

Conservation

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Home Manufacture of Our Pulp and Paper

Industry now Employs 16,000 More Persons than a Decade ago—Embargoes on Export of Pulpmwood Justified.

Canada's wise policy of benefiting by the home manufacture of her natural resources is exemplified notably in the pulp and paper industry. In 1908, according to Government statistics, only 36 per cent of Canada's pulpmwood cut was manufactured in the Dominion, whereas 64 per cent was exported raw. In 1917, over 70 per cent was manufactured in Canada, less than 30 per cent being exported in a raw state.

Ten years ago, the number of employees in the pulp and paper industry of Canada was about 10,000. The number of employees at present is estimated at 25,000, and the annual wage bill at \$20,000,000. The exports alone for the past fiscal year from this industry are around \$100,000,000, about 90 per cent of the newsprint manufactured in Canada is exported. More than one-third of the newsprint used in the United States is of Canadian manufacture.

Prospective increases in the capacity of Canadian plants will bring the production of newsprint during the coming year, on a conservative estimate, to a total of 50,000 tons.

The importance of all this in the maintenance and development of the economic structure of Canada can scarcely be over-emphasized. Obviously, it would be the poorest and of public policy for the respective provincial governments to relax the existing embargoes upon the export of raw pulpmwood from Crown lands. Such a course would inevitably mean reducing the supplies of raw material available for Canadian mills, as well as the more rapid depletion of our pulpmwood forests, resulting in their comparative exhaustion within a measurable period of time. About 1,000,000 cords of pulpmwood are now exported in a raw state, all of it from lands in private ownership. Practically all of this goes to the United States.

The phenomenal growth and development of the pulp and paper industry in Canada serves strongly to emphasize the urgent need for the perpetuation of our great pulpmwood forests, in order that the great industry may be per-

British Columbia Government Reaps Profit from Higher Prices of Lumber

Sliding Scale Arrangement Made in 1914 Assures Province a Share in Unearned Increment from Increasing Stumpage Values

In 1914, the British Columbia Government entered into an agreement with the holders of timber-cutting rights on Crown lands, whereby the amount of the timber royalty was fixed according to a sliding scale based on the average selling price of lumber f.o.b. mill. At the end of each five-year period, the schedule was to be adjusted for the next period, taking as a basis the average price for the first four and a half years of the preceding period.

Lumber, at that time, was selling at about \$12.50 per 1,000 b.f. until the price exceeded \$18. The government was, however, to receive an increasing share in any excess above that price as follows:

1920-1924	..... 25 per cent	1940-1944	..... 35 per cent
1925-1929	..... 30 "	1945-1949	..... 40 "
1930-1934	..... 30 "	1950-1954	..... 40 "
1935-1939	..... 35 "		

This arrangement recognized the principle that the public, as a part owner of the timber, was entitled to a share of the unearned increment in the value of stumpage as reflected in lumber prices. At the same time, it provided security to the lumber industry against charges which might not permit of a reasonable operating profit.

As a result of the greatly enhanced price of lumber, especially during the last two years, the average price for the years 1915 to 1918 and the first six months of 1919 was approximately \$19.50. During the period, 1920-1924 the government will, therefore, receive an additional 37 cents per 1,000 b.f. for the timber cut from Crown lands. As the average royalty, during the last period, was about 75 cents per 1,000 b.f. the increase will amount to about 50 per cent and should add from \$300,000 to \$350,000 to the annual revenue of the province.

The following table shows the increase both in the quantity of lumber cut and in the price during the last five years:

Year.	Quantities, feet B.M.	Amount received	Avg. price per M. feet
1915	747,096,710	\$ 9,307,408.27	\$12.46
1916	1,010,427,819	15,012,050.67	14.86
1917	1,166,489,300	23,163,129.54	19.86
1918	1,208,201,605	31,004,178.08	25.74
1919 (6 months)	620,307,280	14,079,740.25	22.76
Total 4½ yrs.	4,752,522,714	\$92,658,506.81	\$19.50

—Roland D. Craig

manent instead of merely transitory, as has proved to be the case in the greater portion of the eastern United States. There fire protection has been wholly inadequate and logging methods have been destructive, seeking, for the most part, the greatest immediate profit, without any conscious attempt so to regulate methods of logging as to leave the cut-over area in a condition to produce another crop.

Fortunately, in Canada, the great bulk of the forests are in public ownership, and the public, as a whole, can afford to take thought for the distant future.

The increasing employment of trained foresters by Government services, as well as by pulp and paper companies, offers distinct encouragement for the future.—

Chyle Leavitt

FUR-FARMING CONFERENCE

A Conference of Fur Farmers, Fur Dealers and Trappers has been called by the Commission of Conservation to meet in Montreal on the 19th and 20th February. The programme for the conference is not yet complete, but will include addresses and discussion by the leaders of the rapidly growing fur-farming industry. Fur-farming has passed the experimental stage and is now on a solid commercial basis. It is also hoped to have an exhibition of black, silver, and cross fox furs, the pelts of fur-bearers reared in captivity.

In 1913, the Commission of Conservation issued a report on Fur Farming, for which there was a large demand. A supplementary report on this important industry will be issued early in the year.

Saw-mills to Close for Lack of Trees

Great Industry is Threatened with Extinction for Want of Raw Material—Object Lesson for Canada

Five thousand saw-mills in the southern United States will discontinue operations within the next three years owing to the decline in the supply of southern pine. This statement of Col. Henry Graves, Chief Forester of the United States Forest Service, is a startling reminder that the timber resources of America are not unlimited. The men who openly scoffed at the idea of such depletion occurring at all are being rudely awakened and a national forest policy is being advocated and considered with unusual interest in the United States.

The outstanding features of the forest policy recently enumerated by Col. Graves are: First, that the Federal, state and municipal governments largely increase the area of public-owned forests either by purchase, or exchange for stumpage; second, that Federal aid be provided to the states which are willing to provide the necessary machinery for the protection and reproduction of the forests. The scheme also suggests that assistance be given annually to timberland owners who may be prepared to practise forestry on their lands.

The first, and by no means the smallest, obstacle to such proposals is public apathy. A vigorous educational campaign will be necessary to undo the work of those who persistently instilled the idea into the minds of United States citizens that the forests could not be exhausted. The people must be brought to realize the fallacy of such a doctrine and that only a united nation-wide effort can save a great national industry from decline. As soon as public opinion has been aroused, a complete census of existing supplies will be necessary, for such information has never been brought together in the United States.

Canada is undoubtedly in a better position than the United States because a much larger area of her forest lands are still held under the Crown and exploitation has not proceeded so far. American governments have postponed action so long that the outlay necessary to retrieve their position will be enormous.—A. Donnell.

Scheme to Utilize Coal-mine Refuse

England's Fuel Problem Stimulates Economic Use of Material Formerly Wasted

A company here was formed in the Nottingham, Eng., district for the purpose of promoting a scheme for the utilization of refuse from coal mines. It is believed that, when the project is fully established, it will attract other industries to the city and district.

Plans have already been drawn for the erection of a super-power station, briquetting plant, coal-washing plant, concrete-products works, low-temperature distillation plant, and a light railway. Land has been allocated for the construction of the light railway and low-temperature distillation plant. It is intended that the waste from the distillation plant be used in the super-power station. The briquetting plant is expected to use up the inferior waste from the super-power station and, in conjunction with this, there will be a coal-washing apparatus. The coal-washing plant will deal with the refuse from pits within a radius of 16 miles, and the good coal will be mixed with the refuse from the low-temperature distillation plant and "cemented" with pitch, producing a compound of high commercial value. The concrete-products works is expected to play an important part locally, particularly in view of the massive amount of construction work to be carried out in the Nottingham district in the immediate future.

The fuel problem in Canada is no less important than in England. Canada should not only watch developments in coal conservation in the Old Country, but, it is to be hoped, will not always wait for a lead.

Quebec Takes Lead in Garden Suburbs

Provincial Government will Spend Federal Grant in Promoting Building along Modern Lines

The declared housing policy of the Quebec Government is to spend its apportionment of the Federal loan in the promotion of garden suburb and garden village development, which indicates that Quebec will lead the way in Canada in this important social movement. By this method of procedure, large blocks of suburban and country land can be bought at low figures and thus the greatest obstacle to cheap and better housing is removed.

The Sherbrooke Housing Company has acquired a beautiful site of 51 acres, with about 1,500 feet frontage on the Magog river for the sum of \$51,000. The movement illustrates a fine spirit of co-operation among government authorities, manufacturers and citizens. The Connecticut Cotton Mills Co., situated at Sherbrooke, have already experimented at their home plant, at Danielson, Conn., in garden village housing and have been so satisfied with the results that they have offered to extend their plant at Sherbrooke at a cost

of \$2,000,000 on condition that the city of Sherbrooke will co-operate with them in the model housing of the workers. Sherbrooke has responded. The Quebec Government, on the advice of Dr. Nadeau, Housing Director, came forward with a loan of \$500,000 and Mr. F. G. Todd, their town planning adviser, has laid out the site on modern lines. Ten houses have already been completed and the return of the building season will witness great activity at the garden suburb of Sherbrooke.

Other garden suburb projects in the province of Quebec include a scheme for the workers of the Riordon Pulp and Paper Co. at Kipawa, the town plan of which has been prepared by Mr. Thomas Adams and where 46 houses have already been completed, a small model development at Ste. Anne de Bellevue, for the employees of the Garden City Press Co., a garden suburb intended to house about 200 families in the vicinity of Hull and a project for a Confederation Garden Suburb for Quebec city that will involve the expenditure of \$1,275,000 and will house 500 families.—*Alfred Buckley.*

Farmers Neglect Profit in Sheep

Feed now Wasted may Be Turned into Mutton and Wool—Small Flotilla of Shearers

Sheep should carry a part of the live stock carried on the average farm just as well as cattle, horses or swine. Enough unused pasture and roughage go to waste and weeds go to seed every year in Canada to produce hundreds of thousands of dollars' worth of mutton and wool. In 1871, there were 3,155,509 sheep in Canada and in 1911 according to the last census figures there were 2,174,300. This is an enormous decline in the industry, when it is realized that the lesser number in Canada in 1911 were scattered over a much larger area, due to the opening up of the West.

An experiment conducted recently by the Live Stock Branch, Ontario Department of Agriculture, demonstrated that it is profitable to keep sheep on the average farm and under ordinary conditions. Nine small flocks of from 10 to 12 ewes per flock were stationed in different parts of the province and, for two years, an accurate account was kept of feed and other expenses, allowance being made for interest on capital invested. Each flock showed a profit each year, averaging about \$38 per flock, or an average profit of between \$3 and \$4 per head.

It would seem that, if increased production of wool and mutton is to be brought about, it can best be done by the keeping of more small flocks on the average-sized farms of Canada.

There are a number of important points in favour of keeping sheep that will be emphasizing.

First: Sheep destroy weeds and consume food that would otherwise be wasted. They eat most of the

common weeds and, in eating them, grind the seeds so thoroughly that they will not grow.

Second: Economy of housing and management. Cheap buildings are satisfactory as shelters. Sheep require no protection except from snow, rain and wind. In Canada, they are subject to few diseases and require but little attention except at lambing time, which makes the labour problem in this enterprise a minor consideration.

Third: A small investment only is necessary to get a start in the sheep business. Good vigorous grade ewes should be obtained and a pure-bred ram used. The ram need not be a show animal but should be of good size, strong and vigorous.—*F. C. Nunnick*

Economy of Central Heating in Canada

Long Winters would Reduce Overhead Charges, Making Operation Cheaper than in U.S.

Two of the principal items to be considered in connection with central heating are the cost and the overhead charges involved in the external piping or distribution system. Where the system is only in use for a short period of each year, as in some localities in the United States, these charges are comparatively high, but in Canada, where they would be spread over more than half the year, the financial burden is decreased.

The advantages of central heating plants over individual systems for each house or building are numerous. In an individual system, as a rule, the plant is not large enough to warrant careful operation and the coal is fired in large quantities and at long intervals. To obviate the difficulties of combustion, high-priced coal is burned. It is evident that, if a central station containing a power-plant boiler of standard size, utilizing cheap fuel and operated intelligently, be substituted for the heating plants of several buildings, much of the inefficiency, nuisance and discomfort from the small plants would be overcome.

In central heating plants where each building has to be charged its exact proportion for service, the question of rate must be carefully considered. Payment for the use of steam should be at a meter rate based on 1,000 pounds of condensed steam.

An investigation of a large number of plants in the United States in pre-war times disclosed that the average rate was 50 cents per 1,000 pounds of condensed steam. Prices would now probably be from 50 to 75 per cent higher, or say, 75 to 87 cents.

Respecting the economy: If we assume that 1 pound of steam contains 1,000 heat units and 1 pound of coal contains 13,000 heat units and allow an efficiency of 50 per cent for the coal, then we find that, theoretically, coal at \$13 per ton, if burned in a house furnace, would be equivalent to steam at \$1 per 1,000 pounds, as compared with 75 to 87 cents for a central plant.—*L. G. Denis.*

Financial Pitfalls in Hydro Projects

How Money can be Lost in Water-Power Development by Lack of Foresight—Some Essential Factors to Consider

In the twelve years preceding 1915, seventeen large hydro-electric plants in the United States and some miscellaneous minor developments, totalling over 600,000 horsepower and involving an investment of \$125,000,000, proved financially unprofitable. Much of the failure in connection with such projects has resulted from the "honest mistakes" of engineers and was due to misestimates of the quantity of water available, running all the way from 30 to 200 per cent.

There were also serious misestimates of cost which resulted, not infrequently, in the projects costing nearly double the estimates.

Twenty years ago, when improvements in electrical transmission resulted in extensive hydro-electric developments, there was more excuse for errors in engineering and other estimates than now. No such wealth of stream-flow and other hydro-metric data as exists to-day was then available.

With all the data now available respecting hydrological conditions, cost of construction and market possibilities, it is clearly incumbent upon those interested in financing proposed developments, to exercise the utmost care in the examination of this information. Great caution must be displayed in using information in reports the character of which is not fully defined. Little confidence can be placed in any reports not based on actual measurements for, without these, the best judgment of explorers and even of engineers as to heights of falls and volumes of stream-flow is frequently very wide of the truth.

Large lakes do not necessarily mean large water-power possibilities. Water is not water-power. Again, it is unsafe to predetermine resources upon the total descents of rivers. This is well illustrated by a comparison between the water-power possibilities of two of the larger streams of Vancouver island, Campbell river and Nimpkish river. These drain approximately equal areas and have similar total descents in the main portions of the river. The power possibilities of the Campbell, however, with its concentrated possible developments, may be estimated at about 100,000 horse-power as contrasted with some 15,000 horse-power for the Nimpkish.

Development should not be contemplated without reckoning with power from coal, chiefly from two standpoints: First, regarding steam-power as a direct competitor; second, considering steam-power to be used as an auxiliary source to augment the supply of power during periods of low water. During recent years, great advances have been made in developing power from coal and the cost of power from this source has been very materially cheapened. Adapted from "Water-powers of British Columbia," by A. V. White.

**Commission of Conservation
CANADA**

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CONSERVATION is published monthly. Its object is the dissemination of information relative to the natural resources of Canada, their development and proper conservation, and the publication of timely articles on housing and town planning.

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MUSKRATS IN THE LUXURY CLASS

The plebeian muskrat is coming into its own. Before the war, rat skins could be obtained from the trappers at from 20 to 30 cents each. "Fur Farming in Canada," published by the Commission of Conservation in 1914, quotes autumn muskrat skins in Eastern Canada at 25 cents for large skins and 15 cents for small. To-day, autumn muskrat skins are bringing in Quebec from \$3.25 each for current collections to \$4.50 each for the best rat skins.

Fashion is responsible for these high prices. Muskrat, when plucked and dyed, becomes Hudson seal. The demand has reached a point where there is danger of the extermination of this furbearer and, in Ontario, it can only be taken during the spring season, when, it is claimed, the fur is at its best.

This increased price of the raw pelts is naturally reflected in the prices of Hudson seal coats, which, in 1915, were quoted by a well-known furrier as ranging from \$100 to \$125, whereas, to-day, the prices range from \$400 to \$450 and, in 1920, will probably be \$600 to \$650.

The present demand for skins and the high prices now being paid will probably lead to the establishment of muskrat farms in Canada.

PUBLIC FIRE ALARM SYSTEMS

The extent of any fire in a protected community depends in large measure upon the promptness with which the fire-extinguishing appliances are brought into operation. The fire alarm system of a city or town ought, therefore, to be as nearly perfect as money and skill can make it. A deficient fire alarm system constitutes a general hazard. It may be tolerated when reconstruction would involve a heavy outlay, but a community is dealing with the whole question of fire protection from the wrong end when extinguishing apparatus is purchased at the expense of the alarm system. Three minutes after a fire has broken out a pall of water would usually be sufficient to subdue it. With ten minutes' uninterrupted start, a fire may need a quarter of a million dollars worth of apparatus and an army of men before it can be controlled. An obsolete fire alarm system is the most form of economy.—J. Groe Smith.

ELECTRIC HEATING

Heating on a large scale by electricity is economically possible only where electric can be generated at a very low cost. As stated by Mr. Arthur V. White, Consulting Engineer, Commission of Conservation: "Let it be appreciated that Canadians need never expect to have electrical energy replace coal and other fuel for heating buildings except to a relatively limited extent."

With anthracite coal at \$12 per ton and burned at 50 per cent efficiency, and with electric energy at one cent per kilowatt-hour, the coal will yield 11,700 B.t.u. for one cent as compared with 3,412 B.t.u. from the electric energy for one cent. This demonstrates that, on this basis, heating by electric energy would be three and one-half times as costly as with coal.

An estimate by Mr. Arthur V. White indicates that, in Ontario, the heating requirements of the average home in Toronto would require about five electrical horsepower per capita. The 2,100,000 inhabitants of Western Canada would require not less than 10,500,000 electrical h.p. for heating alone. The Toronto basis may be applied to the West as a whole, because the milder conditions of the Pacific coast are compensated by more severe winters of the Prairie Provinces.

WATERWORKS FOR SMALL TOWNS

Many of our moderate-sized communities have not availed themselves of the advantages and benefits of a public waterworks system. While some years ago only the larger cities could afford waterworks systems, modern progress has extended this privilege to the smaller towns and villages. The advantages of a common water supply with the convenience of tap water in each house, as against individual supply, need scarcely be pointed out. It is sanitary, convenient, cheaper in the long run, and greatly reduces the fire hazard. This last can be measured in dollars and cents in the reduction on insurance costs and consequent increase in value of property. Added to this, and perhaps of even greater value, is the assurance that the possibility of the entire town being destroyed by a conflagration has been immeasurably lessened.

That waterworks installations are not restricted to the large centres is plainly demonstrated in our own country. In our two larger provinces, Ontario and Quebec, there are over 180 public water systems for communities of 2,000 population or less, and nearly one-half of these have a population under 1,000.—L. G. Denis.

WINTER FIRE PROTECTION

Winter fires in barns, stables or outhouses are usually caused by the knocking over or explosion of kerosene lamps or lanterns. Keep a few pails of dry sand on hand. Dry sand will not freeze. In the incipient stages of an oil fire, sand will smother, whereas water will spread it.

BUILD UP YOUR BODILY RESISTANCE

1. Sleep with at least one window open in your bedroom all the year round.
2. Eat plenty of good, wholesome food.
3. Never allow yourself to become more tired by staying up late after a hard day; make up for it by going to bed early.

If you are in good health, if your resisting power is good, the germs of disease are less likely to harm you.

Nothing helps to build up the resisting power so much as proper food, plenty of sleep, and pure, fresh air.

COAL BY-PRODUCTS SAVED

Coke and other by-products of coal are now being produced in a plant at Anyox, B.C. This plant, which is the only one of its kind on the Pacific coast, has been two years in construction and is now in full operation.

Coal for the 32 ovens is supplied from mines on Vancouver Island, from which steady shipments have been made to the northern smelter town for some time past. The coke produced is said to be of excellent quality and approximates 65 per cent of the total weight of coal carbonized. About 500 tons of coke are produced daily.

The by-products recovered per ton of coal are: gas, 11,500 cu. ft.; tar, 10 gals.; sulphate of ammonia, 21 lbs.; light oil, 3 gals.; benzol, 1-55 gals.; toluol, 40 gals.; solvent naphthalene, 30 gals.; crude naphthalene, 4 lbs. The coal tar will be shipped to Vancouver to be fractionated into pitch and creosote. All these products will find a ready market in Canada and the Pacific Coast states.

LONDON FUR AUCTIONS

The price trend at recent London fur auctions has shown remarkable increases in the cheaper furs, such as muskrat, wolf, beaver, kitt fox, etc. Even dressed dog and house cat advanced 25 per cent. There is thus a marked tendency to widen the market for furs to use species formerly in slight demand. If this tendency continues, the now well established Canadian industry of fur farming should receive a further extension and a new impetus.

PLAY SAFE

The money value of a man includes the cost of his upkeep and education from his birth till he becomes self-supporting. He then becomes an asset instead of a liability.

This demonstrates the economic loss to the community when, through an accident, he is incapacitated and unable to carry on his work. All the cost of bringing him to the earning stage is wasted, and he again becomes a burden on society.

**Lumber Industries
Employ Most Labour**

Manufacturing Group with Largest Payroll is Directly Dependent on Forests for Raw Material

The importance of the lumber industry in the economic life of Canada is strikingly shown in a recent bulletin of the Dominion Bureau of Statistics. Among the great manufacturing groups, the lumber industry holds fourth place in point of production, first place in furnishing employment, and first place in total payments for labour.

The figures for 1917 show a total capital investment of nearly \$170,000,000, and a wage and salary list aggregating about 57,000 people with payments amounting to nearly \$40,000,000. The total value of the output for the year is placed at \$115,884,905. This figure includes the value of lumber, lath, shingles, pulpwood and miscellaneous products.

In value of production during 1917, the leading place was occupied by British Columbia, with Ontario, Quebec, New Brunswick, Nova Scotia, Saskatchewan, Manitoba, Alberta and Prince Edward Island following in the order named.

In the amount of lumber cut, though not in its value, British Columbia has displaced Ontario as the premier province. The cut for the former for 1917 was 1.2 billion board feet, and for the latter 1.1 billion. Increasing ascendancy of British Columbia in this respect may be expected, since that province contains approximately half the merchantable saw timber of the Dominion.

It should be noted that the white pine cut of Ontario has diminished very considerably, due to depletion of virgin supplies, and that an increasing percentage of the spruce timber is going into the manufacture of pulp and paper, rather than lumber. Further, while extensive lumbering in British Columbia is of comparatively recent development, it has been going on in Ontario since a very early period, and a consequent heavy destruction due to fires and the absence of restrictions upon logging methods calculated to leave cut-over areas in a productive condition.

The forests of British Columbia, like those of Quebec and New Brunswick, are administered by the Provincial Forest Service, a technical organization of trained foresters. This development has not yet taken place in Ontario, though representations have been made to the Provincial Government in that connection.

In Nova Scotia the appointment of a technically trained Provincial Forester is under consideration.

The importance of handling our forest areas from the viewpoint of permanent production, rather than for immediate profit only, is becoming increasingly recognized.—Clyde Leavitt.

The area under cultivation of fibre flax in Ontario in 1919 was about 20,000 acres.

DOUGLAS FIR REPRODUCTION AFTER FOREST FIRE, 17 YEARS OLD
Cdn. No. 18

Natural Resources and National Health

Health Society of Denmark has Made Country One of the Most Prosperous in Europe

Denmark affords an interesting example of the connection between the promotion of health and the promotion of material prosperity. According to a special correspondent of the London *Times*, who recently visited Denmark, a great deal of its prosperity in later years has been due to the operations of the Danish Health Society.

Twenty-five years ago Denmark was fared with despair and to-day she is one of the most prosperous countries in Europe. The *Times* correspondent ascribes this largely to the work of Lieut.-Col. Henric Mylius Dalgaard, who founded the Health Society of Denmark. It is so customary to associate a health society with medical propaganda that it is somewhat astonishing to find that one of the principal activities of the Danish Health Society has been the reclamation of barren heaths and moors and the irrigation of dry waste lands in Jutland. The Society has a membership of 9,416 and obtains a contribution towards its work from the State. To quote:

In 1860 there existed in Jutland 2,244 square miles of heather, 396 square miles of marsh, and 220 square miles of uncultivated downs. Now this area of unproductive land is reduced by more than one half, nor will the Health Society relax its labours until not one ounce of soil remains that does not contribute its share to the national economy.

The work of the society, like that of the Commission of Conservation in Canada, is educative and advisory. It teaches scientific method and wise co-operation to the farmers and by persistent advocacy ensures the development of woods, forests and lands that were formerly waste. For example, there are in Jutland over 2,220 plantations and the number is constantly increasing. The society's membership is continually expanding.—*Thomas Adams.*

Reconstruction of Shell-torn Areas

French Government will Compel Communities in the War Zone to Prepare Town Plans

The French Government passed a Town Planning law in March, 1919, which made it compulsory for every city and town of over 10,000 inhabitants to prepare, within three years, a plan for its improvement and extension. The act further required that any town or village which was destroyed or partially destroyed by earthquake, fire or any act of war must have a plan made for its reconstruction, and that plan must be approved by the authorities of the Department before any building might be commenced.

France has a very large problem to solve with reference to the reconstruction of the area devastated by war. For planning purposes that area has been divided as follows:

- Areas where there was very little destruction.
- An area of nearly two million acres, related to districts more or less injured by shell fire.
- Land so shorn up by shell fire that it would cost more to deal with than the land was worth. (There are about 275,000 acres of this obliterated land, including seventy-five villages that have been absolutely destroyed.)

Little permanent reconstruction has taken place as yet because of the delay consequent on the preparation of plans necessary for over 3,000 destroyed towns and villages.

The Germans stole plans of many of these towns from the offices of the municipal surveyors. The only copies extant are in the offices of the Prefectures of the various Departments, and, at best, many have not been revised since 1825.

One reason for holding the Inter-Allied Town Planning Conference in Paris in June was to show what other countries are doing, particularly Great Britain, which is in the van of the movement.—*G. H. Ferguson.*

Forest Reproduction in British Columbia

Data are Insufficient but Indicate that Better Protection of Young Growth is Needed

As regards the reproduction of the forests in British Columbia, with the exception of one season's work, conducted by Dr. C. D. Howe, for the Commission of Conservation, no concrete information has been secured concerning the extent or nature of the young growth which is replacing the original stands removed by logging or destroyed by fire. In this investigation, typical areas were carefully studied, and the results obtained are of great practical value in establishing the following facts:

- On about one-half of the area logged and burned in the past 20 years, the forest reproduction is not sufficiently abundant to ensure the re-establishment of the commercial forest. The other half, however, is well stocked with young trees and, if not burned, a forest yielding saw-logs is assured.
- It is evident that light burning of the slash and dense undergrowth gives the best reproduction of Douglas fir.
- Better protection of the reproduction of Douglas fir already established is imperative, since second and subsequent fires have already destroyed about one-half of the reproduction originally established.

The continuation of this work in other forest regions, and in connection with other species of trees, is necessary, in order that methods of exploitation and protection may be adopted which will encourage reproduction.

The rate of growth of the various species of trees in British Columbia is a subject concerning which no information is available. To conduct investigations along these lines, permanent experiment stations should be established in the forests, where all the conditions affecting the forest, from the seed to the mature stand, can be observed and controlled for a sufficient time to secure reliable conclusions.—*R. D. Craig*

Forest Survey of Ontario under Way

Experts Employed by Commission of Conservation Engaged in Taking Inventory of Province's Forest Resources

The Commission of Conservation has made an excellent beginning upon the survey of the forest resources of Ontario, under the direction of R. D. Craig, assisted by G. H. Edgecombe and A. V. Gilbert, both of whom are returned soldiers and graduate foresters of considerable practical experience. The Ontario Government has recognized the value of this project by affording co-operation in the securing of much data of great value from departmental records, as well as by instructing its field staff to assist with further information, to the fullest possible extent. Splendid co-operation in the collection of information relative to timber stands and forest conditions generally has also been afforded by timber owners, both individuals and corporations.

Only to a limited extent is it physically possible for the Commission to make actual cruises or first hand examinations of timber stands. Experience has, however, shown that highly valuable results can be secured by collecting all available data from timber owners, governmental agencies, explorers, surveyors, cruisers, etc., checking one source of information against another, and verifying the data by a limited amount of field observation.

A project of this character necessarily requires considerable time for completion, particularly with only a limited staff available. It is, however, of great practical value in dispelling current ideas of *inexhaustible* forest resources, as well as in laying an intelligent foundation for a sound national forestry policy. In any such policy, increased protection of the forests from destruction by fire is an absolutely essential element, together with such practical regulation of cutting methods as will make the production of a second crop possible on logged-over lands.—*Clyde Leavitt*

DOUGLAS FIR REPRODUCTION AFTER LOGGING AND SLASH BURNING, 20 YEARS OLD
Cdn. No. 19