

Where the soil is thin, or as frequently seen, only a layer of more or less decayed moss on the bedrock, a fire is disastrous, the root zone being destroyed. And a fire up there is easily started for the whole lower half of each spruce or larch tree in the dense young stands which prevail, is a highly inflammable plume of dead twigs, moose moss, and lichens.

The bark beetles work in colonies, destroying the trees, and the moment they create an opening in the close-growing stand each following wind storm (and they are frequent) mows down its quota of trees. Finally a stroke of lightning sets fire to the whole tangled moss-covered mass of fallen and up-rooted debris, usually not only consuming it and much of the soil as well, but eating far and wide into the green timber. Then, reproduction being everywhere prolific, a dense young stand springs up on the ruins of the fire and nature's slow cycle of growth and decay begins all over again.

The climate and the soil conditions are the two basic factors which determine farming value. Where frequent or recent fires have not resulted in the formation of purely "temporary" or "fire types"—as e.g., young jackpine on heavy clay—a study of the existing flora answers many questions as to the climate and the soil.



Timber on Mitsht) Riv.r.

On well-drained spots as far north as Split lake the flora is almost identical with that of similar sites in the Riding Mountains of Manitoba, proving that during the growing season these localities lie under one and the same isotherm, or nearly so. And yet the Riding Mountains are nearly four hundred miles southwest of Split lake.

Two other factors which help vegetation in this northern clay belt are the low absolute elevation—only 500 to 700 feet—and the large proportion of sunlight during the growing season, because of the long day. No doubt also the large proportion of the country covered by water has a tendency to prevent late spring and early fall frosts.

In the absence of weather records, it is impossible to say whether the summer of 1910 was an average season or not, but certainly it was favourable for farming operations. There were showers every week and the growth of the native vegetation was amazingly rapid. The total annual precipitation included 2 or 3 feet of snow would appear to be about the same as for western Ontario, to wit, 30 to 40 inches.

At Cross lake no damaging frosts occurred between June 8 and September 11, an interval of ninety-three days. But as a "sixty-day" oat or barley in Ontario will mature in that region in forty-five or fifty days—a general rule which applies as well to fruits, roots and vegetables—there would appear to be no difficulty from a climatic standpoint in growing all the hardier products of the temperate zone.

The size and quality of the wild fruits between Setting and Split lakes was first-class. During the last week of July we enjoyed ripe raspberries, gooseberries, black and red currants, blueberries, saskatoons and strawberries (late ones).

The first three mentioned were especially fine—the bushes loaded down with fruit as large and juicy as many tame varieties in Ontario. The average temperature of the growing season is about 60° Fahrenheit.

Certainly vegetables will grow to perfection anywhere between Cross lake and Nelson House. At the former we ate potatoes weighing a pound and a half each, dug on the last day of August, and when we left on September 10 the corn and tomatoes were still untouched by frost. I would respectfully point out the advisability of the Dominion government placing several small experiment stations at suitable points within the limits of this clay belt to make careful test of its seasonal variations and cropping possibilities. When the railway is completed such information will be of the utmost value to intending settlers.

As in all other northern districts one great drawback will be the insect pests. Mosquitos, "bulldogs," deerflies and gnats abound. It is doubtful, however, if they are as bad as in parts of New Ontario now being settled and farmed.

The winters are quite as enjoyable as in Manitoba—probably more so. Mr. Clifford, one of the railway location engineers, who has spent two years between The Pas and Split lake assured me that he liked the winter season there much better than the summer.

With regard to soil conditions, drainage is the great necessity everywhere. To render the soil fertile for cropping, the heavy stiff boulder clay must be opened up to the action of the air. Probably the use of a sub-soil plow might obviate the necessity for underdrainage over large areas. But however secured, aeration is necessary to change the present cold, dead, impervious soil to a warm, porous, friable one, full of bacterial life, available plant food, and resulting fertility.

The soil is exactly similar to that around Cochrane in New Ontario which yields such large returns under right treatment.

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The manager of the Japan Rolling Stock Company (Mihon Sharyo Kaisha), has recently stated that a large amount of rolling stock will be required in Japan in the near future as a result of the extension of the government railways, and that it is estimated that by 1923 500 locomotives, 750 passenger coaches, and 9,300 freight cars will be placed on the government lines, necessitating an aggregate expenditure of about £2,500,000 to £3,000,000. In addition, considerable quantities of stock will be required for the lines built and will be constructed by private companies, of which 17 or 18 were organized last year.

A translation into English of the "Lectures on Biology," delivered by Dr. Curt Thesing in the Humboldt Academy and Urania in Berlin, has appeared in London. The point of the lecturer is that Darwinism or Lamarckianism or any other theory in itself is insufficient to cover our present knowledge. The writer is strong in his discussion of the transmission of acquired characteristics. The author gives a remarkable instance of the development of the spermatozoa of *Rossia marcosia*—a little cuttle fish—found in the Bay of Naples. Each spermatoblast regularly gave rise to four spermatozoa, which resembles the process among insects called polyembryony, by which a single egg will give rise to from four to a hundred or more individuals.