what they thought was their monopoly and to bring in outside works to help in the production of munitions as it has been to persuade the Trades Unions to forgo trade customs and to enable outside sources of labour to be employed, such as women and other unskilled labour. But both have had to do it. In other words, "dilution of works" has been as difficult to effect as "dilution of labour," and the position both of the armament ring and of the workman would have been very different if they had consented freely to it when it became obviously necessary for the safety of the Empire.

The necessities of research work have already been dealt with, and by the pooling of such research work enormous advantages in any one trade could be obtained. Such pooling of information has been effected with most beneficial results, especially in the chemical trade abroad. Any workable scheme which would enable this to be done and get over the jealousies between one firm and another would be of enormous benefit to the trade in general.

Another thing that must not be lost sight of is the urgent need of improving our educational system. It is little short of a disgrace that the older universities are closed to those without a knowledge of Latin and Greek.

Languages are of the greatest importance to an engineer—not dead languages, but living ones. And these should be properly taught, so that the student should be able not only to read and write them, but also to speak and understand them when spoken. It is quite a different knowledge of a language to be able to read, write, speak, or understand it. Many people can read a language without being able to write, speak, or understand it when spoken, and conversely it is not uncommon to meet people who can speak and understand a language without being able to any large extent to read or write it. And it is only in living languages that a man is trained to speak and understand a language.

Why is it that we are so wedded to the dead languages? There is, of course, the tradition that such are necessary for a liberal education, and there is the argument that modern languages are not so good a training for the mind. Granted that they are not quite so good from the point of view of learning to read and write them, does not the fact that they can also be taught as a living language to be spoken and understood make them on the whole the best educationally for a man? This is entirely apart from the fact that modern languages are useful and ancient useless to the man in commercial work. There is, of course, bitter opposition from that most conservative man, the schoolmaster, and one great reason is that it is much easier and cheaper to get a man to teach Latin and Greek than modern languages which have to be taught orally. The teaching of Latin and Greek as they are usually taught has been standardised to the last degree, and as a result they can be taught by the "semi-skilled" man, and a "skilled" man is not necessary, to use engineers' phraseology. In fact, the teaching of Latin and Greek is a pure "repetition job." At the same time, no education is complete unless science is combined with languages, and also literature, and here lies one great danger of modern technical education.

After the boy has left school and enters the shops more facilities should be given to enable him not only to keep up but to continue his education. In the shops and drawing office too often the boy is left to pick up a knowledge of his trade as best he can. The apprentice who asks questions is often looked on as a nuisance, and requests for information are generally met by a blank refusal or worse. Often the foreman or chief draughtsman is afraid to answer questions for fear of being charged with giving away so-called "trade secrets," but an immense deal of information can be given to an apprentice without doing so.

Evening classes are all very well in their way, but more facilities should be given for the diligent apprentice to attend day classes, and this can be arranged in various ways if the employer has a will to do it. A thing that at present often prevents boys desirous of educating themselves getting on is the fact that overtime is allowed as soon as a boy is eighteen, and often he is compelled to work overtime regardless of classes that he ought to be attending.

It is important to remember that the boy of to-day is the man of to-morrow.

One complaint is that after a lot of trouble is taken about a boy he leaves after a few years and goes to another employer. The good of the trade in general must be considered, and a man who has had experience of various classes of work is generally a much more valuable man than one whose knowledge is confined to one class only. In any case, the other employer gets the benefit of what has been done by the first, and thus the trade in general benefits.

It is realised that this is a very imperfect review of things as they are at present, but if this address induces all classes engaged in engineering to consider how things can be bettered the author feels that a part, at all events, of his object has been attained.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—Notice is given of the forthcoming appointment to the George Henry Lewes studentship in physiology. The object of the studentship, the annual value of which is 200*l.* and is tenable for three years, is to enable promising students to devote their whole time to physiological research. Candidates are requested to send a short statement of their qualifications to Prof. J. N. Langley, the Physiology School, Cambridge, by November 18.

LONDON.—At a meeting of the Senate held on October 18, the Vice-Chancellor (Sir Alfred Pearce Gould) being in the chair, the following doctorates were conferred:—*D.Sc.* (*Engineering*), Mr. E. H. Salmon, an internal student, of the East London College, for a thesis entitled "Columns." *D.Sc.* (*Economics*), Mr. P. Bandyopadhyay, an internal student, of the London School of Economics, for a thesis entitled "Public Administration in Ancient India." *D.Sc.* (*Physiology*), Miss D. J. Lloyd, an external student, for a thesis entitled (*a*) "The Osmotic Balance of Skeletal Muscle," (*b*) "The Relation of Excised Muscle to Acids, Salts, and Bases."

OXFORD.—The reports for the year 1915 of the curators of the Botanic Garden and of the Department of Botany have just been published. They contain long lists of contributors, both public and private, of specimens and other material for study to both institutions. To most of those who have sent donations to the garden a return has been made in kind. Many interesting plants have flowered in the garden during the past year. In the Department of Botany lectures have been given by the Sherardian professor and Messrs. A. H. Church and W. E. Hiley. Practical work in physiology has been conducted by Mr. Kempin. Considerable progress has been made with work on the herbarium. The accounts show that great economy has been practised in the matter of expenditure.

THE University of Lund is founding a personal professorship in the theory of heredity for Dr. N. H. Nilsson-Ehle.

MISS G. J. SANDERS, formerly principal of the Lowthorpe (Massachusetts) School of Horticulture and Landscape Architecture for Women, has been appointed principal of the Swanley Horticultural College.

A PAMPHLET issued by the Bradford Education Committee describing the courses in chemistry and dyeing held at the Technical College in that town is symptomatic of the altered outlook towards the various branches of the chemical profession brought about by the world-war. These college courses are, in the first place, arranged to meet the growing requirements of the local dyeing industry. Together with the study of colouring matters, practical instruction is given in the art of dyeing in a dye-house with full-sized machinery combined with a finishing plant for completing the commercial treatment of cloth. As in many other technical colleges, there is an entrance examination, in which English and mathematics are compulsory. Special stress is laid on the fact that a sound secondary education up to the age of sixteen or seventeen is a preliminary asset of the greatest importance. The combined course in chemistry, dyeing, and the allied subjects extends over a period of four years. A similar course has been devised for those taking up chemical work in other industries, such as in oil and soap works, or in metallurgy or gas engineering. Both these courses include a certain proportion of mechanics and engineering bearing specially on chemical industries. Students passing satisfactorily through either of these courses receive the college diploma, but the associateship of the college is reserved for those who have had one year's practical experience subsequent to the award of the diploma, and who have submitted a thesis on some previously approved subject. The ultimate object of the curricula of this college is to turn out practical chemists, dyers, and pharmacists, and that these qualifications are appreciated by manufacturers is seen from the encouraging list of appointments secured by the alumni.

AN appeal on behalf of the Endowment Fund of the School of Oriental Studies at the London Institution has been issued by an influential committee of which Lord Curzon is chairman. The objects of this new institution are three in number:—(1) To provide a place where the Englishmen who will presently be engaged in governing or garrisoning the Oriental and African parts of the Empire may learn the languages and study the literature, the religions, and the customs of the peoples with whom they will be brought into contact; (2) to offer a training to those who are about to proceed to the same countries to take part in commercial enterprise or avocations; (3) to furnish in the capital of the Empire a meeting-ground and focus for the scholars of the East of all nationalities on their visits to this country. Evidence has been accumulating in recent years that the training of our Civil Servants and officers in the languages and modes of thought of Oriental peoples falls short of the ideal which we ought to have in view. In the new relations that will develop when the war is over there must be a higher standard of efficiency in these respects if our rule is to continue to commend itself to those with whom we are brought into relations. Information has been received that important steps are already being taken in Germany to give a higher education to Germans about to proceed to the East. Provision will be made in the new London school for all the more important languages of the Near, Middle, and Far East, and of Africa. The committee desires to raise an endowment fund of 150,000*l*., towards which they have now as a result of a preliminary appeal about 10,000*l*. Donations and subscriptions may be paid to the head office or to any branch of the London County and Westminster Bank, or to the secretary of the executive of the appeal committee at the School of Oriental Studies, Finsbury Circus, E.C. The governing body of the school has appointed Dr. E. Denison Ross, C.I.E., to be its director, and he will take up his work almost immediately. Dr Ross has travelled extensively in the East. Among his numerous works is the "Tarikh-i-Rashidi," a history of the Moguls of Central Asia.

A SERIES of resolutions referring to the claims of humanistic studies to scientific attention was adopted a couple of months ago by a conference representing the Classical, English, Geographical, Historical, and Modern Language Associations (see NATURE, September 7, p. 23). The committee of the Association of Public School Science Masters has just expressed agreement with the principles of education stated in the resolutions; and in answer to an invitation to make a statement with regard to education in the natural sciences, it has sent the following to the chairman of the conference:—"Natural science in education should not displace the 'humanistic' studies, but should be complementary to them. In this capacity natural science meets two needs in particular:—(1) *Search for Truth*: Imaginative power indicates new fields in which further knowledge of truth may be revealed; its subsequent establishment depends on accurate observation, with constant recourse to nature for confirmation. The one aim of natural science is, in fact, the search for truth based on evidence rather than on authority. Hence the study of the subject implies accurate observation and description and fosters a love of truth. The special value of Natural Science in the training of Mind and Character lies in the fact that the history of the subject is a plain record of the search for Truth for its own sake. (2) *Utility*: There are certain facts and ideas in the world of natural science with which it is essential that every educated man should be familiar. A knowledge of these facts assists men (*a*) to understand how the forces of nature may be employed for the benefit of mankind; (*b*) to appreciate the sequence of cause and effect in governing their own lives; and (*c*) to see things as they really are, and not to distort them into what they may wish them to be. It is the business of Natural Science in education to bring this knowledge within the range of all." The statement is signed by Prof. H. H. Turner, president of the Association of Public School Science Masters, and by Mr. A. Vassall, chairman of committee. Probably arising out of the conference referred to above, a Council of Humanistic Studies has been constituted, comprising representatives of the British Academy, in addition to the five associations mentioned above. Its object is to watch educational developments in the interests of the studies represented by these bodies and to co-operate, if possible, with the representatives of natural science. The president is Lord Bryce, and the chairman Sir Frederic Kenyon, to whom communications may be sent at the British Museum.

SOCIETIES AND ACADEMIES.

LONDON.

Geological Society, June 28.—Dr. Alfred Harker, president, in the chair.—Dr. A. Smith **Woodward**: A new species of Edestus from the Upper Carboniferous of Yorkshire; with a geological appendix by J. Pringle. The fossil confirms the interpretation of Edestus as a row of symphysial teeth of an Elasmobranch fish. The row of eight bilaterally symmetrical teeth, fused