

if a "company for exchange" were mooted. I will not elaborate further, but may be permitted to remark that the Government were to be commended for making public in recent years their experts' valuable reports on the oilfields of the North.

Assistance to so-called "cranks": No man should be turned down as a fool with a "bee in his bonnet" who exhibits highly inventive genius, but should be treated as an asset of the State and taken in hand. Many men of the kind in our experience have died poor and broken-hearted, and the product of their brain has been lost, often through illiteracy and through want of a little paternal encouragement by the State.

Edison successes: It is fairly well known that many important inventions credited to Edison have in the embryo stage been the product of some humble worker. Edison has provided the laboratory and taken the place which in this country the State should take.

Specimen exhibits in school: For years past it has been my desire to see in the schools of the Dominion samples and specimen exhibits of minerals, &c. How many of us to-day deplore an ignorance of even elementary geology! How few know the first thing as to a sample of phosphate rock, the discovery of deposits of which the Government to-day has wisely encouraged! The idea of exhibits in schools might be extended to seeds and weeds. Many farmers to-day are ignorant of these. The re-establishment of the School of Mines should receive the earnest consideration of the Government.

Physical science should be made compulsory in schools: It is usually found to be most interesting study to most high-school boys, and the few that have got a smattering have longed for more. Take to-day the few men who understand the workings of a common pump, and the fewer who know of centrifugal force. I would bring the pump itself into schools and demonstrate, for ocular and personal contact with the practical objects is much more lasting in its educational effect than mere theory. Theory and practice should go together. As an instance of physical comfort afforded by scientific investigations conducted in America by army experts, I may mention the present-day footwear, evolved after long experiments in the army. There is no need to-day for a growing lad to have his feet pinched and distorted, as was the case some years back. Lasts are to-day made to conform with the shape of a man's foot, not *vice versa*, thanks to scientific insistence.

One day the matter of educating the masses on the suicidal policy of restriction of output must be taken in hand. The subject ought to be introduced into schools, and scholars be encouraged to write essays on it. The introduction into school arithmetic of easy problems dealing with "outputs" might tend to lay a foundation for future good results. The Board of Scientists' advice might be taken on the matter. To quote from "Eclipse or Empire": The organization of the country, and those industries in particular which are the life-blood of her power, must be safeguarded in the interests of the State. Mr. Runciman, in his speech of the 3rd January, 1916, in London, says, "It will, in fact, be apparent to all observers that a country that fails to regulate and foster its industries in the national interest cannot in the nature of things long survive the rivalry of another country where the industries are so regulated and fostered." This sentiment may be applied to New Zealand. The question, Are we making the most of and getting the best and most economical results out of our productions to-day? should be answered by experts. It has been said that a nation can never become great which is a producer of raw material only, and it therefore behoves us for our future's sake to encourage in every way work and study such as shall produce the highest and best results from the materials which a bountiful country has placed in our hands.

To Mr. Veitch: If we are going to allow industrial troubles to be a barrier against us we might as well drop the whole thing, as far as the development of industries is concerned. I think we should go ahead. My idea is to bring all the classes together and have a table talk about different matters to see where the difficulties really are.

Dr. D. E. HANSEN, Director, Invercargill Technical College, examined.

It is being brought home to the people of our Empire in a most striking manner since the beginning of the war that many of our industries have languished and others have become defunct through failure to improve the manufacturing methods, to utilize fully the by-products, and to make proper use of what is wrongly regarded as waste. To keep our industries in a flourishing condition a proper co-ordination is necessary between the manufacturers and those who are competent to advise, including more particularly the chemist, the physicist, the botanist, the consulting engineer, and other experts. Most of our young men who have attended secondary schools have the rudiments of a scientific training, yet insufficient knowledge to grapple with the intricate problems that are encountered by the manufacturer. These problems can be handled only by specialists, who are to be found on the staff of our universities or in practice as consulting experts. The latter are comparatively few in number, and the former are in general discouraged in terms of their engagement by the University authorities from engaging in outside work, or are so loaded with work of an elementary nature as to have no time for duties outside the lecture-room. One has only to look to Germany and the United States of America to see how the employment of university professors in solving the problems met in manufactures and industries has benefited the country in general. In the United States professors are generally allowed to associate themselves with manufacturing firms as scientific advisers, whilst it is also a common practice for a firm to make a donation to a university on the understanding that one or more research students will be set aside to investigate some problem which the firm cannot solve in its own works and by means of its own staff. The practices mentioned do not result in a deterioration of the standard of work done in the universities; it has instead the desirable effect of increasing the number of research students and the number of professors and highly