

THE OYSTER CULTURE IN CANADA

THE oyster peculiar to Canadian waters, and known far and wide as the Malpeque, has attained a unique reputation, says the Montreal Witness, in a recent issue. Connoisseurs who have sampled the oysters of the world, declare that nowhere else are oysters produced which will compare for a moment in delicacy of flavor with the Canadian product, not excepting even the famous "natives" produced in such large quantities at Colchester and Whitstable, in England, or the "Blue Points" and other varieties produced in the warmer waters along the United States Atlantic coast line. The reason for this superiority of flavor is thought to be largely owing to the much greater coldness of the waters in which the Canadian oysters are bred.

Old Montrealeers can remember the time when every autumn the oyster boats used to come up from Prince Edward Island to Montreal laden almost to bursting point with barrels of these mollusks, which were retailed at as low a figure even as a dollar a barrel. It used to be the custom in all the larger settlements along the river bank to look out for these oyster boats, and it not infrequently happened in later years that all the oysters were sold out before the boats reached Montreal. For some years past no oyster boats have come to the city at all, owing to most of the beds having been fished out, and also to the local demand having increased.

This summer Dr. E. W. MacBride, the professor of zoology at McGill University, has been doing work in connection with the government biological station in the Maritime Provinces, and has made a special study of oyster culture off Prince Edward Island. This week he gave a lecture on his researches before the Natural History Society in Montreal, and made the very grave announcement that unless immediate steps are taken to protect the oyster beds, the Canadian oyster will be absolutely exterminated. Thus a peculiarly valuable natural asset of Canada will be destroyed, and what should be a great and profitable industry will be completely wiped out. His remarks were regarded as of so much interest and importance that he was asked to contribute the substance of his address to the press, and in fulfillment of this desire, Dr. MacBride has prepared the following notes for the "Witness":

The oyster beds in Canada are confined practically to Prince Edward Island and a few localities on the New Brunswick and Nova Scotia shores, but the Canadian oyster, which

is famous for its unrivalled flavor—in this respect being at the very top of all oysters in point of desirability—is rapidly disappearing. Twenty years ago oysters were sold by the fishermen at one dollar a barrel, but they have become so scarce that last year from ten to twelve dollars per barrel was being charged, and if the process of depletion goes on, in ten or fifteen years the Canadian oyster will be almost, if not quite, extinct. This will be a calamity very difficult to repair, to say the least.

It must be remembered that the Canadian oyster is identical with the American oyster, and is, properly speaking, an inhabitant of warmer waters than those of Canada—such waters as are found in Chesapeake Bay, and off the Virginian and Carolina coasts. Along the coast of the United States the oyster is continuously distributed. That is to say, it is found practically everywhere where there is a chance for it to exist, and if in any one place along the United States coast line the oysters were completely fished out, the supply would be restored through the spat from adjacent oyster beds reaching this place and renewing the oyster growth.

But there would be no such hope for the Canadian oyster if once it were exterminated, because the Canadian oyster can only survive where the conditions of the shore are such that the temperature of the water in July and August reaches about seventy degrees. Now, such conditions are very, very local. They are in every case due to the existence of submerged banks over which there is a stretch of shallow water, which water gets heated up to seventy degrees in July and August. Outside these narrow confines the general temperature of the Gulf of St. Lawrence never rises above forty or fifty degrees even in the hottest seasons. If, therefore, the oyster were completely exterminated in one of these beds it could not be stocked from adjacent beds, because the spat, in attempting to cross this icy barrier, would perish.

This is the serious thing about the Canadian oyster. It is, in point of fact, a remnant of the fauna which inhabited Canada before the glacial epoch, when a warm climate spread continuously up as far as Baffin's Bay. The coast of Prince Edward Island was specially favorable to preventing the extinction of the Canadian oyster, when the glacial epoch supervened, because the Island consists of extremely soft rock—the New Red Sandstone. Prince Edward Island is the only representative of this rock in Canada. Now, this soft

rock has been breached by the sea, on the north coast particularly, and accordingly a number of shallow bays have been formed which are shut off from the general sea or gulf by sandbars. The whole north coast of Prince Edward Island is fringed with sandy bars, and it is in these shallow places that the oyster flourishes.

The reason that the oyster requires a temperature of seventy degrees at least is that the spat, or free-swimming young, are unable to survive a lower temperature, whereas the adult oyster can survive in any temperature so long as it is not absolutely frozen. Thus, for instance, in England, and everywhere where the oyster is cultivated, it frequently occurs that several years pass without there being a fall of spat, as it is called, because the temperature in that particular summer has not reached a high enough degree. In Canada it nearly always occurs that the temperature gets to a sufficient degree to ensure the welfare of the spat.

The Canada oyster differs from the European oyster in regard to its breeding. The egg of the Canadian oyster is fertilized after being expelled in the sea, and the young enter on a long period of free swimming existence, a conservative estimate of which would be about three weeks. In the European oyster the egg is retained in the shell of the mother until development is far advanced, and when the young of the oyster is finally expelled from the mother's gills, it swims only for one or two days. The result is that within the beds in which the oyster lives there is a far more uniform and wide distribution of spat from the Canadian oyster than from the European variety.

There are two ways of attempting to cultivate the oyster. One is to obtain what are called seed oysters—really oysters about one year old, and averaging an inch in length. Oysters, I may remark parenthetically, are marketable in their third year, but are really not full grown until they are five or six years of age. The inch-long oysters are laid down on a special bottom—a bottom formed of sufficiently firm material to prevent them from sinking and being smothered in the mud. The best bottom is made of old oyster shells, or tiles, or even stones. This method of culture has proved a success in Prince Edward Island every time it has been attempted.

But supposing that these seed oysters cannot readily be obtained, we may attempt to catch the free-swimming larvae, and an ex-

periment of this kind was instituted last summer. A portion of Malpeque Bay was rented by the Biological Station, and in this over a hundred birch poles ten feet in length were planted in groups of three and in lines of six feet apart, at right angles to the shore. A certain number of twigs were left on the poles. The object was to produce a slight eddy as the tide flows past, checking the tide somewhat, and giving the free-swimming oysters an opportunity of settling.

This method of oyster culture is employed with success in Japan. But there is another problem to be met in Prince Edward Island that is absent in Japan, namely, that there is not less than three feet of ice over the bay in winter. Consequently, it is necessary to sink these poles so that the tops of them are three feet below low water. If the experiment succeeds, there ought to be next summer a considerable number of young oysters attached to the bark of the birch poles. At the end of the second year these would then be removed and planted as seed oysters.

Until quite recently there was no encouragement for the cultivation of oysters in Prince Edward Island, because all the waters were regarded as public property, and anyone could obtain a license to remove oysters on payment of a small fee. Consequently, no one would plant oysters for other people's benefit. The ownership of the oyster beds is vested in the Island Government, and that government has recently passed a law which permits the owner of a farm to lease the water immediately fronting on his farm for the purpose of oyster culture. Even when this is done, all difficulties are not removed, because the protection of the fisheries devolves not on the Island but on the Dominion Government, and those who have commenced to cultivate oysters complain that their property in these oysters is not respected by their neighbors. As the water is comparatively shallow, the oysters are continually being stolen. It is to be hoped that this confusion of jurisdiction will be satisfactorily arranged, and adequate protection given. If that is done, it is well within the mark to say that the production of oysters in Prince Edward Island can be increased a hundredfold.

At present the oyster catch comes almost entirely from one bay on the north of Prince Edward Island—Richmond, or Malpeque Bay. This is only one of a large number of precisely similar bays which extend the whole way along the north coast of the Island, and

there is evidence to show that all these bays were at one time richly productive of oysters. Indeed, in the next bay, proceeding along the coast in an easterly direction—Grenville Bay—oysters were at one time so abundant that ships used to come from England, and make up a cargo of them, and sail directly back to the British market. This bay is now practically depleted, and, of course, no trade worth mentioning is done.

There is even more striking evidence of the former richness of these oyster beds. The soil of Prince Edward Island, though it is very fertile, lacks one important constituent, namely, lime, and this want some of the farmers supply by dredging from the shallow bays what is termed oyster mud and spreading it on the land. This oyster mud consists of old smothered oyster beds, which, in some cases, are eighteen feet thick. The presence of these beds points to an oyster production in former times in Prince Edward Island, to which the existing oyster beds can only be supposed to represent the merest fragment.

The cause of the destruction of the beds must be traced to the cutting down of the forests. When the first settlers arrived there, the island was covered by fine lumber, among which there was a good deal of splendid hardwood. This has almost all been removed, and the result is that the snow melts with too great rapidity and strong spring freshets are produced. These freshets rapidly wash away the soft land, and the enormous amount of silt produced has already smothered large numbers of oyster beds, because the silt falls more rapidly than the oyster grows.

An oyster which has grown where silt is being deposited rapidly, but not rapidly enough to smother it, may be recognized by the shell which has curved upward in the effort to keep clear of the silt. The long and narrow oyster is the oyster which has grown in a bed very closely packed by its companions. The best variety of oyster brought to the Montreal market is that known as the cup oyster, which is broad, and has a comparatively smooth flat shell. This variety represents the oyster which has grown under the most favorable conditions. It is perfectly possible to cultivate this kind of oyster simply by choosing the right kind of bed and laying down the seed oysters in it. It is to be hoped that the government will encourage this industry, for the Canadian oyster represents a very important natural food supply.

Britain's Duty to Canada

FOREMOST among the Imperial problems about which men are to-day thinking is that of Colonization, writes John Redington in the Standard of Empire. In this, as in questions of defence, of tariffs, of treaty making, public thought in Great Britain has undergone a radical change. The Dominions beyond the Seas are no longer regarded by the Home Government as dumping grounds for the home-raised criminal. But while the right of the Colonial to freedom from imported criminal contamination has been completely recognized, there still remains, in almost unabated strength, the belief that the older civilizations have the right to send their own weak and inefficient human products to the younger lands Oversea. Until within recent years little or no effective protest was raised by either the Dominion or the Commonwealth, so long as the immigrants were known to be neither criminally vicious or physically unfit. Of late, however, the bars are every year being put a little higher. In this protection of her young nationhood, as in some other Imperial matters, Canada has led the way. The number of immigrants being turned back for this reason increases every month. The Mother country has been politely and respectfully advised that she can no longer shift on to the shoulders of her daughters the responsibility of the care for those whose low standard in the scale of being is directly and solely due to the conditions of life in the older civilizations.

That something must be done, however, towards the betterment of these conditions none can deny. It is like the mythological riddle which, if a man could not guess, he died. And in the solution of the riddle the lands of the "far flung fenceless prairie," the lands of wide horizons and scattered population, of vast and undeveloped natural wealth, unquestionably hold the key.

A serious attempt—perhaps the first adequate attempt—to discuss the various important issues raised in the colonization problem, particularly as they affect the Canadian Dominion, has been made by Mr. Emerson Hough, well known as the author of "The Mississippi Bubble," "Heart's Desire," and other equally interesting and popular novels. Mr. Hough approaches his subject from various angles—personal, Governmental, philosophic, and humanitarian. His book is called "The Sowing," and is, indeed, a study in colonization in its Imperial and Canadian aspects. It is being published serially in "Canada West," a Winnipeg magazine devoted to the interests of Western Canada. The September number, containing the first instalment, has just been received in London.

Mr. Hough brings to his responsible task a perhaps unique equipment. In hunting and fishing trips in remote parts of the Dominion, from Lake Superior to Alaska, he has tramped through the centres and past the outposts of settlement. The remarkable changes that have taken place in prairie Canada within the last two decades Mr. Hough has personally witnessed, so that few students of the question can speak with more intimate knowledge and authority. He has had the additional advantage, too, of being in close touch with the men who are in control of the Dominion's immigration policy, and of the means whereby that policy has in later years been administered with such success.

It is evident from the first instalment of "The Sowing" that Mr. Hough will run directly counter to the usually accepted views of those who style themselves Imperialists—at all events to that narrow Imperialism which regards the Colonies, whether for commerce or colonization, as mere appanages to the Mother country, existing only for her greater power and glory. The sub-title of the book—"A Yankee's View of England's Duty to Canada"—is the plainest intimation that, after sizing up all the facts, Mr. Hough has put the saddle on the other horse, and regards Britain's duty to Canada and to herself as paramount to any obligation Canadians owe to the Mother country, so far as colonization is concerned. And, greater even than the vital interest of these two countries in the question, Mr. Hough regards the interest of humanity at large. "It is Canada's opportunity," he says in his first instalment, "to show what the United States does not show, a reverence for law and justice; and, at the same time, to show what England does not offer, a readiness to meet and master new and interesting problems of swift modern civilization. It is not a question whether England does or does not like this other Continent and its ways. Canada will grow, with or without England. Expansion will go on. Government makes not so much difference to man as does his daily bread. 'Ubi bene, ibi patria'—where a man prospers, there is his country. Men will make their way along the lines of least resistance, as all life progresses. It is not the question how much England can control Canada. The great question is, of how much use can Canada be to England in the way of opportunity? Beyond that, all the answers will come, not through this or that political party, this or that system of government, but through the working of the law of environment. The great truth is that, one extreme against the other, the lot of the average man is better in Canada than it is in England. England is the one to profit by that truth, and not to grow muddled in her grumbling over it. Of how much use may

Canada and England be to the world? Let us ponder over that."

From this, and abundant signs elsewhere in the first instalment of "The Sowing," it is evident that the book will be provocative—if not, as appears probable, of difference and controversy, at least of thought and discussion. It is evidently Mr. Hough's intention to "speak right out in meeting," to "hew to the line, and let the chips fall where they may." "Let the galled jade, wince—our withers are unwrung," appears to be Mr. Hough's motto. And that the conclusions of one so fearless, so impartial, and so experienced as Mr. Hough will be a notable contribution to one of the great age-old world problems none can deny.

We quote elsewhere a passage from Mr. Emerson Hough's remarkable story, "The Sowing," which gives food for much thought. "It is Canada's opportunity," he says, "to show what the United States does not show—a reverence for law and justice." The opportunity has been fulfilled—to some extent. A few years ago the writer of these lines passed straight from one of the American to one of the Canadian towns of the West. In the American settlement the talk was all of claims jumped, shooting affrays, and other acts of lawlessness: there had been ten murders within the past few months. In the Canadian town, though it swarmed with American "toughs" and all the miscellaneous riff-raff of a mining country, there had been no murders, no robberies, no claim-jumpings, a pistol was not to be seen in the place, and the streets at night, with their open saloons, were not a whit more dangerous than the Strand. "When I came here first," said a bar-tender, "from the other side, I found that Victoria, Queen and Empress, did mean something." There were about half a dozen policemen in the town; but then, as everybody knew, behind them was the force of the Dominion of Canada, and indeed the whole force of the British Empire, to see that law was respected and justice done. The homicide beyond the border had a very fair chance indeed of getting off scot-free; whereas in British Columbia it was pretty certain that he would be lodged in gaol, brought before a magistrate, and tried for his life. All this is infinitely to the credit of Canada, and one is glad to know that it is acknowledged by an American writer of Mr. Emerson Hough's competence. But there is still another example of reverence for law which Canada should give her Southern neighbors. The politics of Washington, and of many of the State Legislatures, are not, to put it mildly, a pattern of purity and probity. The reign of "graft" is by no means over. Canada, with all its British sentiment and sympathy, is very near the United States in some other respects besides that of locality. The political influence is specially strong; and there is a certain danger that the tone and temper of American public life may be viewed with too much indulgence in the Dominion.

Coal Town That Is Clean

THE preconceived impressions of Cardiff are very far from accurate. People generally suppose it to be a sooty and ugly coal town, with a thick atmosphere and processions of grim miners passing through the streets between the shafts and their slate thatched cottages. On the contrary, it is one of the prettiest cities in the kingdom, with wide, clean streets, lined with shade trees and rows of comfortable villas, with flower gardens, shrubbery and clinging vines, which at this time of year are ablaze with color.

Although Cardiff handles more coal than any other place in the world, and that is the chief occupation of its citizens, a stranger might live here for a year without suspecting such a thing from appearances. There isn't a mine within nine miles of the place, and the coal is carried directly from the shafts in railway trains to the docks, which lie some distance below the residence portion of the city. They are reached by a long street that is inhabited by people of every clime on earth, chiefly sailor folk, who have been stranded here at the end of voyages or are keeping boarding-houses and shops for the patronage of their fellow countrymen who come here by the sea.

The coal of Cardiff goes to every port except those of the United States. It can be found at almost every factory in the world outside of our country, and furnishes steam to move the fleets of nearly every nation. Hence the shipping that comes to Cardiff represents a corresponding number of countries, and perhaps no other city except it be Port Said, at the entrance of the Suez Canal, or Panama, or Punta Arenas, on the Straits of Magellan, has so many races represented in its population. If you will take a tramcar from the city to the docks you can see signs in almost every language hanging over the doors of shops and restaurants and boarding-houses.

Six miles north of Cardiff a long range of hills, averaging 700 or 800 feet high, runs east and west for fifty-six miles, and they are formed of coal of various grades and values. The slopes of this ridge are covered with coal pits and the villages of miners that work in them. The best quality of coal comes from Rhondda and Aberdare, and it is probably the best fuel used by man. All the coal is brought by railways that pass the mouths of the mines to the docks of Cardiff, where the cars are sorted on different sidings and switched to the quays, where the vessels lie ready for loading. All kinds of vessels and all sizes are awaiting cargoes, and experience has taught the men who manage the business how to handle the coal with the least labor and the least expense. The docks belong to the Marquis of Bute, or at least he is the principal stockholder, hold-

ing \$27,500,000 of the shares of the \$30,000,000 company formed by his grandfather many years ago.

Cardiff is a very ancient town. It dates back to the days of the Romans, who had a strong fortress here, the remains of which have been excavated and thoroughly explored by competent archaeologists under the direction and at the expense of the late Marquis of Bute. The Normans followed the Romans and held sway for several centuries, and other races came in turn with various stirring events and incidents, of which the old castle was the centre. Robert, Duke of Normandy, a weak and dissipated son of William the Conqueror, was kept in prison here nearly all his life and died at Cardiff Castle in 1134 in the eightieth year of his age.

In those days southern Wales was an agricultural country, and it was not until the discovery, at the beginning of the eighteenth century, that iron could be smelted with mineral fuel, that the coal deposits in this neighborhood were recognized as valuable.

Originally the coal was transported on the backs of mules and horses until 1800, when a canal was built by the iron masters, and then the importance of Cardiff rapidly increased. According to documentary evidence held here, Robert Thomas, of Waun Dylit, was the first man to use coal for the generation of steam, and it is a coincidence of great interest that his granddaughter became the wife of Sir William Thomas Lewis, general manager of the Cardiff docks and of all the interests of the Marquis of Bute in this vicinity. Sir William Thomas has recently resigned because of his advanced age, having been in his present position for more than fifty years. It was his energy and genius that developed the city of Cardiff to its present importance.

It should be said, however, that the late Marquis of Bute, the grandfather of the present Marquis, and the owner of the property, was the inspiring genius and furnished the capital with which the work was done. Born in 1793, he succeeded to the title and vast estates that had been in his family for generations when but 21 years of age. He soon realized the enormous wealth nature had stored upon his property in the range of hills I have mentioned, and undertook to develop it. He determined first to build a series of docks which would enable ocean-going ships to come nearer to the canal which brought the coal down from the mines, and in 1830 obtained an act of Parliament granting that privilege. They were speedily constructed, proved eminently successful, and have been extended from time to time until now the docks of Cardiff have an area of 160 acres, and last year handled 17,369,175 tons of coal.

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