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Science and Empire Building

IT is distinctly unusual for the Governor-General of a great Dominion to deliver an important scientific address; yet that is what recently happened in New Zealand when Lord Bledisloe gave the Cawthron lecture, which is there regarded as the annual pronouncement *par excellence* on modern movements in science and their relation to the life of the community. Lord Bledisloe chose as his title "A Conspectus of Recent Agricultural Research" and the choice was doubly happy in that the subject is of profound importance to the people of New Zealand and that he himself is so well qualified to deal with it. Nowhere in the world is scientific agriculture more highly developed and nowhere can one gather a more discriminating and better informed audience to listen to an agricultural lecture than at the Cawthron Institute on the occasion of this annual function.

The cordial welcome given to the discourse by the New Zealand Press was much more than a compliment to the popularity of the Governor General. The address is admirable both in range of subject matter and in presentation.\* Lord Bledisloe begins appropriately with an account of the work on soils and plant growth, this being fundamental to all agricultural systems. The account of the Rothamsted experiments on cultivation and fertilisation of crops and on the making of new pastures is followed by a description of the Jealotts Hill investigations on the intensive manuring of pastures, and of the Aberystwyth work on the improvement of hill grazing. This naturally leads to a survey of the effects of mineral deficiencies on the composition of the herbage and on the health of the animals grazing thereon. Fundamental studies on this subject are made at the Rowett Research Institute at Aberdeen, but New Zealand has contributed in no small measure to the advances made in recent years.

Stress is rightly laid on the need for an adequate soil survey of the country. Much is already being done in New Zealand and appropriate methods are being worked out: meanwhile the underlying principles are being studied at Rothamsted, Bangor, Aberdeen and elsewhere.

Dairy research comes in for a great deal of attention because, as Lord Bledisloe rightly points out, uniformity in the butter and the cheese exported to Great Britain is an essential condition of their saleability and stable reputation in British

\* Copies of the lecture can be obtained from Messrs. Whitcombe and Tombs, Ltd., 3 Adde Hill, London, E.C.4, price 1s.

markets. Nothing has contributed more to the attainment of this desirable characteristic than the production of commercial 'starters' commenced in Denmark some forty years ago and now widely used wherever dairying has become a science. So much research has been done on the feeding of animals and so advanced is the good farmer's knowledge of this subject that, in Lord Bledisloe's view, "if the average human being knew as much about the feeding of himself and his children as the average farmer knows about that of his stock, the average standard of human health and physical energy would be at least 33 per cent higher than it is. Probably as much as 50 per cent of the therapeutic activities of physicians, druggists and clinics is referable, directly or indirectly, to avoidable dietetic indiscretions based on ignorance of the fundamental principles of animal nutrition".

This statement is supported by some remarkable evidence. It is stated, for example, that the Plunket or Truby King system of feeding infant children has reduced the New Zealand rate of infant mortality under twelve months from 80 per 1,000 in 1889 to 32 per 1,000 in 1932, a figure which gives New Zealand the best record in the world and compares with 71 per 1,000 in England and Wales, 109 in Germany and 124 in Italy.

The chief export from New Zealand is wool, and no small part of the present depression in New Zealand is due to the low prices now obtained owing to the quantity of this commodity on the market; every penny per pound of wool sold represents £1 million in the national revenue. Naturally New Zealand is deeply interested in the research work on wool now going on in Great Britain: the search at Leeds for definite standards of grading which would enable the manufacturer to tell the farmer exactly what types of wool he wants; the studies at Edinburgh of the inheritance of the more important characteristics of the wool; and the Rowett Institute investigations on the relation between the composition of food and the yield of wool.

Next in importance to wool, and probably of more significance for the future of the country, come the dairy and meat industries, both of which ultimately depend for success on low temperature transport. Great Britain will probably always be New Zealand's best customer and the journey will always have to be across the equator; however much it may be shortened, there will always be

the need for low temperature transport and storage. Research on this subject is now being taken up seriously and scientifically at Cambridge and elsewhere, and further developments may be expected in the near future. It is very gratifying to observe how much of the work that made so strong an appeal to Lord Bledisloe's highly skilled audience had been done in the agricultural research institutes of Great Britain.

The address is important not simply because of its subject matter, but much more because of its significance. The British Empire was founded by adventurous soldiers and sailors; it was developed by courageous farmers and settlers who, often struggling against fearful odds, brought the land into cultivation, built roads, railways and cities, and laid out the countryside as a vast agricultural estate. It has been knit together by bonds of sentiment steadily growing among the people and fostered by wise statesmen, writers and teachers. But the lands of the Empire have nowhere reached the limits of their development. The first feeling of an agricultural expert in visiting any of the great dominions is one of wonder at the vast natural resources still awaiting development.

Courage and hard work have played and must continue to play their part; science has now come in, vivifying with magic touch many an enterprise that seemed beyond hope, and achieving tasks which but a short time ago would have been deemed impossible. No one can tell where the applications of science will stop; for the present, the one thing certain is that they will go on at an increasing pace, playing an ever-growing part in the lives of all who are so directly dependent on natural forces as are the agricultural communities of the dominions. The Empire builders of to-day are the men and women who in Great Britain and overseas are quietly studying the scientific problems that so deeply concern the comfort and well-being of those living in the distant lands.

The change has far-reaching consequences. More and more it is becoming essential that the administrator should have a full appreciation of the part that science should play in the life of the community. Lord Bledisloe's undoubted success in New Zealand is due in no small measure to the fact that he recognises the value of science and so is able to enter more sympathetically into the life and problems of the Dominion than would otherwise be possible. The Cawthron address of this year may well be a significant portent.