

at least eight hours a week up to eighteen. These classes are "to include general, practical, and technical education," and they will probably in many cases take the form of trade schools carrying on the education of young workers who have found employment. The advantages of manual training in primary schools are not sufficiently emphasised in the report. Manual dexterity can be acquired at an early age, and boys might thus gain a truer conception of the dignity of hand labour, while experience shows that technical or elementary scientific knowledge, if attained by practical work, becomes a permanent possession. Greater differentiation between the work of rural and of urban schools is another pressing need.

No one can maintain that our system of primary education has been a failure. As the President of the Board of Education pointed out the other day in his admirable speech, we owe to it, in part at least, the new armies which have brilliantly upheld our national honour on many stricken fields. But we believe that education can do more in the future in developing moral strength and in inculcating the sense of duty and good citizenship. Mr. Fisher has laid down as the ideal of his office that it should build the foundation "for a patriotic and social education worthy of the genius of our people, and a fitting monument to the great impulse which is animating the whole people in the war." We all hope he will be spared to realise that high ideal.

In the tremendous tasks which lie before the nation, Government can play an important part. Statesmanship worthy of the name must lead, inspire, direct, and initiate. In guiding education, assigning defined functions to experts carefully selected for special purposes, exercising their enormous patronage with a single eye to knowledge and efficiency, as well as in encouraging the progress of applied science, and guarding against legislation which may hamper trade and industrial activity, there is ample scope for the action of Governments. Interference in the management of business enterprises will usually be harmful, since, for well-known reasons, the conduct of business affairs by officials in democratic countries is rarely efficient.

Some tariff adjustments may be found desirable; but the idea that national prosperity can, in the long run, be assured by fiscal devices is baseless. In so far as tariffs can stimulate the operation of natural laws, they may be beneficial. When they aim at producing artificial conditions in defiance of law, they usually defeat their ends. They may be used legitimately, and we have been told that they will be used to further the development of the resources of the Empire, and the object having been attained, they can be dispensed with.

I have only dealt with reconstruction in the material sense, which cannot alone guarantee the purer and happier national life which we all earnestly desire. That can be reached only if the whole nation will, in the difficult times that lie before it, follow the shining examples of duty, discipline, and self-sacrifice which have been set by our heroes on the seas, in the field, and in the air. The men who have constantly faced death and shared in dangers and hardships will come back with a new outlook on life. In the trenches there have been no party divisions, no attempts to set class against class, but only shared efforts which are bringing certain victory to a sacred common cause. May we not hope that the great lessons learned by our best manhood in the storm and stress of war will react upon the nation as a whole and render the forms of politics to which we have grown accustomed impossible in the future? The strife of parties and of individuals contending for office and power, the intrigues

which have not wholly ceased during this crisis in our fate, the machinery by which party chests are filled and constituencies are manipulated, the false discipline which, by preventing men from voting according to their knowledge and conscience, vitiates the decisions of Parliament upon vital issues, the triumph of words over experience and powers of action—all these things and more have had their day, and we begin to realise the inevitable results.

Reconstruction in the highest and fullest sense can be achieved only by a great national party, seeking solely the welfare of the commonwealth, examining every public question from the view-point of the interests of the community as a whole, and choosing leaders irrespective of class or party, who can be trusted to bring a lofty patriotism and trained intelligence to bear upon the vastly complex and far-reaching problems with which we are now confronted. If these are only visions, then I see no certain prospects of restoring the shaken fabric of the State, of rebuilding our prosperity on a broader and an enduring foundation, of healing the open wounds in our body politic, and of wresting lasting good from the gigantic evils of war.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

ST. ANDREWS.—The University museum has just received the entire collection of local and other birds, many very rare, made by Misses Baxter and Rintoul (of Largo and Lahill), for years known as authorities on ornithology, and joint editors of the *Scottish Naturalist*. They have, moreover, in interpolating these, gone over the entire University collection of birds and rearranged and labelled them. Accompanying this noteworthy and valuable gift, for most are exquisite examples of the taxidermist's art, are eight cases with drawers containing named collections of the eggs of birds and of Lepidoptera and other insects, as well as a few skulls and stuffed mammals.

DR. P. MARIE has been appointed to succeed the late Prof. Dejerine as professor of clinical neurology in the University of Paris.

FRÄULEIN A. M. CURTIUS, recently appointed lecturer in French by the philosophical faculty of Leipzig, is, according to the *Nieuwe Courant*, the first woman on the staff of a German university.

THREE research fellowships in, respectively, pathology and bacteriology, medicine, and surgery have been endowed in the University of Chicago by Dr. F. R. Logan, who has given a sum providing an income of 600*l.* a year for the purpose.

In his presidential address to the Institution of Mechanical Engineers on April 20, Mr. Michael Longridge considered the provision in this country of technical education for engineers. Many persons, he said, still fail to understand that the manual training which enabled an apprentice to become a master craftsman in times gone by does not suffice to turn a schoolboy into an engineer to-day. Differentiation is needed now in the training of the various classes of engineers and workmen, and it is this lack of differentiation which seems to be one cause of the inefficiency of our technical education relatively to its cost. The education available for the higher ranks of engineering is fairly satisfactory in Mr. Longridge's opinion, but that provided for the workman, both general and technical, is most unsatisfactory. "Yet the workman must have better education to qualify him to rise if capable, and to give those who have not the ability to rise some interests outside their daily work and football matches, and also to lessen drunkenness. The need will become

greater as repetition work and automatic machinery replace varied jobs and manual skill. Unless an antidote be provided, the monotony of this kind of work will crush initiative and mental vigour, and instead of skilful craftsmen we shall breed incompetent machines." The address insists that either the school-leaving age must be raised or a system of part-time instruction during working hours of engineering apprentices must be introduced.

THE April issue of the Proceedings of the Institute of Chemistry contains the presidential address delivered by Sir James J. Dobbie on March 1. In it is discussed at length the question of the general education of chemists. Sir James defines the aim of education on its intellectual side as the evenly balanced training of all the faculties of the mind, and claims that this aim can never be attained by the study of science exclusively on one hand, or of the subjects commonly classed as the humanities on the other. At the same time, science must form part of every person's education. Dealing with the question what science subjects should be taught in schools, he lays it down that the one way to obtain satisfactory results is to concentrate on a limited number of subjects, carefully selected with reference to the pupil's age and stage of mental development and to their suitability to serve as an introduction to further science studies. He selects as most suitable subjects for study the facts and principles of biology and those of physics and chemistry as lying at the root of all the other sciences. The study of the properties of matter and of mechanics should, the address maintains, precede the study of the special branches of physics and the study of chemistry. Any scheme of science teaching would be unsatisfactory which does not make some provision for chemistry, and the study of chemistry should be taken next after mechanics. Work such as this should, Sir James Dobbie thinks, be supplemented by wide reading in other branches of science so as to widen the interests of the pupils and to extend their knowledge.

SOCIETIES AND ACADEMIES.

LONDON.

Zoological Society, April 17.—Dr. A. Smith Woodward, vice-president, in the chair.—**E. rieron-Allen**: The mussel-fishery and Foraminifera of Esnandes (La Rochelle), and the early work of Alcide d'Orbigny. A series of slides was exhibited illustrative of the early studies of Alcide d'Orbigny at Esnandes (near La Rochelle), and the mussel-fisheries established there since the year 1035. The experiments of Prof. W. A. Herdman on the west coast of England were referred to, and those of Prof. A. Meek at Holy Island on the east coast. A further series was shown illustrating some of the notable d'Orbignyan species found in the neighbourhood, not recorded from there by d'Orbigny in 1826, but recorded from other localities at that date, and from distant seas between 1839 and 1846. A third series of slides illustrated well-known species from the locality which had been recorded and described by earlier authors, but were not apparently identified by d'Orbigny from the neighbourhood of La Rochelle.

Linnean Society, April 19.—Sir David Prain, president, in the chair.—Dr. D. H. Scott: The Heterangium of the British Coal Measures. Heterangium, Corda, is a genus of Carboniferous plants, based on specimens with the structure preserved, and now classed with the Pteridosperms. It is proposed to group *H. shorensis*, *H. tiliaeoides*, and *H. Lomaxii* (of which *H. cylindricum* is only a form) in a new subgenus, Polyangium. It is probable that the Upper

Coal Measure species from Autun described by Renault also fall under this subgenus, while most of the very interesting Silesian species, of Millstone Grit age, recently discovered by Dr. Kubart, appear to belong to the simpler type which may be called Euheterangium.—**E. S. Goodrich**: The development of Hatschek's pit and the ciliated organ on the roof of the buccal cavity in Amphioxus from the left anterior coelomic sac and from an ectodermal preoral pit in the embryo and larva. Following Bateson, the author compared the opening of Hatschek's pit with the proboscis-pore of Balanoglossus and water-pore of Echinoderms.—Miss Nina F. Layard: Wooden scratching-tools made by an African parrot. Notes have been taken by the author of the behaviour of a grey African parrot, first in choosing out natural tools, such as pointed seeds and quills, for use as poll-scratchers, later in pointing up a match for the same purpose, and finally shaping up wood in such a way as to appear to warrant the bird's claim to be described as a tool-maker. The contention is that if it can be proved that the parrot, requiring an implement that would penetrate the feathers to the scalp, purposely produced a point with this object, then the border-line between the mere tool-user and the tool-maker has been crossed.

PARIS.

Academy of Sciences, April 10.—M. A. d'Arsonval in the chair.—**H. Le Chatelier**: The National Research Council in the United States.—**P. Puiseux** and **B. Jekhowsky**: Study on the general form of the lunar globe. The moon appears to be slightly elongated in the direction of its axis of rotation. A tetrahedral deformation cannot be regarded as definitely proved.—**J. Bergonié**: The superiority of agricultural work medically prescribed and controlled to the physical therapeutic treatment of the hospitals in the treatment of after effects of war wounds. The results of a practical comparison of the two methods taken over a period of thirty months prove the superiority of the open-air natural treatment to combinations of electrotherapy, mechanotherapy, thermotherapy, kinesi-therapy, mechanical and manual massage, hydrotherapy, etc. The superiority is especially marked in the case of men employed on the land previous to the war. Even in non-agricultural workers the superiority, although less marked, is still considerable.—**G. Julia**: The reduction of forms to indeterminate, conjugated non-quadratic forms.—**G. Arnaud**: The family of the Microthyriaceæ.—**A. F. Legendre**: The structure of the Sino-Tibetan massif.

April 16.—M. A. d'Arsonval in the chair.—**A. Lacroix**: The haüyne lavas of the Auvergne and their homogeneous enclosures.—**H. Le Chatelier**: The synthesis of ammonia. The author gives extracts from his patent of September, 1901, for the synthetical preparation of ammonia from its elements, work taken up seven years later by Haber and now made use of on the large scale in Germany.—**A. Gautier**: Increase in the curative properties of quinine and of mercury by the organometallic compounds of arsenic. The joint administration of arrhenal and quinine chlorohydrate cures cases of malarial fever which have resisted large doses of quinine alone. The association of arsenical compounds with salts of mercury enables effective cures to be produced with much reduced doses of mercury, and cases of syphilis respond rapidly to this treatment.—**E. Ariès**: The coefficients of thermo-elasticity at low temperatures and Nernst's hypothesis.—**M. Riquier**: A property of the analytical functions of any number whatever of imaginary variables.—**M. Mesnager**: The representation of concentrated charges by trigonometrical series.—**C. E. Guye** and **C**