

blameworthy, especially when cherished by parents for their children. Sir Michael Sadler believes the movement has its counterpart in the movement towards greater freedom in self-government, and its deepest sources lie in a desire for liberty and the more generous development of human personality. Enlightenment and self-discipline are the two inseparable sides of a true liberal education. The force behind the desire for such an education is so powerful that it is the part of wisdom not to disregard it. He thinks that a liberal education begins away back in elementary education and extends beyond the limits of university education; that some of its indispensable factors cannot be tested by examination; and that it may be secured through diverse curricula, provided that in every curriculum a humanising spirit prevails.

Certain resolutions were thereafter submitted to the conference. After a lengthy and interesting discussion, in which a large number of delegates took part, the following motion was adopted: "That representations be made to the Board of Education urging the pressing need of further provision (by legislative change, if necessary) for the full-time education of boys and girls up to the age of sixteen, to include instruction of varying types." To this was added an addendum in favour of the pressing need of joint action between elementary and secondary branches of the Board of Education with the view of such provision and the closer combination of elementary and higher education. It is perfectly evident that there exists a large body of opinion in Yorkshire strongly in favour of greater facilities for education beyond the age of eleven and up to the age of sixteen. It is not so clear that opinion has definitely crystallised out as to the form this education should take. County Alderman Jackson, chair-

man of the West Riding Education Committee, expressed the opinion that the atmosphere of the mine and factory is not suitable for children between fourteen and sixteen; at that age they should be in cultured surroundings, and without doubt he expressed the views of an overwhelming majority of those present.

On the question of greater variety in curricula a discussion arose as to the desirability or otherwise of creating a new type of school in which instruction might be given of a kind different from that now normally offered in the secondary school. It was argued with some cogency that such a school might come to be looked upon as a school inferior in grade, providing an education of an inferior type, notwithstanding the suitability of the courses of instruction provided by it for the particular purpose. There is the danger, too, of segregating one class of children. Undoubtedly the great bulk of the pupils who would attend such schools would be drawn from the elementary schools. It is quite evident that many members of the conference would view with disfavour any further differentiation of schools while accepting the principle of greater differentiation of curricula. Obviously to them the logical position is to demand a common name for all full-time education, whatever its type, between the ages of eleven and sixteen.

Sir Henry Hadow, vice-chancellor of the University of Sheffield, in an interesting speech introduced a motion which, while welcoming the greater freedom in the choice of subjects for the First School Examinations now allowed by the Joint Matriculation Board of the Northern Universities, expressed the opinion that there should be greater freedom in regard to the groupings of courses for the Higher Certificate. The motion was agreed to unanimously.

Rothamsted Experimental Station.

ANNUAL VISITATION.

AT the invitation of Lord Bledisloe, chairman of the Lawes Agricultural Trust Committee, a number of guests representing various agricultural interests visited the Rothamsted Experimental Station on Wednesday, June 13, for the annual inspection of the fields and laboratories.

The morning was occupied in a tour of some of the experimental plots, including two of the classical fields—Broadbalk, on which wheat is grown continuously, and Hoos, where barley is similarly grown. These have been for many years of the utmost value and interest to agriculturists in general, and the opportunity was taken to show the visitors some of the other plots laid down to test points that had, directly and indirectly, arisen from the results of these classical experiments. Among these may be mentioned the top-dressing series, designed to ascertain how the yield of the crop is influenced by spring dressings of artificial fertilisers applied in varying amounts and at various times; the malting barley series, in which the relation between malting value and manurial treatment is being examined; and the residual value of different manures on the succeeding crops. On this latter field the crop this year is clover, and the beneficial effect of previous organic manures, in particular cake-fed dung, is most striking.

After luncheon Lord Bledisloe briefly reviewed the purpose and recent progress of the Station. He laid stress on the care that is taken to avoid the erection of water-tight partitions between the scientific worker and the practical farmer, without in any way limiting the work of fundamental investigation, on

which the application of science to agriculture is of necessity founded. Lord Bledisloe also referred to a number of the external activities of the Station, as indicative of the efforts made to keep in touch with the whole life of the countryside.

Sir E. J. Russell, director of the Station, then gave his statement on the work of the Station during the past year. The reorganisation of the laboratories has been completed, and the experimental work on the farm will shortly follow suit. Very considerable progress has been made in extending the outside centres: the experimental fields on the Woburn Farm are now in charge of Rothamsted, and Dr. Voelcker, who for many years has been in charge at Woburn, has consented to continue the work. Through the generosity of Mr. E. D. Simon, the use of an extensive farm—Leadon Court, Herefordshire—has been given to the Station, and under the management of Mr. J. C. Brown an extensive trial of the soiling system is being carried out. In addition, the Station has many centres on farms throughout the country, at each of which a repetition of a carefully designed experimental programme is being carried out. By this means it is possible in a comparatively short time to obtain trustworthy information on the degree to which the results of field trials at Rothamsted are modified at centres possessing different soil and climatic conditions. The work is being carried out at present on malting barley and potatoes with especial reference to the action of artificial fertilisers, and wherever possible the aid and support of the industrial organisations concerned have been enlisted.

Passing on to the work in progress in the laboratories, Sir John discussed it under its three main headings,—the cultivation of the soil, the feeding of the crops, and the maintenance of healthy conditions of plant work. In connexion with the work on soil cultivation and the physical properties of the soil, he stated that the Empire Cotton-growing Corporation has given a substantial sum for the development of this work, as it is convinced that questions of soil physics are of great importance in those parts of the Empire where cotton is grown. Among other recent developments are apicultural investigations and work on the control of insect pests by means of parasites. The New Zealand Government has been supplied with parasites of certain pests,—the earwig, pear slug larvæ, and pear leaf midge,—which cause extensive damage in that country.

Sir Matthew Wallace also spoke of the value of the work at Rothamsted to the practical farmer. He compared the present wave of agricultural depression with that of 1880 when he started farming, and said that the comparison made him optimistic for the future. The close relations that must exist between research centres and agricultural colleges if both are to keep ahead of the times were alluded to by Principal M. J. R. Dunstan, of the Royal Agricultural College, Cirencester. Mr. George Dallas, of the Workers' Union, said he was very greatly encouraged by the attention now being devoted by the Ministry of Agriculture and Stations like Rothamsted to the improvement of the lot of the farm labourer. He expressed the opinion that the recent increase of educational facilities will be of great benefit to the whole industry, and further it will help to prevent the departure of the best and keenest men from the land.

In the afternoon the visitors made a brief inspection of the work in progress in the laboratories.

New Principle of Therapeutic Inoculation.

IN collaboration with L. Colebrook and E. J. Storer, Sir Almroth Wright published in the *Lancet* (February 24, March 3 and 10) an elaborate communication which is an expansion of a special lecture delivered before the Royal Society of Medicine in November 30, 1922. It is entitled "New Principles of Therapeutic Inoculation."

The new principles may be best understood by a brief reference to the older principles which they are intended to augment or replace. In the therapeutic inoculation for infective disease, it has hitherto been the custom, following Sir Almroth Wright's earlier work, to inoculate the infected individual with a vaccine prepared with the virus with which the individual is infected. While the results in chronic infections have been on the whole excellent, there has been disappointment in the cases in which a heavy infection of a septicæmic type occurred. This was due to a certain extent to the fact that the elaboration of specific protective substances was a matter of time, and the state of the individual might be such that he was incapable of elaborating protective substances at all.

For a long time, however, it was known that non-specific bacteria, or indeed substances not bacterial in origin at all, might be employed to augment quickly the patient's resistance by a process, it was thought, of leucocytosis and phagocytosis. While not agreeing with this suggested action, Sir Almroth Wright, by many new and ingenious technical methods, shows that what he calls an "epiphylactic" response may be evoked by bacteria which are not identical

with those with which the patient is infected. This epiphylactic response occurs when inoculation is made into the blood *in vivo* or even *in vitro*, and takes place immediately by an extrusion of opsonic and bactericidal elements from the leucocytes—an ectocytic rather than a phagocytic process. These ectocytic substances are polytropic in character, *i.e.* they act not only on the homologous but also on heterologous bacteria.

There is, in fact, a non-specific immunity, and it is this which Wright and his collaborators aim at producing to tide the patient over the critical days of his severe infection. The process adopted is named "immuno-transfusion," and consists of the incorporation of healthy human blood which *in vivo* or *in vitro* has been made, by inoculation, to develop an adequate epiphylactic response and is laden with protective substances. In this process it is clearly pointed out that quantitative determinations are of the utmost importance, as a dose of antigen optimal for one patient may be highly detrimental for another. The methods recommended are complicated, and treatment of severe cases of generalised sepsis, if it is to be successful, must lie in the hands of highly trained serologists.

University and Educational Intelligence.

ABERDEEN.—The Blackwell prize for 1923 has been awarded to Mr. F. C. Diack, the subject of the essay being "The Sculptured and Inscribed Stones of the North-east and North of Scotland."

The University Court has appointed the following lecturers to the newly instituted grade of reader in their respective subjects: Geography, Mr. J. McFarlane; bacteriology, Dr. J. Cruickshank; public health, Dr. J. P. Kinloch; embryology, Dr. A. Low.

Prof. C. R. Marshall has been appointed John Farquhar Thomson lecturer on "The Human Body" for the year 1923-4.

CAMBRIDGE.—Mr. J. Barcroft, King's College, Dr. Adrian, Trinity College, and Dr. Hartridge, King's College, have been reappointed reader in physiology, University lecturer in physiology, and University lecturer in the physiology of the senses respectively; Mr. A. H. Peake, St. John's College, and Mr. T. Peel, Magdalene College, have been reappointed as demonstrators of mechanism and applied mechanics. Senior studentships have been awarded by the Royal Commissioners for the Exhibition of 1851 to D. Stockdale, King's College, and J. H. Quastel, Trinity College.

SHEFFIELD.—An anonymous gift of 20,000*l.* has been accepted by the University for the purpose of founding an undergraduate scholarship and a number of post-graduate scholarships. The undergraduate scholarship is to be in the faculty of pure science, and is restricted to boys from King Edward VII. School, Sheffield. The post-graduate scholarships are to enable graduates to pursue research in ferrous or non-ferrous metallurgy.

At a meeting of the trustees of the Albert Kahn Travelling Fellowships Foundation on June 14, Mr. W. Randerson was elected to the fellowship for 1923. Mr. Randerson was educated at the Imperial College of Science, South Kensington, and during this year has been a research fellow of the Salters' Institute of Industrial Chemistry; recently he obtained the degree of M.Sc. (London) for a thesis on the chemistry