

purposes of war our administrators gave every incentive to scientific investigation; money, men, and material were provided for the asking, free from Treasury control—free, in fact, from all control other than that of the scientific worker able and willing to organise and execute a necessary piece of work.

I see no reason to think that the lesson has been properly learnt, and every reason to anticipate a re-establishment of that parsimonious treatment of scientific effort which seems now to belong to a past age, but with which we were all well acquainted five years ago. The control of scientific research is again leaving the hands of the scientific man and being resumed by the lay administrator. The old remark has been resuscitated quite recently that "it is a commonplace among administrators to fear the expert." The non-technical administrator has no means of distinguishing the expert from the charlatan; he has, perforce, to regard the scientific expert as the lineal descendant of the "adept" of alchemical times, whose main claim to recollection is based upon the adroitness with which he was able to divert public funds to his own base purposes.

It is quite clear that if scientific research is to be assisted by the State—and unless so aided it will languish, and carry with it into decadence every activity of the Empire—it must be administered by men of scientific training and eminence; any other mode of procedure will necessarily lead to the strangulation of scientific effort by departmental red tape. In this connection it is again instructive to refer to American practice. Our blood-relatives across the Atlantic had three years in which to study in peace the efforts which we were making in war, and it cannot but be useful to observe the manner in which they propose to profit by our experience.

In 1916 President Wilson, a university professor and an expert, now one of the most imposing figures in terrestrial affairs, called upon the National Academy of Sciences at Washington to nominate the members of a "National Research Council"; the object of this new organisation was stated to be that of co-ordinating the scientific work of the country in order that the scientific problems both of war and of peace might be more efficiently solved. The National Research Council is under the presidency of one of the most eminent among the active American men of science, Prof. George E. Hale, of the Mount Wilson Observatory, and has large funds at its command for research purposes. Two points are conspicuous in connection with the American programme—first, the substitution of the professional lay administrator by the ordinary office staff; secondly, the recognition of the close interdependence of pure and applied science. The contention which has long been advanced in this country, that an adequate output of purely academic chemical research work and the existence of a flourishing fine chemical industry are mutually essential, is here tacitly accepted; the former seeks in the industries remunerative positions for the products of its training, and the fine chemical industry looks to the scientific investigator for inspiration and new directions for enterprise. The nation which possesses an extensive organic chemical industry controls chemical warfare, the production of pharmaceutical and photographic products, the textile industry, and many other great departments of human activity.

The operations of the great American organisation for the stimulation of scientific research work are already making themselves felt. They have produced just recently an entirely novel method for oxidising naphthalene to phthalic acid, presumably by the use of atmospheric oxygen and a catalyst, which gives a 95 per cent. yield, and are responsible for the huge

nitrogen fixation scheme now under installation in the States. These two illustrations alone, the one small and the other large, leave us in no doubt as to the influence which the National Research Council is destined to exert on scientific and technical progress throughout the world.

If British science is to make itself adequately felt in the great intellectual and material advances of the near future, British men of science must be entrusted with the initiative power and the command of money which they have enjoyed during the past few years; unless this is done our Empire will, as before, continue to fall behind other great nations as a contributor to the increasing mass of pure and applied scientific knowledge.

In an address which I had the honour of delivering in this room a year ago attention was directed to the necessity for closer co-operation between the large societies representing the various chemical interests in Great Britain. During the past year action has been taken in this matter, and some fifteen of the societies have now collaborated in the establishment of a Federal Council for Pure and Applied Chemistry, the function of which is to advance, safeguard, and voice the interests of chemical science. The Federal Council consists of representatives nominated by the component bodies, and is already occupying itself actively with the questions within its purview; it has moved with some success in connection with the claims of experimental science to recognition in the recently established scheme for education within the Army, with the provision of fine chemicals for research purposes, with the remuneration of scientific posts, and with other matters. The Federal Council will continue to apply itself to those questions which are of importance to chemists as a class, leaving more specific chemical interests to be dealt with by the appropriate constituent societies. A very similar project for the consolidation of the larger chemical interests is in course of execution by our French colleagues.

It is beyond question that a central house for accommodating the chemical societies in a manner proportionate to their importance than is at present possible should be provided; that a common chemical library far more complete than any now available in this country should be at our service; and that some comprehensive scheme for the publication of compendia of chemical knowledge should be put into operation. A very imposing and costly programme confronts the recent amalgamation of chemical interests, but the universal approval which greeted the proposition for creating a Federal Council for Pure and Applied Chemistry is a happy augury for the future usefulness of the new organisation.

#### UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

BIRMINGHAM.—At a meeting in Birmingham on May 8 of representatives of the engineering profession and others, the Lord Mayor presiding, a provisional scheme for celebrating the centenary of the death of James Watt was agreed upon. We are glad to note that the scheme includes the endowment of a chair of engineering at the University. A point which is sometimes overlooked in such matters was made by Sir Oliver Lodge, who reminded the meeting that endowments of this kind, though most desirable, should not be regarded as gifts conferring benefit only on the University. The University acted as a trustee, and every new chair endowed involved expense. Apparently no definite opinion was expressed as to the salary which should be attached to the chair; this would no doubt depend upon the sum collected for the memorial.

Taking into consideration, however, the vast benefits accruing to the world from the genius of James Watt, we may hope that the endowment will be a liberal one, so that the full services of the best possible men may be secured. If a considerable sum could also be allotted as an endowment for the department over which the professor would preside, and a further amount to provide valuable research scholarships for promising students from any part of the Empire, a memorial worthy of the subject might be established. For example, the appointment of a professor, for ten years at a time, with a salary of 5000*l.* per annum, with a like sum towards the upkeep of the department, and, in addition, the provision of ten scholarships each of 500*l.* per annum tenable for two years, might cost 300,000*l.*, but the money would be profitably invested.

The evacuation of the University buildings by the military hospital authorities is proceeding rapidly, and it is hoped that the departments of physics and chemistry at least may be reinstated in their proper quarters by October next. The appointments of the new professors of physics and chemistry (Prof. S. W. J. Smith and Prof. G. T. Morgan) have accordingly been made as from July 1 in order that they may supervise the restoration of their respective departments.

CAMBRIDGE.—A gift of 210,000*l.* to the University for a chemical school was announced by the Vice-Chancellor, Dr. A. E. Shipley, at the meeting of the Senate on May 13. Particulars were given in the following extracts from a letter from Mr. R. Waley Cohen:—"It has been an immense pleasure to me to be able to write to Sir William Pope and tell him that the British oil companies have agreed to join together in a scheme for endowing a chemical school at Cambridge. The Burma Oil Co. have agreed to contribute 50,000*l.*; the Anglo-Persian Oil Co., 50,000*l.*; the Anglo-Saxon Petroleum Co., 50,000*l.*; and Lord Cowdray and the Hon. Clive Pearson between them 50,000*l.*, making the total of 200,000*l.* which is required. Mr. Deterding, who has taken very great interest in the scheme from the beginning, has offered to make the 200,000*l.* into guineas by adding a personal contribution of his own of 10,000*l.*"

LONDON.—The annual report of the Vice-Chancellor of the University (Sir Cooper Perry), which was read at the presentation day ceremony in the Albert Hall on May 9, was naturally written in a more cheerful strain than previous reports during the war. *Cedant arma togae*—at last the University is able to turn from the works of war, to which the Vice-Chancellor was able to refer with just pride, both in the fields of battle and of science applied to warfare, to a conflict in which "the weapons are no longer 'reeking tube and iron shard,' but the highest qualities of insight and spiritual temper." The list of gifts and benefactions during the past year indicates the wide appeal of the University, including generous provision for the teaching of aviation, modern Greek, Portuguese (in all of which new chairs have been established), and a German field-gun given by the War Office in recognition of the work of the Officers Training Corps during the war. Progress has been made with the scheme for degrees in commerce, and an institute of phonetics is to be established at University College.

OXFORD.—At a prolonged sitting of Congregation, held on May 6, various amendments to the statute which aims, amongst other objects, at making Greek optional instead of compulsory in Responsions were taken into consideration. Most of the amendments would have had the effect of limiting somewhat the choice of subjects, but all were rejected except one,

which makes it possible to omit all the subjects of "Group II." (English, French, and German), and another concerning the fee for entrance to the examination. The statute as amended will have to come before a further meeting of Congregation, and if passed by that body, to be submitted to Convocation, where the final decision will be taken.

MR. G. R. BENNETT has been appointed principal of the Technical Institute, Newport, Mon.

MR. ANDREW W. YOUNG has been appointed to the post of lecturer on pure and applied mathematics at the Sir John Cass Technical Institute, Jewry Street, Aldgate, E.C.3.

PROF. C. R. MARSHALL, professor of materia medica and therapeutics, University of St. Andrews, has been appointed to the Regius chair of materia medica in the University of Aberdeen, vacant by the resignation of Prof. Theodore Cash.

APPLICATIONS are invited for the following awards in connection with the Armstrong College, Newcastle-upon-Tyne:—The Earl Grey memorial fellowship, value 300*l.*; the Royal (1851) Exhibition scholarship, value 200*l.*; and industrial bursaries, each of the value of 150*l.* The names of candidates must reach the secretary of the college by, at latest, May 31.

THE Higher Education Sub-Committee of the London County Council has had under consideration the report of the Government Committee appointed to inquire into the position of natural science in the educational system of Great Britain. In view of the importance of the subject, and of the value of the report, it is desirable that the conclusions and recommendations should receive the fullest consideration and discussion among those concerned in the teaching of natural science. The sub-committee has therefore arranged a meeting at County Hall, Spring Gardens, at four o'clock on Friday afternoon, May 30, to which the principals of the schools of the University, headmasters and headmistresses of secondary and central schools, principals of polytechnics and technical institutes, and science teachers of these colleges and schools have been invited. Sir J. J. Thomson, chairman of the Government Committee, has consented to address the meeting, and Sir Cyril Cobb, chairman of the Education Committee of the London County Council, will take the chair.

ANNOUNCEMENT is made in the *Times* that the Government proposes (if Parliament agrees) to expend during the next five years about 2,000,000*l.* on agricultural research and agricultural education. Substantial scholarships will be offered to men who have distinguished themselves in the natural sciences at the universities, and a certain number will be selected for employment in universities and other institutions. Research is already carried on at Cambridge, Rothamsted, Bristol, and Reading; but whereas at present there are probably not more than forty men in England and Wales engaged on pure research in agricultural science, it is hoped that during the next decade or so the number may be raised to about 150. Another feature will be the encouragement of higher agricultural education in colleges by means of grants and in other ways. There are about a dozen agricultural colleges in England and Wales, and it is hoped to bring the farmer into more sympathetic touch with them by the creation of more demonstration farms and of a keener sense of the general value of science in agriculture.