"CO-OPERATION BETWEEN SCIENCE AND INDUSTRY."

An Open Letter to Frank Arnoldi, Esq., K.C., President of the Royal Canadian Institute.

Congratulations, sir, not so much on the addition of the word "Royal" to the title of the Institute, which in itself is no small thing, but on the goal towards which, as we now recognize, that was but a step.

"Co-operation Between Science and Industry in Canada," recently issued over your signature, will be read with interest by engineers everywhere and they will recognize and appreciate the partial return of the Institute to its old love.

The study of nature to woo from her the knowledge of her secrets is one thing and this knowledge may be To called Science, or Pure Science, or Exact Science. convert this knowledge to the use and convenience of man is another thing. It is sometimes called Applied Science, but it is really Engineering. It is the new form of the old struggle with nature to make her work for man. This struggle has been aided, has been entirely changed by the knowledge supplied by the sciences, but the knowledge is but a weapon and much lies in the wielding of it before nature is compelled to yield in usefulness. This wielding for the community is Engineering. The methods of the Engineer are scientific methods, but they are very different from the scientific methods that produced the weapons. It is Engineering that makes the weapons useful.

You are seeking methods of developing this En-You are pleased to consider yourself gineering aid. neither a scientist nor an Engineer, but you belong to that profession which has a broader and at the same time a more intimate view of the real needs of the community than any other other, and you have chosen to lead back the Institute to the lines favored by its founders. The Royal Charter of 1851 stated the objects of its incorporation to be "more particularly for promoting the acquisition of those branches of knowledge which are connected with the professions of surveying, engineering and archi-The aims of the Institute show the conventecture." tionalized symbols of Engineering and its founder was an Engineer, but for more than a generation the Institute has departed from the lines laid down for it, and the tangible results have been meagre compared with the promise of the future. Our congratulations on the return to the original trail.

Yours faithfully,

H. E. T. HAULTAIN.

C.N.R. SHOPS AT PORT MANN, B.C.

The buildings for the proposed machine shops and repair plant of the Canadian Northern Railway at Port Mann, about 16 miles from Vancouver, were completed some months ago and equipment is now being installed. The buildings are practically all of reinforced concrete construction with wood and steel roof trusses. The main erection and repair shop is 276×143 ft. and is laid out with two main bays. The other buildings include a 15stall round house, a large storehouse, an 80-ft. turntable, an 80,000-gallon steel water tank mounted on a steel tower, and housing and boarding accommodation for about 150 men. The bay of the main structure devoted to repair shop has a 30-ft. elevated platform running the full length of the building to be used for purposes of light repair. Both bays are served by 10-ton travelling cranes. An electrically operated pair of jacks with spacing capacity of 25 to 45 ft. is being installed for the manipulation of locomotives. The drill, lathe and other equipment are of the most modern types.

SANITATION AND THE WAR.

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At a recent meeting of the Canadian Club of Toronto, Dr. John A. Amyot, director of the Provincial Board of Health, pronounced sanitation as the most vital factor in a modern military campaign and corroborated his statement by reference to war fatalities in the past. Where efficient precautionary measures against disease had not existed, fatalities had been overwhelmingly more numerous as the result of epidemics of sickness than from the destructive forces of the enemy.

It was stated that in the South African war 12,669 men and non-commissioned officers had died from disease, while only 7,000 had died from wounds. In the American Civil War the northern army lost 102,000 men, and 20,000 of that number died from disease. Going back to the Crimean War, during 6 months, from October, 1854, to March, 1855, there were 52,000 men in the hospitals and only 3,800 of that number had been disabled by wounds.

The Russo-Japanese War very stoutly emphasized what sanitation in war meant. By rigid measures, conditions as outlined above were reversed and less than 25% of those who met death, died from disease.

The speaker pointed out the work of the Army Medical Service Corps—to keep men fit and to return as many sick and disabled persons as possible to the firing line. It was stated that before the time of antiseptic surgery the mortality in cases of amputation and injuries to lower extremities on the field of battle was as high as 90%, and that it has now been reduced to as low as 5%.

He expressed the great difficulty in the present war to be that the armies were of such a mixed nature that the difficulties attending complete sanitation on such a gigantic scale are enormous.

Dr. Amyot paid due attention to the problem of water supply and remarked that in war the army always assumed water in a new district to be impure, until it had been proved to be otherwise.

GOVERNMENT DRY DOCK AT SELKIRK, MANITOBA.

Late in October the Department of Public Works, Ottawa, completed at Selkirk, Man., the construction of a \$100,000 dry dock. The capacity of the dock is 1,500 tons, and it is of sufficient size to handle a vessel 250 ft. in length. The cradle is 192 ft. long in itself, and 208 ft. over all. Its width is 52 ft. It has been constructed in two parts in order to provide for repairing two small vessels simultaneously.

The dry dock is operated by a 150 h.p. motor. By it the dock cradle is raised or lowered on a track extending 525 ft., or to any depth necessary for hoisting the craft to be repaired. The hoisting is accomplished by chains. The cradle is chiefly of steel construction, while the dock walls are both of concrete. The Crandle Engineering Co., of Boston, were the contractors. Inspection work was carried out by the Canadian Inspection Co.