

## Rocky Mountains Forest Reserve

Bulletin Issued by the Department of the Interior on Forest Conditions

"Forest conditions in the Rocky Mountains Forest Reserve" is the title of a recent bulletin by T. W. Dwight, of the Forestry Branch, Department of the Interior, Ottawa. In this bulletin, forest conditions are described, and conclusions are drawn as to what method should be followed in the cutting of timber, to ensure satisfactory reproduction of the best species.

The necessity of adequate fire protection is emphasized. Fires have raged over so much of this Reserve in the past that only one-fourth of the timber is of mature size, the balance being second-growth, mostly under 50 years of age, and therefore too small to be merchantable. However the potential value of this young growth is very great and will well repay all possible care in protecting it.

Over 90 per cent. of the second-growth stands are lodgepole pine. An extensive fire occurred in the Ghost River valley one hundred and eighty-three years previous to the study, and the resulting stand is now being lumbered. Evidences of fires much earlier than this exist, but the number of fires has increased greatly within the past sixty years. Recurrent fires at short intervals tend strongly toward a scattering tree growth and the covering of the ground with a poor quality of grass.

Changes in present methods of cutting are necessary to the proper protection and reproduction of the forest.—C. L.

## INOCULATION FOR TYPHOID

Typhoid inoculation is apparently justifying the claims made for it by its advocates. A recent report of the United States War Department shows that, in the last ten months, there have been only twelve cases of typhoid and two deaths among the 57,000 men composing the army.

These deaths, as well as most of the cases of sickness, were of men who had not been inoculated. The typhoid rate in the army in 1906, was 5.66 a thousand; in 1907, 3.55; in 1910, 2.32; in 1911, 0.80 and in 1912, 0.18. It is pointed out that conditions of service, though they may have been changed, are such as would, a few years ago, have produced 150 cases and 25 deaths. Such results naturally inspire confidence in the method, and attention is again called to the matter, as it was several months ago, not only because of its interest to sanitarians, but also because inoculation might be very advantageously adopted by railway and other contractors having many men in more or less permanent camps.—Ex.

## CAUSES OF FAILURES IN POWER PROJECTS

Continued from page 1.

estimate of the flow of a stream during other than low-water months can usually be made if undertaken in the right way.

### GAUGING RECORDS ESSENTIAL.

Such an estimate may be based on rainfall data alone—in conjunction with a knowledge of the physiographic and cultural conditions—but should preferably be based also on long gauging records of adjacent or similar streams, or of the same streams at another situation.

The failure of many engineers in making proper estimates is apparently due to three causes:

- (a) They consider the problem simpler and easier than it really is.
- (b) They have not the necessary data.

(c) Lacking these, they have failed to acquire properly experienced judgment in such matters.

When we consider that, for a given rainfall, there are some forty or fifty factors which affect or cooperate to determine the amount and character of the run-off which that rainfall will produce, the complexity of the problem and the difficulty of making reliable estimates from rainfall alone becomes at once apparent. In general "an ounce of gaugings is worth a pound of estimates"; and in this respect Canada is placed at a great disadvantage as compared with the United States and other countries. The United States Geological Survey, and in some cases state governments have done much to provide records of the flow of streams. Between \$300,000 and \$400,000 are spent annually for the continuance of this work, the importance of which is well recognized.

The engineer, whose problem relates to the utilization of run-off waters cannot at a moment's notice go afield and gather adequate reliable facts by an examination of the stream, but has to search records as far back as they go.—L. G. D.

## Fire Protection on Railway Lines

### Systematic Work being Undertaken on Railways in All Parts of Canada

The provisions of the Fire Regulations of the Railway Commission, which were in effect only in the West during the summer of 1912, have now been extended to the East through the completion of co-operative arrangements with the Provincial Governments of Ontario, Quebec, and New Brunswick, for handling the details of local inspection of the work of the railway companies. John McGillibon has recently been appointed Provincial Fire Inspector for New Brunswick. The appointments of W. C. J. Hall and E. J. Zavitz as Provincial Fire Inspectors for Quebec and Ontario respectively, were made during the winter. The Government of Nova Scotia has definitely

agreed to co-operate with the Board and the appointment of a provincial fire inspector to supervise this work in the Province is expected to take place in the near future. The forest fire situation is especially serious along railway lines in New Brunswick and an intensive system of fire patrols has been agreed upon, to be established along the line of the Canadian Pacific Railway. Similar plans are in course of preparation covering other lines in the Province.

Serious fire danger exists along the lines of the Intercolonial and National Transcontinental Railways in Nova Scotia and New Brunswick, and the establishment of a fire protective system along these lines, similar to that required of privately-owned railways by Order 16570 of the Board of Railway Commissioners, is under consideration by the Minister of Railways and Canals. Action along these lines is essential in order to prevent the occurrence of numerous and destructive fires during the summer. The large amount of timber along the N. T. R. between Moncton and Edmundston is particularly in need of efficient protection.

The work in the Western Provinces under Order 16570 is now well organized under a plan of co-operation with the Forestry and Parks Branches, Department of the Interior and with the Forest Branch of the B. C. Department of Lands.

Under Order 16570 of the Railway Commission, special patrols are being prescribed by the Chief Fire Inspector along portions of the lines where the fire danger is serious. In sections where special patrols are not considered necessary, the issuance of special instructions to all regular employees with regard to reporting and extinguishing fires, as required by Order 16570, should furnish very efficient protection.—C. L.

## How to Prevent Needless Fire Waste

Pass ordinances making the fire department a department for the prevention of fires as well as the extinguishment of fires.

Give the police department authority to prevent fires, and make each man responsible for the proper enforcement of preventive measures.

Institute in the public schools a course of regular weekly instruction in the economic significance of fire waste.

Investigate the cause of every fire, and punish the person or persons responsible for the conditions causing the fire, whether the fire was incendiary or from carelessness or indifference.

Popularize individual responsibility. Educate the public; have a "Fire Prevention" day.

By carrying out these recommendations a material reduction in Canada's \$2,000,000 a month fire waste would be brought about.—The Bulletin.

## Electric Locomotives

### Marked Efficiency Shown on Mountain Grades—Railway Electrification in United States

Within the next few years hundreds of miles of railway in the northwestern United States will be operated by means of electric locomotives. Already arrangements have been completed for electrifying some 450 miles of the Chicago, St. Paul and Puget Sound railway, and it is stated that the company has appropriated \$7,500,000 for this work.

The electric locomotive has already shown marked efficiency on the mountain railways. As a matter of fact the limit of capacity of a number of American lines has long been determined in large measure by their ability to get trains over some of the excessive grades on their mountain sections. From two to five steam locomotives of the heaviest type are required to haul trains over these grades, and a speed of seven or eight miles an hour is seldom exceeded. Where such grades pass through tunnels the difficulty is increased, for the steam and smoke from the locomotives coats the rails with a greasy soot, which makes the wheels slip, and the heavy fumes from the coal or oil fuel make operation a matter of real danger to the train crews.

With the installation of electric locomotives all the difficulties and dangers arising from soot have been overcome and trains are hauled over these portions of the road at double the best speed possible for steam. The 100-ton electric locomotive is suitable for the heaviest railway traffic, and one of them will "back" the heaviest steam locomotive.

For the handling of freight trains there are electric locomotives that weigh 180 tons and which have a traction power of 80,000 pounds starting. The motors are built in two sections, each of which weighs 90 tons. By placing together a pair of these 90-ton electric, both under the control of one man, the engine-power is control 3,500 horse-power or a maximum tractive force of 90,000 pounds. One of the huge Mallet steam locomotives weighs 239 tons but of this weight only 167 tons is on the drivers, and the engine is therefore capable of only 71,000 pounds tractive effort.

The electric locomotive has undoubtedly proved its worth, and a few years will see them largely used not only on the mountain roads of the United States but of Canada as well. This constitutes still another reason for the people retaining control of hydro-electric development.

The Harbour Commission of Toronto, created during 1911 by an Act of the Dominion Parliament, proposes to spend \$19,000,000 on the improvement of the harbour and water front during the next eight years.