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CENTRAL RESEARCH INSTITUTE

LOSSES due to preventable ignorance are incalculable. They transcend the cost of war. In fact, all the realized wealth of the world would not offset them. The resultant toll of human life is greater than that of war, famine and pestilence combined. Man, of course, is only groping in a dim twilight toward the secrets of the universe, but the knowledge he has already acquired has been more than sufficient to revolutionize most human activities and to add immensely to the health, wealth and convenience of mankind. But what is lacking is universal and extensive, to say nothing of intensive application of the known and proven.

Any extension of the present boundaries of knowledge adds to human resource, multiplies wealth, prevents untoward happenings, and helps the less able to better things. Yet it is a remarkable fact that scientific research is in bondage to ignorance, since it is denied legitimate extension and support by those to whom the results mean the most.

The usual attitude toward research is whether it is likely to pay, as if it were necessary to justify knowledge in terms of economic fact and trade profit. Surely it is conceded that past research has paid countless thousands per cent. What further need has it of any justification?

To attain the best results in the sense of fundamental discovery, the mind of the investigator must be untrammelled and his eyes without the blinkers of simple commercialism. Industrial research is perhaps another matter, for the immediate problem is stated and the scope of the investigation circumscribed.

It is ignorance that binds the feet of science, lack of knowledge that acts prejudicially against the novel. To win through to the emancipation of mankind by making nature servant in place of master, demands freedom and means, together with trained intelligence. One-tenth the world's expenditure on armament would suffice in less than a century

to unlock mysteries unnumberable. We must discard ignorance, unshackle research from the chariot of commerce, and endow science in order to set man free.

Throughout the British Empire, the importance of research appears now to be receiving somewhat adequate recognition, probably for the first time in modern history. In Great Britain, parliament has created a separate Department of Scientific and Industrial Research, and has voted for its maintenance the sum of five million dollars to be spent in five years. In Canada, there is good reason to believe that a Central Research Institute will be established at Ottawa, combining the functions of the Bureau of Standards at Washington and the Mellon Institute at Pittsburgh. According to an announcement by Dr. Macallum, administrative head of the Honorary Advisory Council for Scientific and Industrial Research, there will be an expenditure of \$500,000 for a four-story building, of \$100,000 for equipment, and at least \$100,000 per annum for maintenance. Canada urgently needs such an institute. It should be established at once, even if it should cost many times the figures quoted by Dr. Macallum.

STATE AID FOR HYDRO-ELECTRIC PLANTS

TWO adverse factors have affected the development of water power in Canada, as in many other countries: First, public sentiment; second, initial cost. The public feels that there is a nobility in the country's rapids and waterfalls; that their grandeur is a heritage which must not be surrendered at the call of commercial interests. This sentiment is deep-rooted, and in many cases cannot be trifled with until fireless homes, foodstuff costs, freight congestion and other issues pertaining to personal welfare and the personal pocket-book, are seen to be dependent upon the water power for solution.

Once established, a hydro-electric station costs little to maintain and is largely automatic in operation. There are no expensive outlays for coal or oil. The pay-roll is comparatively small and the interruptions in service are few. But the initial cost is generally much greater than for a coal-power or oil-power plant. With money at over 10 per cent., allowing for present interest rates and all incidental expenses and discounts, the individual water-power plant is an expense not likely to be undertaken under present conditions by individual companies, which generally have need for most of their initial capital, unless:—

(a) They are compelled to make use of water power in the interests of the country, and

(b) The government aids them in so doing, which would be only fair if (a) be enforced.

The energy problem of the country as a whole should be given active consideration. The Dominion Power Board was appointed for this purpose some time ago, but as it has issued no report, nor has it made public any of its investigations or discussions, the public cannot determine whether anything has been done toward economic correlation of the energy resources of Canada.

Through the Victory Loan and other sources, the Dominion government is in possession of ample funds for investment in any enterprise which will be of economic benefit to Canada. While the funds are available, it would be well if the Dominion Power Board could suggest some method of assistance in financing water-power developments which would conserve coal or oil, yet which would be impossible from a business standpoint without State aid.

The utilization of water power deprives the country of no asset or resource. Every pound of oil, wood or coal of any kind that is used for power where hydro-electric energy could have been substituted, lessens our national wealth. True conservation would be effected by State aid in the financing of water-power developments, this aid not to take the form of bonuses or grants, but merely loans which would be fully repaid, with reasonable interest, upon the instalment basis.