

## WATER POWERS OF PACIFIC PROVINCE SUBJECT OF REPORT

*Commission of Conservation  
Estimates Available Hydro  
Power of British Columbia  
at 3,000,000 24-hour h.p.*

### CONSERVATIVE ESTIMATE

The report on the water-powers of British Columbia, which is about to be published by the Commission of Conservation, places the total estimated 24-hour horse-power of the water-powers of that province at about 3,000,000 horse-power, in round figures.

This report completes the series of water-power reports which the Commission in 1910 undertook to publish. The investigation of the water-powers of British Columbia, of which the present report is the result, was commenced in 1911 by the engineers of the Commission, as stated in the report.

### DIFFICULTIES OF SURVEY.

Referring to the difficulties experienced in obtaining the data in the report, and to the conditions affecting water-powers in the province, the report says:—

"The season available for such reconnaissance water-power investigations as were made in British Columbia is comparatively short. One of the chief difficulties encountered is that it is almost impossible for observers to avoid over-recording in their notes the power possibilities of stream observed during high-water. Young engineers are impressed by the quantity of water coming down the rivers, and have not the advantage of having observed the same streams at their low-water stages, nor have they always the knowledge of measurements for the flow of similar streams to temper their judgment.

### UNIQUE HYDRO CONDITIONS.

"The conditions affecting powers in the province are unique, and do not closely correspond to those existing in other portions of Canada. This is especially true of the mainland Pacific coast. One cannot but be impressed with the fact that coastal water-powers in British Columbia, which to the casual observer appear to be of comparatively small amount, nevertheless may, when economically and fully developed, yield several-fold the estimate of power, if appraised upon the same basis as similar streams in Eastern Canada. Glaciers, snowfields, and heavy rainfall abound, and, with many storage possibilities, constitute unique factors which contribute to enhance the values of powers. These conditions, on the other hand, emphasize the necessity of special and very careful engineering investigation and expert handling."

### POWER SITE TABLES.

Power site tables giving summarized data with regard to the water-powers are given in the report, which says, in reference to these tables:—

"Owing to the topography of British Columbia and the relative small extent of territory covered by detailed topographic and hydrometric surveys, it is practically impossible to make anything like a close estimate of many of the water-power possibilities. Both the confines of the watersheds of many of the available streams and their run-off are unknown. In such cases any figure purporting to give the available amount of power is at best only an estimate indicating possibilities.

"The power tables contain summarized statistical data regarding the water powers. It is not practicable to indicate any details of information upon which the tabular estimates are based, but all available data have been used. Effort has been made to keep on the conservative side, and totals for the province, based on the tabulated estimates, can only fairly be compared with

estimates for other large territories by taking into account the conservative character of the deductions. Estimate quantities are on the basis of 24-horse-power 80 per cent efficiency. If comparison is made with other estimates of horse-power giving theoretical quantities, then our estimates should be increased 25 per cent."

The report gives 610,000 24-hour horse-power as the amount available on the Columbia river and its tributaries, 740,000 horse-power for the Fraser river and its tributaries, 270,000 horse-power for the Vancouver Island water-powers, 650,000 for the mainland coast and coastal islands, and 250,000 horse-power for the Mackenzie river and its tributaries. In round figures, the total estimated power, including about 400,000 horse-power not counted in the above estimates, because there are economic reasons against its development for an indefinite time, is placed at about 3,000,000 horse-power.

## GAME BIRDS VALUABLE FOR FOOD AND SPORT FACING EXTINCTION

*Pamphlet explains ways in  
which Migratory Birds Act  
may save them*

### IN THE PUBLIC INTEREST

"It is to be hoped that all parts of the Dominion will uphold the authorities in their enforcement of the new game Acts. If some are too shortsighted or selfish to deny themselves a little for the general good, it is well to remind them that the laws are now based upon treaty, and as such form part of an international obligation which we at least do not intend to treat as a scrap of paper, and will enforce regardless of consequences to individuals."

This is what the pamphlet "Vanished and Vanishing," written for the purpose of familiarizing the public with the Migratory Birds Convention Act, its aims and workings, says in reference to the new laws for the protection of bird life in both Canada and the United States. The pamphlet was prepared by F. A. Taverner, Ornithologist to the Canadian Geological Survey, and is issued by the Dominion Parks Branch, Department of the Interior. Copies will be sent by the Dominion Parks Branch on request. It is one of a series of pamphlets issued for the purpose of making the Migratory Birds Convention Act, the new international legislation for bird protection, known to all, and to teach bird protection. The Commissioner of Dominion Parks, J. H. Harkin, is the administrator of this Act.

The circular is a reminder that many game bird species, such as the passenger pigeon, the great auk, the Labrador duck, the Eskimo curlew and others, once abundant, are now extinct, and a warning that other beautiful and valuable species, like the Hudsonian curlew, the wood duck, and the eider ducks, are threatened with extinction. In part, the writer says:—

### WOOD DUCK MAY VANISH.

"The wood duck is a species whose present progress is toward extinction. But a generation ago it bred on nearly every slack-water and overflow of our woodland streams and was the commonest summer duck within its range. Not retreating to marshes and broad wastes, where it would be comparatively safe for breeding, it was an easy prey to the amateur throughout the nesting season. In the early fall the opening of the shooting season found it numerous on ducking grounds, and its less wary habits put it to a disadvantage in relation to other hardier species. Its range does not extend as far north as that of most ducks, consequently there is no reservoir of breeding birds in the unsettled north from which to draw, as with them. When the breeding birds in our settled countries go, the species will have vanished. Unless care is taken, this, the loveliest and most

beautiful of all our American ducks, will go the way of the passenger pigeon and the Eskimo curlew.

"The eider ducks have also been seriously reduced within the memory of man. The cause of this is not difficult to find. They nest in great numbers on the north shore of the gulf of St. Lawrence and the Labrador. Dogs, the local beasts of burden, have practically cleared them from the mainland within reach of even the smallest settlement, and on the small islands adjoining they are easy prey to the fishermen, who eke out their table with innumerable ducks and their eggs, killed or taken indiscriminately in and out of season.

At the present rate of decrease the time can be measured in decades when they, too, will be no more on this coast. The problem is rendered the more serious here as the birds furnish practically the only source of fresh meat for the residents. Properly conserved, there is no reason why the eiders and other sea birds should not form an important factor to the food resources of a country where every amelioration of circumstance is important.

### INTERNATIONAL CO-OPERATION. NOW.

"Besides these more or less prominent cases, nearly all of our game birds have been sadly reduced. Of course all of this is not due to Canadian shooting; shooters to the south of us have had a hand in this as well. In some cases we, in others they, have probably been the determining influences, and the subject is such that no permanent results can be obtained without co-ordinated effort in all quarters. . . . This has now been arranged by the International Migratory Birds Convention. . . . One of the greatest evils of the old systems of local control over migratory game has been the apportionment of the open season. Each jurisdiction had its own seasons, short enough probably for each locality if none other were considered, but as the birds gradually work their way south in the fall they found that as they moved from one political division to another they were in a continuous open season. . . . Under the new system of federal control inaugurated both in the United States and Canada, supplemented by harmonious co-operation between the two countries, much improvement can be looked for.

### EVILS OF SPRING SHOOTING.

"Perhaps the most serious detail in the reduction of game has been spring shooting. . . . In the fall we have both the adult birds and their increase, an increase always normally greater than is necessary to keep up the numbers of the species. This increase above reproductive requirements can be looked upon as the interest upon the principal invested. . . . The returned birds in the spring, however, . . . are the remainder that have finally survived the dangers of the season, and represent the principal upon which the next interest payment will be based. Spring shooting is like killing stock that has been carried through the winter and is about to increase, a policy no stockman would follow, and which should be equally avoided by the sportsman."

### Water-Power Development.

Canada is a country with wonderful possibilities in electrical energy to be developed from her natural waterways. That she has already taken advantage of part at least of these resources is shown by the fact that on January 1, 1918, 1,652,651 horse-power, which is 89.6 per cent of all the power-producing capacity of the central stations in Canada, was developed from water-power, as stated in the final report of the Fuel Controller.

### Ten Prisoners Missing.

The Canadian prisoners of war in Germany at the time of the signing of the armistice—some 2,688 other ranks and 238 officers—have all been repatriated except ten, who have not been found or accounted for, as stated in the report of the Overseas Minister of Militia.

25 cents buys a Thrift Stamp.

## CENTRAL WHITE PINE BLISTER ROOT BY LOCAL MEASURES

*Research Work and Scouting  
should be kept up, in order  
to hold Disease in check  
says Department*

### NEED OF PATHOLOGIST

The Department of Agriculture has continued research and scouting work, during the year. No new districts of general infection have been found. The disease has a firm foothold in the older settled portion of Ontario, south of Lake Nipissing, and it has been found in a considerable portion of the settled part of Quebec, on both sides of the St. Lawrence, but in the Ribes (currant and gooseberry) stage only. No trace of the disease has yet been found in New Brunswick, the Prairie Provinces, northern Ontario or British Columbia.

General eradication in eastern Canada is considered impracticable, but experience in both the United States and Canada has shown that local control measures, for the protection of specific areas of pine, are quite feasible at a cost that is not prohibitive, considering the property values at stake. This work involves the eradication of wild and cultivated currants and gooseberries in and near the area to be protected. Cultivated black currants constitute the most serious of the alternate hosts of this fungous disease.

Ultimately, the responsibility for local control measures must rest with timber owners. However, the Dominion and provincial governments have a very distinct responsibility to conduct research, so that the best means of control may be developed, and to continue scouting, to determine accurately the location of infestations, and the rate of spread.

### LEGISLATION NEEDED.

To assist in keeping the disease from the western white pine areas of the Pacific Northwest, there is urgent need for the passing of an Order in Council, under the Destructive Insect and Pest Act, prohibiting the movement of currant and gooseberry plants, or other Ribes, from infected districts in the east, into the prairie provinces or British Columbia. A similar embargo has been placed by the United States Government, and action by Canada is necessary in the interest of both countries alike. No property interests would be affected to a really serious extent by the action suggested. It is of course to be anticipated that nurserymen will object, but the amount of actual business that would be cut off by such an order would be infinitesimal, particularly in comparison with the value of the western white pine, both present and prospective. This disease threatens particularly the young growth, so that the continued production of the several species of five-needle pines is at stake.

### FOREST PATHOLOGIST.

It is necessary to repeat a recommendation previously made, namely, that the protection of our forest resources urgently demands the appointment of a forest pathologist who shall study the fungous and other diseases of forest trees in co-operation with the chief of the Division of Forest Insects of the Entomological Branch. The valuable work accomplished by the Entomological Branch has served to emphasize more strongly than ever the need of similar and coordinated work in the fungous diseases and we would urge the appointment of such an officer by the Department of Agriculture.

The diseases of forest trees have received a great deal of attention in the United States, but extremely little in Canada. Our forests constitute so great an economic asset that adequate attention to this feature of the situation is urgently demanded. Investigative work should by no means be limited to the white pine blister rust, since there are many other tree diseases which cause enormous losses in our forests each year.

Save by the W.S.S. method.