

economic doctrine, it has done everything within its power to advance the cause of industrialization. Large expenditures have been made to advertise the opportunities offered in Alberta, and equally large sums have been spent on developing provincial departments to handle inquiries and to make investigations and surveys. Substantial help in the form of loans by the Government's "credit houses," long-term leases and other assistance has been made available. The policy of the Government has been to encourage and aid private enterprise and it appears that this attitude has had measurable effect.

As to the future growth of industry

in Alberta it is extremely difficult to make a forecast. One point is certain, however, The inequitable share of Canada's transportation costs now borne by Alberta must be adjusted if industry is to be attracted into the province. This burden is itself a severe handicap; coupled with a carrier rate system premised on "what the traffic will bear," it becomes a veritable hobble. Granting that some day this impediment will be removed and the way opened for sound economic development throughout the nation, then the prediction of Professor Griffith Taylor that Alberta will be Canada's first province within the next hundred years may be true.

British Columbia: New Opportunities For Industry

By G. E. KENDALL

SINCE Confederation in 1871, British Columbia has been famous for its tall timber, rich silver ore and bounteous salmon catches. Now, industrialists with important capital, from the United States, Eastern Canada and across the seas, find a new meaning in B. C.'s natural stockpiles. They see here, an opportunity for the great expansion of secondary industries—those industries whose success and ultimate importance will lie with the survival of the province's primary production. The 38,000 odd immigrants who have come to B. C. in the last seven years, also see in this province, the best in working conditions. B. C.'s claims to the highest per capita wage rate and the highest per capita national income and conditions in every aspect are favourable to the working man and his employer.

With ready access to tide water, trade may pass the year-round through British

Columbia's ice-free seaports. This proximity to tide water may mean the eventual industrial greatness of British Columbia—this proximity and the hidden resource, Hydro-Electric Power.

It has been estimated that B. C. has a potential hydro-electric output of 13,000,000 H.P. equalled in potentiality only by the province of Quebec. Development of the power has been tardy but has seen great strides since the opening of the 25,000 H.P. unit of the proposed 180,000 H.P. development of the B.C. Power Commission. This expansion on Vancouver Island precipitated the operational plans of a \$7,000,000 pulp and paper mill. With some 850,000 h.p. in operation in the province, the remaining projected development, including the electrical generating project at Bridge River, will provide the thousands of horse power needed for new industry.

If estimates can be considered indicative of industrial trends, it can be said that no less than \$450,000,000 are

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invested in B. C. factories and that these factories now employ some 88,000 employees compared with the 27,000 odd industrial workers in 1932. To-day, the new industries include manufacturing of matches, pig iron, cast iron spun pipes, umbrellas, floor ties and optical glass. In the last two years, a paint works, a magnesium plant and a chemical factory have appeared on the industrial scene. To-day, New Westminster turns out glass-lined iron tanks, boilers and kilns, the size of which would formerly have necessitated shipment from the Eastern provinces.

Helping to co-ordinate the capital and skill of industry with the best use of the natural resources of the province, is the British Columbia Industrial and Scientific Research Council, who publish all research findings done at the expense of the government. The provincial government, the Dominion government, the University of British Columbia, representatives of industry and labour, joined in this organization, are working towards the goal which will make this province a competitive industrial economy.

Research and scientific method in production will mean the salvation of B. C.'s primary industry. The forest growth cannot be cut each year without fear of eventual depletion unless adequate yield management is enforced—her fish must be allowed to spawn naturally or their abundance will eventually disappear.

Forest Products Industry

It is a well known fact that the forests of British Columbia are the backbone of the western economy. When the early pioneers of the West cut their cities out of the wilderness, they did not foresee that some day their descendants would produce plastic drinking cups and phonograph records from the bark of the remaining timber stands.

Step by step the forest industry has grown from a purely "cutting" basis

until now, it is an industry worth some \$282,288,388.

In 1947, 4,187,816,199 F.B.M. of timber was scaled—some 832,920,633 F.B.M. more than in 1939. But now, the timber is not only converted to lumber in some 1,558 operating mills, but the by-product, sawdust, of these mills is viewed with an eye to the demands of the present day markets and the advances of science. One well-known lumber manufacturer said recently that soon there will be hardly a speck of sawdust left in a modern lumber plant. Sawdust, formerly considered a good cheap fuel by the B. C. housewife, will be turned into higher cost, soft and hard building board in a proposed three million dollar plant.

The growth of the plywood industry has been slow and of a very minor importance in the province. With the discovery of the proper type of adhesives, now locally produced (and also a forest by-product) the future of B. C.'s plywood industry has assumed amazing proportions. Although there was relatively no plywood produced in B. C. prior to the war, to-day the production amounts to more than \$20 millions.

Pulp and paper production, long one of B. C.'s major industries, has expanded rapidly since the end of the war. The production value in 1947 was more than 250% that of 1939. (This amazing percentage rise is partially due to increased market values). The use of small second-growth timber and the formerly despised hemlock has given pulp and paper production a tremendous impetus. Utilization of waste product, called hog fuel, in the making of paper has created another source of cheaper material. The invention of the "log chipper" has brought about this result. Side by side with the paper making industry has grown the paper bag and box business now flourishing in Vancouver.

Watching the celanese-hungry world market, a \$15 million cellulose plant is

well on its way toward production at Port Edward. The Minister of Lands says that this plant represents something unique in the line of forest utilization on the North American continent in that it will be the "first big arrangement in which Government and business combine to perpetuate timber resources by scientific management and at the same time maintain a continued supply of timber for industrial purposes."

If the right kind of cheap, industrial fuel was made available, this firm might construct a plant to manufacture the celanese yarn and eventually the rayon itself. It is unlikely that B. C. will reach the actual piece goods stage as the high costs of labour here cannot compete with the Eastern production costs.

The use of the hydraulic barker in removing bark from logs has been instrumental in plastic manufacture in B. C. Plans are being made to produce the aforementioned drinking cups, and phonograph records, as well as explosives, adhesives, table ware and other commodities from this bark that was once used for fuel

With her forests the economic mainstay of B. C., conservation of this resource is the objective of the provincial government. Remembering that a Douglas Fir requires fifty years before it is ready for the logger's axe, fire prevention has been redoubled, conservation laws enforced and reforestation established as a permanent policy.

The costs of reforestation have been greatly reduced by the appearance of an instrument known as the "root pruner," whereby tree cuttings may be safely obtained. The great annual amount of timber scaling could not continue were it not for the fact that 60,000 acres of new forests had been planted in forest service nurseries. The quality of this nursery stock is being improved by experiments with softwood seed from New Zealand, Russia and the State of Washington.

Each logger in the B. C. woods in-

directly supports some twenty eight people. The industry is not only vital to the province but to Canada as a whole.

Fisheries

With her 1947 fish catch, market-valued at approximately \$58,250,000, British Columbia leads all provinces with an estimated 40% of the total Canadian production. Even the provincial peak year of 1945 has been excelled, and, although production value of the first six months of 1948 is some \$31,000 less than for the same period last year, the latest reports indicate that the total figures for 1948 will again equal, if not surpass, the 1947 results.

But not without caution is this harvest reaped annually. The Dominion Government (responsible only for the fish industry until it reaches the market and process stages) has conducted research and passed legislation whereby the West coast fishermen will be assured of a never ending supply of first grade fish. Joint Canadian and American Treaties have further protected the industry. Extensive articles have been written on the man-made fish ladders which help salmon on their tortuous journey to spawning grounds; the development of fish hatcheries; the tagging of young fish to observe their habits and movements; the regulation of net sizes, and sensible time limits on the various seasons—all adding up to a wise conservation policy.

Although it is the salmon which has brought British Columbia's fishing industry world acclaim, other species are rapidly adding dollars and cents to the yearly output values. As is the case with forest products, a dollar does not pay for as much fish as it did formerly. Even so, B. C.'s herring, halibut, pilchard and cod catches in 1947 broke all previous records. The halibut fisherman, hampered by a short season, has adopted the suggestion of the Dominion Government and gone after the big sporting, Albacore or Tuna (at \$500 a ton) and in 1947 landed one million

pounds. Before the war, no tuna was caught locally and the industry belonged to the California fishermen.

Experiments to grow lobsters at an upcoast lagoon have been more than successful and the industry should be well underway to swell the 1949 values. Whaling operations have commenced again after five years and tests are being made with local oyster seed at the Pacific Biological Station in hope that the importing of Japanese seed will no longer be necessary.

Prior to 1935 there was little known use for the so-called waste products of the canneries. As progress was made in the pharmaceutical field, natural sources of material were sought. The cod and halibut livers were found to be the perfect, natural sources of vitamin oils—and a new industry was introduced to British Columbia. To-day the fish liver and viscera, is utilized of the grayfish (the formerly scorned dogfish), the soup fin shark, the mudshark and the ratfish—a two and a half million dollar industry resulting from utilization of former waste product! There are seven reduction plants in B. C. which last year extracted 11,109,063 U.S.P.U.¹ from 3,772,528 pounds of livers. In 1939, livers would have been frozen and shipped to Eastern United States for reduction. An important development in this secondary industry has been the invention of a photoelectric spectrophotometer for determination of the Vitamin D content in commercial fish oils.

Because of their fresh quality, other cannery by-products, unsuited for pharmaceutical purposes, are converted to "edible meal," an important cattle food.

With 14% of the world's annual, average pack of salmon coming from British Columbia, and four thousand employees working in the Province's canneries, freezing plants and salteries, it is vital that B. C.'s export market be maintained. Sixty-five per cent of her

annual catch must be exported to maintain the industry as it now stands. Britain, short of American dollars, can no longer be the customer of B. C.'s canneries that she used to be. It is hoped that ECA contracts will ease this situation.

Agriculture

Although British Columbia is rarely pointed to with pride as an agricultural area, 1947 figures indicate that the value of this basic industry is second only to that of forestry, with some \$130,000,000 involved. This figure is better than 160% that of the 1939 production value. The \$31 million flood damage to the Fraser Valley and Kootenays will effect the 1948 production figures heavily but will not prove a permanent hindrance to the industry.

Contrary to the results achieved, B. C. is not basically an agricultural area. The country is split by the Cascades and Selkirks into three valley formations. The Okanagan is primarily a fruit growing area. Last year, some 11,000 carloads of apples were shipped from here. If one considered that this would constitute a train 50 miles in length, a slight indication of the valuable output would be achieved. Because of the exacting specifications of the fruit market, a few years ago, the farmer was obliged to let his apple culls rot in the orchards. To-day, some fifty commodities, including pectin, insecticide and animal feed, are reputedly made in B. C. from these once worthless apples. The freezing, packaging, juicing and canning of fruit has added an immense value to the agricultural industry.

The Fraser Valley has long been noted for its dairy products, and more recently, for its poultry raising. One shipment from the valley to Britain last year accounted for 34 million eggs. The growing of field flowers and vegetables for seed is adding to the rich valley production. Cull potatoes, formerly discarded, are now converted for use in the manufacture of glucose at a Lulu Island

1. United States Pharmaceutical Unit—measure of potency.

plant. Perhaps the largest hop farm in the world is at Sardis: one crop will yield twenty-five million gallons of beer.

The third Valley formation, between the Nechako and Bulkley Rivers, contains wide stretches of potentially arable land. As the population of this area increases, the local markets will expand and production from the fertile ground increase.

Mining

The 1947 value of B. C.'s mining industry is totalled at \$113,221,254 or \$41,413,303 greater than the amount quoted in 1946. This 57.67% increase is attributable mainly to the increased production of copper and to the sharp price rise for lead and zinc.

B. C. leads Canada in the mining of silver-lead-zinc ore—important metals in themselves, when the international shortage is realized. But not only is the production of this metal of significance but also the by-products which result from their smelting—sulphur dioxide, sulphuric acid, chemical fertilizers, ammonia, mono calcium phosphate and many others. Additional metals, which appear to swell the value of the mining operations of this ore are bismuth, antimony, and cadmium. During 1947, British Columbia led all provinces in the production of the following minerals: antimony, bismuth, cadmium, lead, silver, zinc, tungsten and tin, and in the case of antimony, tungsten and tin, B. C. was the only province mining these metals.

The gold mining industry in B. C. was hit by the return of the dollar to par. With the price of gold pegged at \$35.00, high labour rates and the increased cost of materials, profits of the mining operations have been heavily reduced.

Coal production, always vital in an industrial centre, shows a higher tonnage for the first six months of 1948 than it did for the same period in 1947. It has been said that the greatest drawback to the establishment of local heavy industry is the lack of the proper type of coal. Evidently, the "right kind" of coal is to

be found in B. C. near Hasler Creek and Pine Pass. Investigations of the marketing possibilities and mining costs made in this area reveal a conservative estimate of 190,000,000 tons of high grade, short flame bituminous coal. This discovery will be important in influencing the direction route of the Hart Highway and extension of the Pacific Great Eastern Railway, necessary in the development of the Peace River District.

Other Industries

With a better material supply than at any time since war-time shortages, the construction industry is forging ahead. In the first five months of this year, contracts amounted to \$29.51 million, an increase of 58.1 per cent over 1947 and it is estimated that the construction total for 1948 will reach some 60 millions.

B. C.'s tourist industry, hampered temporarily by the May floods, is fast becoming a major source of income for the province. Again, natural resources—majestic scenery, bland climate, rivers and lakes filled with sporting fish—have proved the groundwork for the industry. Spending some \$40 million in B. C. last year, the tourist population is expected to show a steady annual increase.

The 1948 provincial estimates have provided for some \$11,000,000 of government construction. The projected Hart Highway will cut 1,000 miles from the distance between the United States and Alaska and provide a link between Vancouver and the Alaska Highway, opening up the last, great inland farming region on this continent and an inviting, new "evergreen playground."

British Columbia, blessed with a huge store of natural resources, a good climate, access to tide water, an abundance of potential hydroelectric power, is rapidly climbing the ladder to industrial fame.

In the words of her Minister of Trade and Industry, "British Columbia offers an unlimited field of industrial and commercial opportunity. Nature has given it much; initiative has given it more."