

Forest Growth on Cut-over Pulp Lands

Recent studies made by the Commission of Conservation have developed valuable information concerning the growth of trees on cut over land. A detailed study of 23,000 acres was made in the Algoma district of Ontario to learn the history of the area during the ten years which have elapsed since the timber was cut and to determine its probable future growth. The forest is softwood in character on the lower lands, mixed with birch and maple on the slopes, and appears as pure hard maple growth on the north side of the ridge tops. The trees which give character to this as a pulp producing forest are white spruce and balsam fir, in the softwood zones.

The thrifty character, young age and rapid growth of the white spruce and balsam combined with the minor competition of birch trees sharply distinguishes this forest from the red spruce forest farther east and promises to yield quicker returns than the slower growing red spruce forest.

Three characteristics of the Central Ontario forest examined should be considered in gauging its future worth for pulpwood production. First, that the forest is young, has never been seriously checked by dense crowding, and the crowns of the younger trees are well developed and capable of quick recovery after a cutting. Second, there is good representation of young trees on the ground to produce the new crop and most important in softwood types of the forest, there is less severe interference by hardwoods with growth than is found where beech and maple are mixed through the forest as is the case in certain parts of Canada.

A large percent of the trees left after cutting, some of which were decayed at the base, have fallen in the past ten years. The balsam suffers more than the spruce. As a result the new forest coming in on cut-over land will have sounder trees than much of the old stand. The cutting has left spruce and balsam trees scattered over the softwood type with sufficient room between them to allow for the spreading of their crowns. Since the tree grows in volume in direct proportion to the size and thriftiness of its crown, the trees of this section promise to re-establish a forest cover if protected from destruction by fire. The actual growth in diameter found in more favourable sites is about one inch in five years. It is believed that the increase in rate of growth due to the opening up of the forest will also result in decreasing the amount of decay to which the trees have been subject in the past.

INFLUENCE OF FIRE ON GROWTH

Fire has unfortunately followed the cutting operations in areas where softwoods have been logged. The condition established by logging is a very considerable fire hazard. The result of such fires

was studied on some older burns where it was found that paper birch and aspen came in first after the fire. Subsequently the softwoods after considerable delay found their way underneath the aspen and paper birch stand. If sufficient time is allowed, these burnt areas will doubtless re-seed but, in the meantime, the only crop produced upon the land is one of paper birch and aspen, which is not used extensively for pulp purposes.

HARDWOOD PORTION.

A considerable portion of the area studied was covered with a forest of pure hardwood or a forest in which hardwood was the principle specie. Such areas due to the lack of the hardwood market had not been cut over at the time the softwoods were removed from the lower lands. The value of maple and birch may soon increase to a point which will allow the harvesting of this crop. But conversion of this hardwood forest into a stand of softwood will be accomplished with great difficulty. The cutting of the old stand of hardwoods will, however, allow the production of a much more thrifty and better formed young hardwood forest.

The study shows the value of the young forest growth left by logging operations and the very considerable loss resulting from its destruction by fire. A future crop of pulpwood can be secured more economically by the protection of the young forest than by the cleaning and planting of these same areas.

True Game Guardian

The true game officer today is more concerned in protecting such game as remains than in issuing licenses for its destruction. If we are to retain our game resources their conservation must necessarily constitute the main function of the game officer; he must be truly a game guardian or warden.

Cost of Inefficiency

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purposes," says W. J. Dick, in "Conservation of Coal in Canada," published by the Commission of Conservation, "coke is fully equal to anthracite coal; it lights quicker and holds the heat as well, while its smokelessness renders it easily superior to bituminous coal. It requires no special appliances to burn it, and only a slightly different adjustment of draughts."

With the known possibility of overcoming one of the chief urban nuisances, namely, the heavy black smoke from bituminous coal, and of converting it into an asset, it is to be hoped that private enterprise will establish coal refining or by-product coking plants in the vicinity of the larger cities. Such plants would provide a source of smokeless fuel to offset the shortage and high price of anthracite coal, while, at the same time, saving the smoke-forming constituents in the form of valuable commodities.

Gypsum

Wide Range of Uses—Building Trades are Large Consumers

Gypsum, or hydrated sulphate of calcium, is one of the important non-metallic minerals of Canada. It is found in all the provinces, with the exception of Prince Edward Island, in one or more of its three forms, selenite, a crystallized variety; satin spar, a fibrous variety, consisting of long silky crystals; and alabaster, a fine-grained white variety.

Gypsum occurs in beds, often of great thickness, and is usually mined by the open quarry method, after which it is crushed to the degree of fineness necessary for the product for which it is required.

The principal uses of gypsum are as wall plaster and in the manufacture of plaster of paris. For these products gypsum, after being finely powdered, is calcined, or heated to drive off the moisture. It possesses the valuable property, however, of being able to absorb moisture again. This permits of its being spread or moulded when in a wet state and of quickly hardening. As plaster of paris it is used for a variety of purposes, such as a plaster finish coat, for mouldings and patterns and for casts of art objects. In the making of cold water paints it supplies the body that carries the colour; it also forms the base for paris green and other insecticides. For fireproofing safes, etc., calcined gypsum is used between the metal walls. Moulds for casting babbit metal, for making rubber stamps, hat blocks, etc., are made of gypsum, while the finest grade of plaster of paris is used for surgical casts and in dentistry for taking impressions for plate work. It is occasionally used as a filler in the manufacture of textiles and paper, and in asbestos wallboard and pipe and boiler covering. In the making of portland cement gypsum is used as an ingredient for the purpose of regulating the period of setting.

As a fertilizer, gypsum has long been used, either alone, when it is known as land plaster, or as an ingredient of many artificial fertilizers. It has the property of liberating plant food in the soil.

New uses are constantly being found for this adaptable mineral, and the revival of the building industry will no doubt result in an increased production. In 1920 429,144 tons were mined, of a value of \$1,876,595.

The Nanaimo, B.C., Fish Meal and Oil Refinery has commenced operations, with a capacity of twenty tons of fish per day, five tons of fish making one ton of meal and producing fifty gallons of coarse oil.

A large western United States tire company, as a result of initiating a saving of waste department, after four months of business showed a return equal to \$1,000,000 annually from salvaging waste materials.

Famine as a Result of Deforestation

China is now face to face with one of the worst famines in her history. Approximately 15,000,000 people are in imminent danger of starvation. The area affected is some 100,000 square miles in extent, and, as only the most primitive means of transport exist, it is impossible for millions of the miserable inhabitants to get out of the stricken districts, in spite of frantic efforts to do so. In addition to the scarcity of food, there is an equally terrible scarcity of fuel. The poorer classes have always to rely on grass roots and stubble to keep their little fires alight and this year there is no stubble. As a result, the rigorous climate of Northwestern China is taking its toll and thousands are perishing from the cold.

The immediate causes of the famine were disastrous floods followed by a long period of drought, which resulted in the complete failure of three successive crops. These calamities, in turn, were caused in large part by a reckless wastage of natural resources. The Chinese have been extremely unscientific and wasteful in the handling of their forests. The rich agricultural lands of the lower plateau were stripped of tree growth probably centuries ago, but until within even a hundred years ago great forests covered the mountain plateaus and slopes of Central China. These have been utterly destroyed over great areas and no attempt made at reforestation either by natural or artificial means. As a result, the slopes have been so eroded by heavy rains as to be veritable deserts. Moreover, the lack of forest cover on the uplands has made possible alternate floods and droughts, the very factors that have brought disaster to so many millions of people in China this year. An area about one-quarter the size of Ontario, fertile enough to maintain a population of over 50,000,000 people has become, as a result of human folly and shortsightedness, a place where men must ever be haunted by fear of destruction.—A. Donnell.

Wild Life, Destroyed, Cannot be Replaced

No natural resource needs the application of greater foresight for its conservation than our wild life. It cannot be replaced once it is destroyed, and its destruction can only be avoided by wise prevision. In the past it has been an almost invariable rule to wait until serious depletion of wild life has taken place before considering its protection. The Migratory Bird Treaty, the Northwest Game Act, and the more stringent provincial game acts, together with the stricter enforcement of these regulations by game guardians with an appreciation of the value of wild life are evidences of a more sympathetic public interest in what is one of Canada's valuable and most interesting natural resources.