

strong organization to which the state will furnish financial assistance.

The first step to be taken in this country is the recovery of more bye-products from the coke ovens and gas-works. At present there is only one concern operating by-product ovens on Canadian coals, the majority of the mines adhering to the old beehive oven or at the best utilizing the gases for steam raising. The recovery of these valuable coal tar and ammonia compounds at every coke oven plant would be a great step forward in national conservation.

Among the salts the alkaline bichromates and cyanides offer a good opening, together with the compounds of magnesia, the latter being largely employed in the manufacture of jointless floorings and the cyanides finding an extensive market in our gold milling plants.

Small chemicals and pharmaceutical products, synthetic perfumes and essences, formerly of German origin, are a fascinating branch and one that English manufacturers are now giving close attention to. There are a large number of what are called organic intermediate products obtained from coal tar by chemical transformation and apart from the dyes. Aspirin and other salicylic acid derivatives may be particularly referred to as being in great demand, and there are many other compounds of which the same might be said.

It can be seen that there is ample opportunity for both the large and small producer in heavy and in small chemicals. The consumers of large quantities of chemical material should follow the lead of the British firms and themselves become producers, owning their independent resources of raw material.

The practical operation of all plants should be controlled solely by skilled technological chemists, with whom research work for improvement of treatment must, as in the foreign factories, become a part of their daily routine. The status of the technical engineer or chemist in this country is, as a rule, entirely disproportionate to his skill and training, the business man being paramount in most undertakings. The technical man should be raised from his present position as an academic adjunct and given a full voice in the control of all technical enterprises.

BRITTLINESS IN SOFT STEEL.

The extreme brittleness brought about in soft steel by working at a blue heat, that is, from about 400° to 650° F., is a well-known phenomenon. It is often so great that insignificant causes, especially light blows and shocks, are sufficient to cause fracture. There are no exact figures, but according to experiments made by Dr. E. Preuss, of the University of Darmstadt, a small elongation of soft steel at a blue heat is sufficient to bring about remarkable increase in brittleness. In all cases the higher temperature gives the worst results. The brittleness increases very rapidly with increase in the amount of elongation given. It is the more extraordinary because no change in structure can be found, even with the highest magnification. If this were not the case it would be easy to separate the brittle material by microscopic examination of a small piece the removal of which would not injure the material. The only difference found was that often the larger slag inclusions were broken, but this is also seen in pieces stretched to the same extent at ordinary temperatures.

A reinforced concrete pontoon for a landing stage for ferry service, has recently been put into use in Sydney harbor, Australia. The pontoon is 160 feet long, 43 feet wide at one end and 68 feet wide at the other, seven feet nine inches deep and has a freeboard of 22 inches. The bottom of the pontoon is flat and the sides and ends are sloped to an angle of 70 degrees.

Coast to Coast

Fredericton, N.B.—The St. John Valley Railway has been taken over by the Intercolonial Railway Co.

Vancouver, B.C.—Train service has been established on the entire line of the newly-completed Kootenay Central Railway. It is 160 miles long.

Victoria, B.C.—Canadian Northern rails are en route for Victoria from Sydney, Cape Breton, via the Panama Canal. The Gladstone, 3,087 tons, sailed from Sydney in November, and is expected to arrive in Victoria in a few days.

Sydney, N.S.—The Nova Scotia Steel and Coal Co. will shortly be working at full capacity. An important order in hand is that for the manufacture of war material for the government, and consists chiefly of manufacture of steel cases for shrapnel shells.

Vancouver, B.C.—Less than 100 miles of track will now complete the British Columbia divisions of the Canadian Northern Railway. Steel bridge work between Lytton and Kamloops has been completed. A tunnel 330 ft. long is being bored at mile 128 north of Kamloops.

Point Grey, B.C.—W. B. Grier, municipal engineer, in his annual report, states that there are in the municipality 16.155 miles of paved streets, 49.75 miles of macadam roads, 29 miles of cement sidewalks, 78 miles wooden sidewalks, 53.5 miles of sewers, 10 miles of storm sewers, and 104 miles of water mains. He estimates the cost of necessary work for 1915 at a little over \$152,000.

Montreal, Que.—The work of linking up the new Cedars Rapids Power and Manufacturing Company's development with Montreal was completed last week, the company being now ready to deliver power to both the Montreal Light, Heat and Power Co. and to the Aluminum Co., under contracts, which date from January 1st, 1915. It is significant to note that despite the mishap which occurred a month ago the new company is ready to operate in advance of the stipulated time. Mr. J. E. Aldred is president of both the Shawinigan and Cedars Rapids Companies.

Hamilton, Ont.—The industrial situation has brightened remarkably of late. The Steel Co. of Canada has a million dollar order for special steel for Great Britain and France, and will shortly commence running full blast. The Canada Steel Goods Co. is also working full time. Large orders for shells are keeping busy the plants of the Canadian Westinghouse Co., Otis-Fensom Elevator Co., Chadwick Brass Co., Hamilton Brass Co., and others. The Hamilton Bridge Co. is rushing the work on the steel for the Don section of the Bloor Street viaduct. The Royal Connaught Hotel and the Proctor-Gamble building are being proceeded with.

Montreal, Que.—The board of control has before it a proposal to construct a tunnel under the Lachine Canal at the Wellington Street bridge for the greater convenience to the Point St. Charles populace and avoidance of delay in navigation on the canal. The Federal government and the Montreal Tramways Co. will be asked to contribute toward the cost of construction, which is estimated at \$750,000. The tunnel, if proceeded with, will be built about 50 ft. below the present water level. The approach at the west end would be at Bridge Street, and at the east end near Murray Street. A sum of \$1,500 was voted toward the preparation of plans. At that point the canal is about 20 ft. in depth, and provision has been made in the estimate to provide room for deepening it further, as contemplated by the government.