the decree that methods must be changed so as to meet the requirements of college entrance examinations, and, as a result, pupils were on the one hand forced into "inductive" or first-hand work, for which they were quite unsuited, and on the other were overwhelmed with mathematical formulæ, in which the physics was buried past disinterment. Now there is a strong desire to return to the ideals which prevailed in the past, to sever the school teaching from college control, to reduce the emphasis now laid on mathematical formulæ and on extreme accuracy in experimental work, and to base the subject on the daily experience of the pupils. The national commission has our cordial support in its efforts at reform.

THE March number of the *Psychological Bulletin* is devoted to child and educational psychology. Prof. O'Shea writes of progress in this field, and puts his finger definitely upon the necessity for the establishment of institutions for educational research in which children of every age will be available for observation and experiment. There are many psychological laboratories, but no institution in which the resources of the experimental psychologist are solely devoted to the problems of the teacher. Perhaps the nearest approach to this ideal is to be found in Leipzig, where the enterprise of the teaching profession has established a centre for scientific research into those unknown forces with the behaviour of which the schoolmaster is expected to have expert knowledge. Prof. Bagley's article, on the psychology of school practice, gives an excellent summary of recent work in this field, and admits the importance of the evidence, which is steadily accumulating, in favour of the doctrine of formal training, albeit in a form less crude than that against which the Herbartian has always tilted. The survey of work in Germany, France, and elsewhere is useful, though the omission of the name of Binet from that part which deals with French activity in this direction is surprising. Prof. Earl Barnes writes of England, and finds our national activities taking traditional forms—Royal commissions, congresses, inter-departmental committees. Public interest in psychological questions is steadily growing in our country, forced upon us "by a disorganised school system, by industrial stagnation and an army of unemployed people, by the agitation for woman's suffrage and by the unrest in India." Truly outsiders see most of the game!