

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. M'Farlane; 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

of the soil solution. The value of the award, which is to enable a student of proved intellectual attainment to enjoy a year's travel for research, is again to be 1000*l.*

THE British Research Association for the Woollen and Worsted Industries is to award shortly a number of research fellowships and advanced scholarships. The fellowships, which are tenable in the first place for one year, are of the annual value of 200*l.* The advanced scholarships, also of one year's tenure, carry a maintenance grant, and are designed to afford opportunity for specialisation. They are tenable either in Great Britain or abroad. Applications for fellowships must reach the secretary of the Association at Torridon, Headingley, Leeds, before July 21, and should contain particulars of the candidate's training and experience.

AN article by Mr. H. A. L. Fisher in the *Empire Review* for June surveys the progress of education in the Empire since 1911, the date of the last Imperial Educational Conference. It has been marked in the Dominions by a development of university and college influence even more remarkable than the similar development in Great Britain, and by a quite noticeable family resemblance between the expedients adopted in the various parts of the Empire for dealing with school and college problems. As examples of this resemblance he cites the Ontario Continuation Schools enactment modelled on the British Act of 1918, the raising of the school age in Alberta to 15, Tasmania's new separate infant department, and Queensland's extended scheme of medical inspection. There has been likewise a very general augmentation of teachers' salaries, but this has failed conspicuously to meet the needs of the situation in sparsely populated tracts of country. The Director of Education in Manitoba writes of inexperienced girls placed in charge of district schools because capable men willing to accept such posts can no longer be found. Australia organises either correspondence classes or itinerant teaching. New Zealand employs group supervising teachers. In Canada, as in the United States, there has been an important movement in the direction of concentrating children of rural areas in central schools. Mr. Fisher concludes his article with a prophecy that during the next decade the four most important tasks will be the development of adolescent education in Great Britain, the strengthening of the Arts Faculties in Canadian universities in such a way as to save these institutions from degenerating into mere groups of professional schools with predominantly materialistic motives, the raising of the matriculation age in India, and "such reforms (including in the first place the geographical concentration of the higher teaching in the Arts and in Pure Science) as may enable London University to take its rightful place as one of the great High Schools of the Empire."

IN a paper on methods of college teaching read to the Association of Land Grant Colleges of America, an interesting sketch was given by Dr. W. W. Charters of experiments carried out by him as professor of education in the Carnegie Institute of Technology. When he joined the Institute some three years ago he found that while many of the experienced teachers in the four divisions—Engineering, Industries, Fine Arts, and Women's College—had worked out excellent methods of teaching by themselves, many of the younger members of the staff, who had had no specific and formal training in methods, needed guidance which it became his duty to provide. Finding nothing for the purpose in books on teaching methods, the authors of which concern themselves

almost exclusively with elementary and secondary education, he organised a weekly seminar and made the instructors who enrolled for it draw up lists of their duties and difficulties. He thus obtained a list of 14 real practical difficulties. He next made a list of 30 of the best teachers in the faculty, and the members of his seminar class were let loose on the chosen 30 to wrest from them the secret of how to handle the 14 difficulties. The professors surrendered at discretion, and the storm troops returned stimulated by the encounters and laden with intellectual spoil, which they proceeded to hammer out into a pamphlet which has been in use ever since. In the following year in the course of a similar campaign, undertaken with the object of elucidating the difficulties of getting students to think, it was found that inductive sciences such as chemistry and physics afforded less opportunity than others for practice in reasoning. This was attributed to the technique of investigation being so refined and the equipment so elaborate that principles have to be for the most part merely verified by students without being re-discovered. In the third year difficulties in shop and laboratory teaching were dealt with. Great stress is laid by Dr. Charters on the value of the weekly seminar for inexperienced teachers, to be followed when practicable by criticism of actual performances.

THE report for 1921-22 of the Commissioner of Education of the United States, who, by the way, is an old Rhodes scholar and graduate of Oxford, shows that if the Federal Government's appropriation for his Bureau—the Education Office of the Department of the Interior—is, as he says, "infinitesimal," it is nevertheless made to go a long way. Education in the States enjoys the ministrations of 48 Boards of Education or their equivalents, each of the sovereign States determining for itself the amount and character of the instruction provided for the children of its citizens: "This is as it should be, for the genius of the American people will probably never accept the idea of a centralized national system of public schools." In the circumstances invaluable service can be rendered by an unbiased, disinterested agency which "makes available to all the States the experiences of the most progressive and the achievements of the most highly endowed." Of the services rendered by the Bureau the conduct of surveys of State school systems and of universities and colleges, whether individually or by groups, is, the Commissioner says, probably the most far-reaching in effect. This work has grown very rapidly during the past two years. Among the developments recorded are: the new radio broadcasting service, which, as a means of reaching the general public, particularly parents and taxpayers, has proved cheaper than printing, reaches its audience quicker, reaches the mass of people who will not read printed articles, is more effective because it establishes more intimate contact, and, above all, educates public opinion *continuously*; promoting co-ordination of schools of commerce with schools of engineering with the view of improving methods of marketing at home and abroad; stimulating special training for foreign service, both Government and commercial; organising home-reading circles on the lines of the National Home Reading Union in Great Britain and associations of parents and teachers. Of interchange of students between countries the Commissioner says, "It is a desirable practice making for permanent peace and international comity, and is encouraged by every progressive nation. There are at least 10,000 foreign students in our institutions of higher learning and probably as many more in secondary schools."