

# Aid of Science in Development of Canada

The Application of Science to Industry, with Observations on Saving in Canada, Was Text of Speech of Arthur D. Little Before Winnipeg Manufacturers.

Prospects of new wealth in boundless quantities, through the application of science to industry, were unfolded the other day by Arthur D. Little, of Boston, in an address at the Royal Alexandra, at Winnipeg, after a luncheon given in his honor by the Canadian Manufacturers' Association. Mr. Little represents the firm of Arthur D. Little, Inc., of Boston, an organization of chemists and engineers, whose specialty is industrial research.

At the invitation of Lord Shaughnessy, president of the Canadian Pacific, the firm established a branch in Montreal, and Mr. Little has undertaken to survey the resources of Canada. His address was partly the result of a tour through Canada, which he had made in company with George Bury, vice-president of the C. P. R.

W. M. Ingram, president of the Manufacturers' Association, introduced the speaker.

Mr. Little explained that he was born in Boston, and therefore belonged to those who do not have to be born again. He was therefore surprised to find himself, after a brief acquaintance with Canada, undergoing an unexpected process of rebirth. He had found himself in a new and ampler world, in which one breathed a more stimulating atmosphere and learned to think in continental terms. It was a world in which present achievement, wonderful though it was, derived its chief significance from its promise of the future. He had seen the black soil of the prairies turning green with the young wheat, great stretches of forest, lakes like inland seas, mountains rich in minerals and of commanding beauty, noble rivers and cities so clean, orderly and metropolitan that the traveller's admiration was blended with envy.

Natural resources, proceeded Mr. Little, did not of themselves create great industries. Such industries resulted from personal initiative. Opportunity implied responsibility, and it was upon the heirs of this rich inheritance that the responsibility for a wise initiative was placed. The first requisite for a wise initiative was a compelling desire to do something with the opportunities at hand, and the second was knowledge. Science was only knowledge at its best; it was not something occult, to be followed for its own sake, but was intensely practical. The war had taught English-speaking people that science was the basis of prosperity and power, and that without science there could be no liberty and no national existence.

Mr. Little defined industrial research as research having for its immediate and avowed purpose some practical end. No greater service could be performed than that of inculcating into the public mind a proper appreciation of what research could do. For forty years the spirit of research had pervaded the entire social structure of Germany, with the result that Germany, although not possessed of great natural resources, had before the war been rapidly making a peaceful conquest of the world. In the United States the handwriting on the wall was being read, and already several large corporations found it profitable to maintain great research laboratories. At least a dozen corporations spent \$100,000 or more on such laboratories, and one company employed 650 chemists.

There was also, declared Mr. Little, an insistent demand throughout the British Empire for the mobilization,

co-ordination and extension of research facilities. Lord Shaughnessy had acted by calling the organization represented by the speaker, Arthur D. Little, Inc., of Boston, to Canada, for the survey of the natural resources of the Dominion and the promotion of industrial research. He and his associates felt that, in so doing, Lord Shaughnessy had honored them so signally that they would be dishonored if they failed to make the most of the opportunity placed in their hands. They were not in Canada in the exclusive interest of any corporation, but to serve all clients whose interests were in line with those of the Dominion. Their work had scarcely begun. Ultimately they hoped to have the known resources of the Dominion indexed, so that the main facts about them would be instantly available. They expected to assist in securing new facts, and were assured of the cordial co-operation of the Federal Government and the universities. They would strive to introduce industries along new and non-competitive lines and, if permitted to, improve the practice of many existing industries. Some progress could be reported already, although they had only been in Canada a few weeks.

Mr. Little then mentioned a few of the lines in which applied science could help in the production of Canadian wealth. Sometimes as much as 2,000,000 acres were sown to flax in Canada for the grain only. It was not practicable, in view of the labor situation, to grow flax for the fibre in order to make linen. But mountains of flax straw resulted from the growing of flax for the seed, because when grown for that purpose it was sown much more sparsely than when grown for fibre, and its habit of growth was changed. Hundreds of thousands of tons of the best paper stock in the world could be obtained from straw. And in the United States the Government was circularizing housewives not to destroy old paper and rags, from which new paper could be made. It had not been an easy matter to separate the fibre required for paper from the broken straw. A great many people had tried it without success. His own company had carried out some experiments in its experimental paper mill at Boston, and had succeeded so well that the United States Government was taking the paper they produced. Samples of it were shown by the speaker. Such paper was worth 6 cents in any market, he said, and probably 8 cents. A mill established to manufacture it could afford to pay the farmers \$3 a ton for flax straw delivered.

Another question they were investigating was the possibility of providing gasoline from natural gas. A new process for effecting this end had been developed in Oklahoma. It was of peculiar promise, and his company had taken out a license to use it in Canada. If some of the gasoline thus obtained contained too much sulphur, probably it could eventually be eliminated by an adaptation of the French process, which had proved so successful in taking sulphur out of oil. By this method, copper was put into the oil, and the sulphur attacked the copper, leaving the oil pure. There was much lignite in Canada. This was a good gas producer, and a new type of machine, a rotary, which worked well with lignite, had recently been made available.

Another possibility for Canada, said the speaker, was the production of dry milk. Several processes for doing this had been invented. Sterilized it kept good for a long time, and for certain purposes, including those of bakers and confectioners, was better than ordinary milk. It could be restored to the condition of ordinary milk by the addition of water. He was convinced that it would become a staple article on the kitchen shelf. Its great merit was that, in shipping, seven-eighths of the freight on ordinary milk was saved and dairies could profitably be established at points remote from markets. About \$15,000 worth of dried milk entered London daily from Scandinavia, and quantities were