

(Frontispiece.)

Plate 1,---View of Lake William, Turtle Mountain Forest Reserve.

(Photo A. Knechtel.)

DEPARTMENT OF THE INTERIOR, CANADA

Hon. ROBERT ROGERS, Minister; W. W. COY, Deputy Minister.

FORESTRY BRANCH—BULLETIN No. 32.

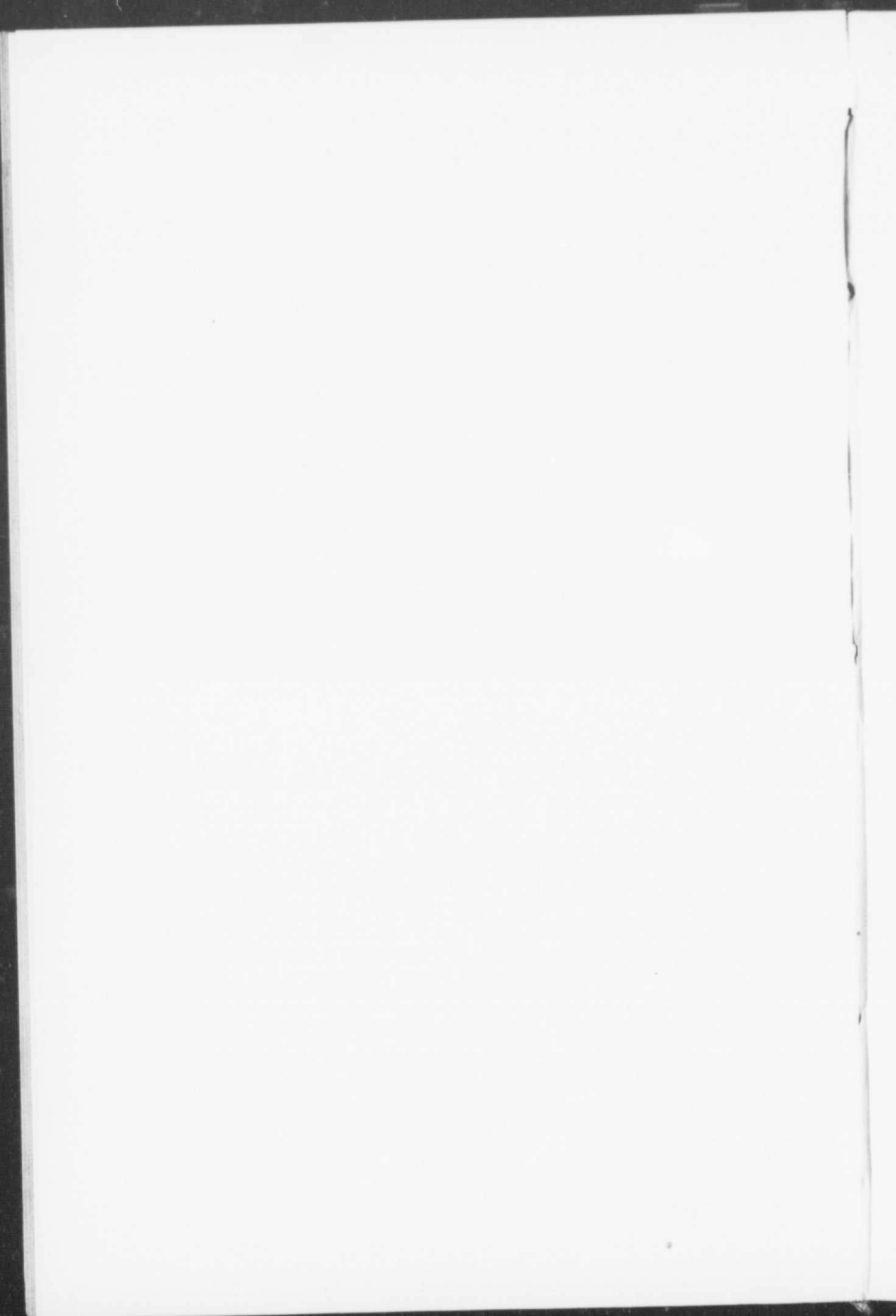
R. H. CAMPBELL, Director of Forestry.

# TURTLE MOUNTAIN FOREST RESERVE

BY

ROY L. CAMPBELL

OTTAWA  
GOVERNMENT PRINTING BUREAU  
1912



LETTER OF TRANSMITTAL.

FORESTRY BRANCH,

DEPT. OF THE INTERIOR,

OTTAWA, August 14, 1912.

SIR,—I beg to transmit herewith a report on the Turtle Mountain Forest Reserve, in Southern Manitoba, and to recommend its publication as Bulletin No. 32 of this Branch.

The bulletin contains an account of the reserve, largely compiled from previous reports of officers of this Branch, on the natural features, the timber and other natural resources of the reserve, and shows the importance of inaugurating a proper system of administration in order to obtain the full advantages of the reserve in the production of timber and the protection of the water-supply for the streams arising therein, as well as for a place of recreation for the people of the surrounding districts.

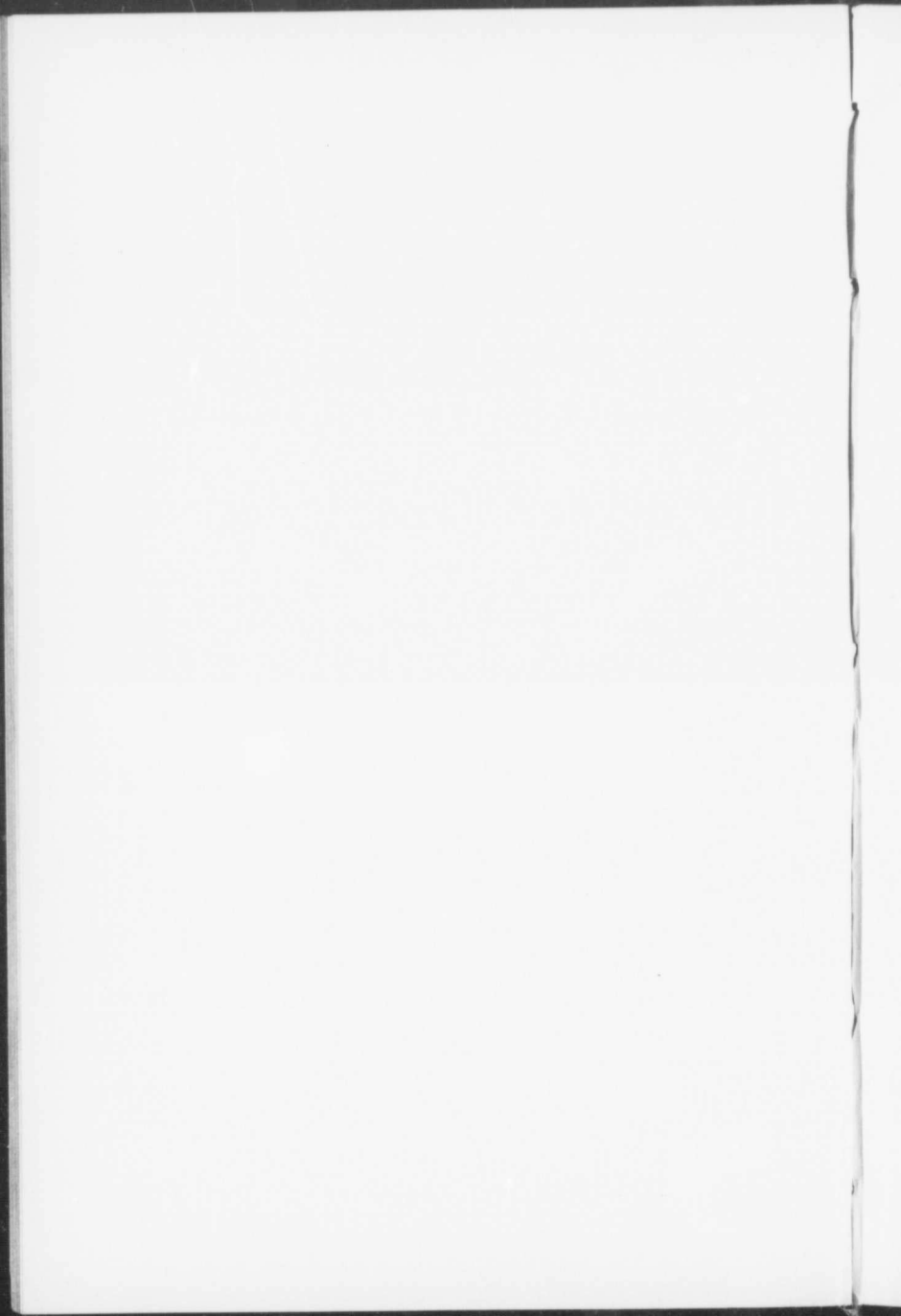
I have the honour to be, sir,

Your obedient servant,

R. H. CAMPBELL,

*Director of Forestry.*

W. W. Cory, Esq., C.M.G.,  
Deputy Minister of the Interior,  
Ottawa.



## THE TURTLE MOUNTAIN FOREST RESERVE

Many hundreds of thousands of years ago a long narrow sea extended from the Gulf of Mexico to the Arctic Ocean. From it were precipitated many feet of rock in layers or strata, which form the immediate basis of the great central plains of North America. A great general upheaval of the earth's crust, most noticeable in the far west in the formation of the Rocky Mountains, caused the water to run off into the surrounding ocean. Here and there bodies of water remained over the plateau and these kept up the work of precipitation, giving what are known as the Lower Tertiary sandstones. Elsewhere streams carried off hundreds of feet of these rock strata from the great broad inland plain, leaving here and there isolated projections. One of these happened to occur in the southern part of what is now the Province of Manitoba. There it stood, two hundred to six hundred feet above the surrounding country, and hundreds of streams, big and little, found their sources in it. Many centuries later the great ice sheet which once covered the whole northern half of the continent moved down with its millions of tons of earth and rock scooped from the northland. The ice melted a few thousand years afterwards, and its waters formed Lake Agassiz, whose bottom is now the fertile soil of the Western Provinces. On the Southern Manitoba height of land there were deposited by the ice many feet of boulder-clay. Lake Agassiz afterwards disappeared and for a few thousand years there has been very little change in the face of the country. On the mountain vegetation flourished, trees grew tall, and wild animals and birds took possession of the cool upland forest.

After centuries of habitation by the Indians the white man appeared in the western prairie. He called the mountain 'Turtle Mountain' and went there to cut wood for his fire and later for his house. Surveyors came into the region and ran the international boundary over the top of the mountain, dividing it almost equally between the United States and Canada. The district began to fill up with ranchers and farmers, and then the work of devastation began. It was natural of course to care little for the forest when there was so much of it—hundreds of square miles—and no one was exercised if through carelessness a fire was started on the mountain. And so from the time of the earliest settler down to the present, to a greater or less extent, the forest's most formidable enemy, fire, has levied a tribute upon it.

As far back as 1890 the pinch of the increasing timber scarcity was felt in the West. In order to make certain a supply of ties for the construction of their road, the Brandon and South Western Railway induced the government to withdraw from entry the even-numbered sections in six townships in the vicinity of Turtle Mountain.

There was considerable discussion in the following few years as to the relative rights of settlers and wood-cutters, and the reservation of the land as a timber-producing tract was the object of several examinations and petitions. In 1895 the Minister of the Interior set aside 75,000 acres as the 'Turtle Mountain Timber Reserve.'

Negotiations were entered into with the Canadian Pacific Railway Company and the Hudson's Bay Company for the transfer of their lands in the reserve, and when in 1906 the 'Dominion Forest Reserves Act' was passed, and the Turtle Mountain Forest Reserve established by Act of Parliament, the area, reduced to 69,920 acres, came under the sole control of the Forestry Branch of the Department of the Interior.

#### DESCRIPTION.

The reserve is roughly a block of four townships, extending westward along the international boundary from the eastern boundary of range 19, west of the principal meridian. The two end townships are not wholly included, however, and the area is therefore reduced to the equivalent of about three townships, or, to be exact, 69,920 acres. Just outside the northern boundary of the reserve Turtle Mountain dips down to meet the rich, rolling prairies of the Souris district, one of the famed wheat areas of the Dominion. Towns and railways are close at hand. The Great Northern is only about four miles from the northeastern corner. Wakopa and Bannerman on this line are the nearest stations, being within five miles, but the town through which the greatest amount of traffic passes to the reserve is Boissevain, situated about eight miles north, at the junction of the Pembina branch of the Canadian Pacific Railway and the Great Northern to Brandon. Whitewater, which is the official headquarters of the Forest Supervisor, is also on the Pembina branch of the Canadian Pacific Railway, and within ten miles of the reserve. To Deloraine, the junction point of the Pembina and Lyleton branches, the distance in a direct line is about twelve miles. The projected extension of the Wakopa branch of the Canadian Northern Railway from Adelpha to Wassewa will place the reserve within four miles of another means of communication with the larger towns of Manitoba.



Plate 2.—A Bay on Lake Gordon.

(Photo A. Knechtel.)

The trails into the forest reserve are uniformly good. A motor service, in fact, is available between Boissevain and Lake Max, the main point of interest in the tract.

## TOPOGRAPHY.

The altitude of the reserve above the surrounding country varies from 200 to 600 feet. The absolute elevation above sea-level is, approximately 2,100 feet. The rolling surface of the land within the boundaries is dotted with scores of lakes, large and small, whose total area comprises about one third of the reserve. Fifteen of the lakes are over a mile in length. These are the bodies of water which, with the innumerable sloughs in the tract, form the sources of the great system of natural irrigation flowing to the north through the Pembina and Whitemud rivers and many other smaller streams to give moisture to the crops of half a million thirsty acres.

## SOIL.

The soil, which is clay loam to stiff clay with boulders, holds moisture very well, being aided in this respect by the dense vegetation. Agriculture, on account of the elevation and the rough and wet nature of the ground, is difficult. Efforts which have been made to grow grain have resulted poorly. Coal has been found in the reserve, but not in sufficiently large quantities for commercial exploitation.



Plate 3.—Lake Adam.

(Photo R. D. Craig.)

## THE FOREST.

Of the forest conditions, Mr. R. D. Craig, who conducted a survey of the tract in 1905, says:

No traces of conifers were found, and, if they ever did grow in these hills, fires have destroyed them, leaving only those species which are able to reproduce

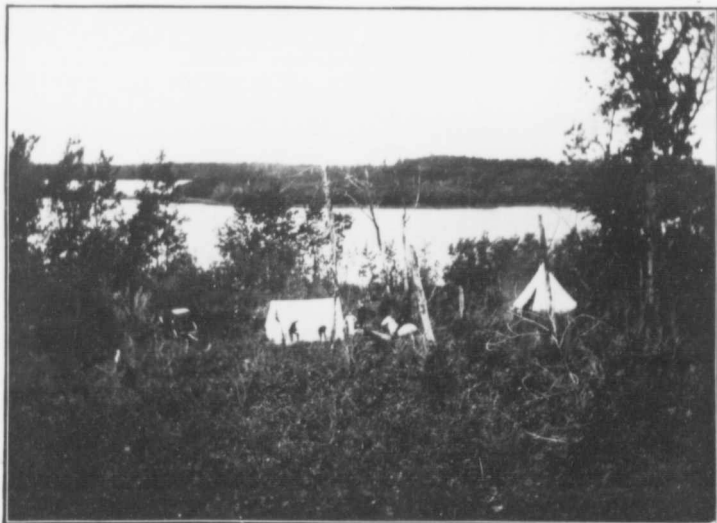


by suckers or coppice. The mature stand is now composed of aspen (*Populus tremuloides*), 43 per cent; Balm of Gilead (*Populus balsamifera*), 14 per cent; paper birch (*Betula alba* var *papyrifera*), 21 per cent; burr oak (*Quercus macrocarpa*), 9 per cent; green ash (*Fraxinus pennsylvanica* var *lanceolata*), 8 per cent; elm (*Ulmus americana*), 5 per cent; and a few scattered Manitoba maples (*Acer Negundo*). There was originally a much larger proportion of oak but the demand for oak logs and posts has been so great that very little now remains.

There is an extremely dense growth of underbrush, even in fairly dense stands of timber, and this makes seedling reproduction difficult and also increases the fire danger.

The underbrush is composed chiefly of the following species, named in the order of their abundance: hazel, high bush cranberry, various species of willows, raspberry, saskatoon berry, rose, cherry and dogwood.

Since the advent of the settler about twenty-five years ago forest fires have been so frequent and so destructive that only 1,600 acres of timber has escaped; on 6,400 acres the timber has been partially destroyed, and the remainder is entirely devoid of large timber. There is, however, an excellent reproduction on the burned-over area which, if protected, will soon form a stand as good as, or better than, the original.



(Photo H. R. MacMillan.)

Plate 4.—Camp of Forest Survey Party on Lake Oscar, July, 1905.

Owing to the greater powers of reproducing by suckers the aspen forms 69 per cent of the new growth; the balm forms 12 per cent, birch 7 per cent, ash 6 per cent, oak 5 per cent, elm 1 per cent, maple 1 per cent.

At the present time (1912) an examination is being made to ascertain the amount of timber now standing in the reserve. Fire has made very great inroads in the course of the past few years, and the estimate which Mr. Craig made in 1905 is not valid for the changed conditions.

#### WHAT THE RESERVE MAY BECOME.

The Turtle Mountain Forest Reserve was established in pursuance of a policy which has been shown to be essential to the welfare of the country. That policy is that forest crops should be grown only on lands fit for forest purposes, and that areas fit for agriculture should be used solely for farm crops. Violations of this principle have caused the most bitter distress in some localities in the older provinces and in the Eastern United States. Whole communities have degenerated with the land, which, although once under rich forest growth, was cleared and planted to field crops only to yield, year by year, poorer and poorer crops. Added to this is the consideration that the timber wealth of the Dominion is being very rapidly depleted. The 'unlimited forests,' on whose glories many an orator has dilated in the past, no longer exist. Canadians are coming very clearly to see that at the present rate of cutting the end of the forest as a source of great timbers and fine lumber is well within a century, and that a very careful policy of conservation must be adopted to maintain the forest heritage.

That scientific handling, when capital, men and continuity of treatment can be counted upon, will pay, and pay wonderfully, is clear from the experience of Germany, whose managed forests have steadily increased their productivity since their establishment. Saxony, which received at the beginning of the century a gross return of \$1.75 per acre from its managed forests now gets \$8.78, of which \$5.32 is clear profit.

#### BENEFITS OF PUBLIC FORESTS.

Public forests serve three distinct purposes:

- (1) They supply to the people timber, fuel, pulpwood, &c.
- (2) They regulate the flow of water from hills and mountains, and prevent erosion of the soil by floods.
- (3) They may be a source of recreation and pleasure to the people.

To the fulfilment of these purposes the Dominion Government has set itself. Some of the forest reserves, such as the Riding Mountain reserve, will be used principally for timber; others, such as the Rocky Mountain reserve, as a conservator of water; others again, as Buffalo Park at Wainwright, Sask., as a game preserve and national park.

#### TIMBER PRODUCTION.

In some cases, however, all three functions are fulfilled by one reserve. This is eminently true of the Turtle Mountain reserve. Of the wood-producing possibilities Mr. Craig says in 1906:

There has been a great deal of wasteful cutting in the Turtle Mountains, and it is the common practice still to cut down a large tree and take only eight

to twelve feet of the butt and leave the rest to rot or burn. The stumps are as a rule inexcusably high; there is no reason for having more than a one-foot stump for poplar. Heretofore cuttings have been made wherever convenience suggested, but if the forest is to be made productive the exploitation of the timber must be done systematically and thoroughly. Three or four cutting areas in different parts of the reserve should be laid out annually and operations restricted to these. The aspen will reproduce naturally, but it is advisable that some more valuable species be planted.

From our measurements of the rate of growth the following tables give a conservative estimate of what may be expected from the dense stands of reproduction now one to twenty years old:—

Age.	No. trees per acre.	Average diameter at breast-height.		Average height.	Average Volume.	Yield per acre.
		Ins.	Ft.	Cu. Ft.	Cords.	
10 .....	4,000	1.5	13.5	0.1	4	
20 .....	2,500	3.2	28.0	0.8	22	
30 .....	1,200	4.7	38.0	2.4	32	
40 .....	850	6.0	46.5	4.3	41	
50 .....	625	7.2	51.0	6.8	47	
60 .....	425	8.7	54.0	11.1	52	
70 .....	335	10.1	56.5	14.0	55	
80 .....	300	11.1	58.0	17.4	58	

It will be seen that by cutting every forty years, which is a long enough rotation for fuel production, an annual cut of one cord per acre, or 55,000 cords, may be made without reducing the capital stock. This amount will supply a farming area of between two thousand and three thousand square miles with fuel and fence material, and at the low price of \$1 per cord would bring an annual revenue of \$55,000.

This supply of wood in the midst of a bare prairie country is of great value to the settlers and there is no reason why, if protected from fire and illegitimate cutting, there should not be sufficient timber produced on the area now reserved to supply the local demand for all time.

#### GRAZING.

Of the grazing possibilities Mr. H. R. MacMillan, M.F., who has devoted much time to a study of conditions within the reserve, says in 1912 that one tract of one and one third townships will accommodate with ease 1,500 head of stock, and that, so far as he has noticed, the grazing tends to encourage the growth of poplar. Around the sloughs the grass is very luxuriant and makes excellent hay. In the brûlés the pea-vine and vetches grow in dense masses four to five feet deep, constituting the very best of pasture.

The influence of the forest growth in conserving waterflow will increase as with time the trees are allowed to grow to large size.

AS A SUMMER RESORT.

The lakes in the reserve are clear and cold, abound in fish, chiefly bass, jack and maskinonge. Of the latter kind specimens over twenty pounds in weight have been caught. The shores of the lakes are for the most part firm, and the bottoms are



(Photo H. R. MacMillan.)

Plate 5.—Stand of young birch and aspen. Such a growth makes good firewood and shelters stock.

largely sandstone and gravel. The swimming and boating conditions are very attractive. Drinking water is everywhere obtainable from the lakes and from the numerous springs which feed them. Deer and other wild animals, while not so numerous as they once were, still live in the wooded places, and prairie chicken, partridge and duck abound all through the open tracts. Wild fruits grow in profusion and there are comparatively few flies and mosquitoes. These natural advantages have attracted campers for many years. There are now (August, 1912) over one hundred spending from one to three months on the shores of the lakes, and there are a great many picnics held in the reserve every summer by outsiders. As some of the older trails are cleared up and more cottages join the nine already constructed the reserve will be truly the playground of Southern Manitoba.

## ADMINISTRATION OF THE RESERVE.

The three essentials in the management of a forest are:—

- (1) Prevention of destruction.
- (2) Encouragement of young growth.
- (3) Utilization to fullest advantage of mature products.

To these points the administrators of the Turtle Mountain reserve must look to make the area productive in any of the three ways previously outlined.

## EARLY ADMINISTRATION.

Even before the establishment of the Forestry Branch general protective measures were in operation. In 1897 a fire ranger was appointed, and timber was cut under license and permit. Saw-mills once operated in the reserve, but these were discontinued



(Photo A. Knechtel.)

Plate 6.—Lake Gordon, showing the grazing possibilities of the Reserve.

through lack of sizeable material. The appropriation for the reserve was not large, and the work done was necessarily restricted. Nevertheless, much good was accomplished through the prevention of fire.

## LOSSES FROM FIRE AND FUNGI.

In 1906 Mr. Craig says of the fire losses:

Fire has certainly been the greatest agent of destruction in this reserve and hardly a year passes but some part of the reserve suffers from its ravages. The fires of largest proportions occurred in 1879, 1881, 1885, 1897, 1903, 1905, and again this spring fire burned over a considerable area.

The fires of 1879, 1881 and 1885 seemed not to have done much damage, but to have left fire-scars on the trees along the south side of Township 1, Range 19.

The first serious fire seems to have been that of 1897, which came from the Dakota side into Township 1, Range 21, near Boundary lake. Some say that it was caused by the Indians who, under the Dead-and-Down Timber Law were given the dead timber, and that they set fire to the forest in order to increase the supply of this dead timber. Others say that the American farmers set it in order to clear their farms. Whatever the origin, it destroyed nearly everything in Township 1, Ranges 20 and 21, as is shown in the accompanying map.

The fire of 1903 burned over almost the same territory as that of 1897, and killed thousands of acres of splendid reproduction, besides much timber that had escaped previously. The first start of the fire seems to be at or across the American boundary, but it is evident that it was started in several other places later with the intention of making a clean job of removing the forest so that the land would be thrown open for settlement. This fire burned all summer and any attempts that were made to put it out seem to have been futile.

The fire has brought other troubles, as Mr. Craig also indicates:

A very large percentage of the old timber and much of the younger is being destroyed by fungi, chiefly *Polyporus ignarius*. Fire-scars enable the fungus to gain access to the wood of the tree and it soon permeates the whole trunk, destroying the wood. Finally, it fruits by means of the dark hoof-shaped brackets so often seen on trees, and the spores attack other trees. There is no practicable method of combating this disease except by removing diseased trees, and this will be done as soon as possible by directing the settlers' cutting to affected stands.

#### SURVEY.

In the summer of 1905 the forest reserve was surveyed under the direction of Roland D. Craig, Inspector of Forest Reserves, by a party with H. R. MacMillan at its head. A complete description of the topographical features and forest conditions was submitted to the Government, together with recommendations as to the future handling of the tract. The map prepared in connection with this survey is appended to this bulletin.

#### PROTECTION.

The general policy with regard to fires is consistently that of the forester that 'an ounce of prevention is worth a ton of cure' and every effort has been made to forestall even the smallest of fires. The Government has laid down certain broad regulations as to the burning of brush around the reserve, camp-fires within it are to be vigilantly guarded, and surrounding settlers are enjoined to proceed at once to the scene of any conflagration and render such service as the Supervisor may require of them. Officials have been appointed whose duty it is to keep watch over the reserve, and roads and trails have been constructed to facilitate access to a blaze. In 1906 five miles of road were cut out. In 1907 squatters were induced to leave the reserve and take up homesteads in other localities. In 1910 fourteen miles of twelve-foot

road were built. In 1911 the ranger's headquarters were placed on the reserve, the Government constructing a suitable house and outbuildings on a site admirably suited for rapid and effective work on the part of the officials. In 1912 a telephone line was constructed from the ranger's headquarters north of Lake Max to the nearest poles of the Manitoba Government local telephone line, whose exchange is at Boissevain. The ranger is now in a position to call on this near-by town for assistance in case of emergency, and the general business of the forest administration of the reserve is greatly facilitated.

#### UTILIZATION.

Regulations have been drawn up covering the use of the reserve for wood, hay and grazing. In general these are as follows:—

*Wood.*—A certain amount of dry wood may be cut free of dues by settlers, and at a fixed rate per cord when the wood is intended for subsequent sale. The charges on green cordwood vary also, depending on whether the wood is for the sole use of the permittee or for sale. On poles a charge per lineal foot is made. Posts, poles



Plate 7.—Lake Oscar.

(Photo H. R. MacMillan.)

and rails not over six inches butt diameter constitute a different class, and the charges on these are subject to special regulations.

A very probable addition to the regulations of the reserve will be that restricting the cut to those areas or individual trees which the forester in charge determines

ready for the saw, and the ease of removal will be made a distinctly minor consideration. Wasteful methods of cutting will be actively discouraged.

So far the output of timber has been as follows:

TIMBER TAKEN OUT OF TURTLE MOUNTAIN RESERVE UNDER SETTLERS' PERMITS.<sup>1</sup>

Year.	No. Permits.	Dry wood.	Greenwood or for sale.	Logs.	Posts.	Roof-poles.	Rails.	Revenue.
			Cords.	Ft. B. M.				
1903.....	198	1,939	219	35,034	2,400	200	75	\$ 302 42
1904.....	638	6,691	683	14,768	4,300			54. 04
1905.....	444	4,549	560	25,200	3,350	1,950	500	353 75
1907.....	250	3,000						
1910.....	172	2,030		1,300				136 75
1911.....	42		488			200		21 50

<sup>1</sup> Figures for 1906, 1908 and 1909 not available.

*Hay.*—Any actual settler residing in the vicinity of a forest reserve may be granted a permit to cut a certain amount of hay for his own use on paying a merely nominal charge, and any person desiring hay for sale or barter may secure a permit for larger quantities at an increased rate.

*Grazing.*—The grazing of cattle and horses is allowed where it is decided that such will not injuriously affect the growth or reproduction of timber, and the number of head to be allowed on a reserve is determined from year to year by the Director of Forestry. At the present time, in the Turtle Mountain reserve the charge is twenty five cents per head per month, or one dollar for the season. In addition certain general regulations have to be observed by those running stock within the reserve.

In 1911 construction was begun upon a wire fence completely enclosing Township 1, Range 21, and part of Township 1, Range 22, west of the principal meridian, in all about 29,440 acres. The work was reported complete in 1912, and save for some additions and repairs which are being made at the present time (August, 1912) is ready to receive cattle and horses for the grazing season. It is expected that the capacity will soon be taxed, as the charge is less than half that imposed by many private owners who allow stock to run on their property.

The cutting of hay by settlers has gone on steadily. As an indication of the extent it may be stated that in 1911 there were 33 permits issued, under which 565 tons were cut.





(Photo A. Knechtel.)

Plate 8.—View of Lake Gordon. Boating is good on nearly all the lakes on the reserve.



(Photo A. Knechtel.)

Plate 9.—Pike caught in Lake William.

## REPRODUCTION.

In 1906 two hundred young Scotch pine were planted, ninety per cent of which have survived.

In 1909 a large quantity of spruce and bull pine seed was sown, the resulting seedlings turning out very thrifty.

In 1912 a consignment of 10,000 two-year-old Scotch pine seedlings and 4,000 white spruce seedlings was sent from the Dominion Forest Nursery at Indian Head, Sask., and the whole number set out in Section 31, Township 1, range 21, west of the principal meridian. The little trees give every promise of vigorous growth.

## SURVEY OF VILLA LOTS.

For many years the reserve has been frequented by campers, but there has been no definite move towards their accommodation until this year, when forty-three lots were laid out by surveyors on Arbor Island in Lake Max. These lots may be leased from the Government for a long period and at a nominal rental. The regulations in this regard will, it is expected, be issued very shortly.

## FUTURE DEVELOPMENT.

The development of the forest reserve under the most advanced system of management which the funds at the disposal of the Forestry Branch will allow will go rapidly ahead. The public are beginning to realize that forest areas, if they are to be a real benefit to the country, must be protected and conservatively cut. As has been stated, the various systems of harvesting the wood crop which are in force in the forests of the nations which have progressed farthest in the development of forestry practice are based on the one idea that the tract under management shall be cut in such a way as to produce the greatest possible ultimate return. This precludes the cutting of immature trees and maintains order and economy in the progress of fellings. The cutting on the Turtle Mountain Forest Reserve will be done for the most part by many individuals, each desiring to take off under permit quantities of from five to fifty cords of fire-wood. Trails and fire-guards will be established, telephone lines will be put into operation, and every other facility for the rapid extinction of fires will be adopted which the appropriation will allow. It is probable that the fenced area will be enlarged for the accommodation of more stock when the demand justifies it. The Dominion Forest Nursery at Indian Head will supply seedlings to the reserve, and as soon as the funds are available and immunity from fire is guaranteed planting will go ahead.

With the increased favour as a summer resort which the reserve will enjoy as time goes on, improvements will doubtless be made. At the present time a picnic ground and boat-landing would add materially to the enjoyment of pleasure seekers. Trails for the convenience of campers and cottagers will be constructed as soon as demand requires, and every effort will be made to have the public feel that the reserve is really theirs for full use under conditions of justice for all.

## CONCLUSION.

The policy with respect to the formation and administration of forest reserves, which has been described in the preceding pages, in so far as it relates to the Turtle Mountain forest reserve, requires time, money and trained men for its fullest development. It should not be expected that such reserves can immediately fulfil all the purposes for which they have been established, but, under careful and intelligent administration, and with the support of enlightened public opinion, there is reasonable assurance that all of these desirable results can be obtained, and that this hilly, wooded tract in a treeless prairie land can be made to serve the purposes which nature evidently intended, viz., the supply of timber, the conservation of the water-supply and a provision of a pleasure and health resort for the people of the surrounding district.

The officers who are charged with the administration of this reserve are doing all in their power to achieve such results, and they bespeak the support and assistance of the public and particularly of residents in the vicinity of the reserve. Such assistance can best be given by cordial co-operation in the observance and enforcement of the regulations for the administration of the reserve.

Department of the Interior

— Canada —

HONOURABLE ROBERT ROGERS, MINISTER  
W. W. CORY, C.M.G., DEPUTY MINISTER

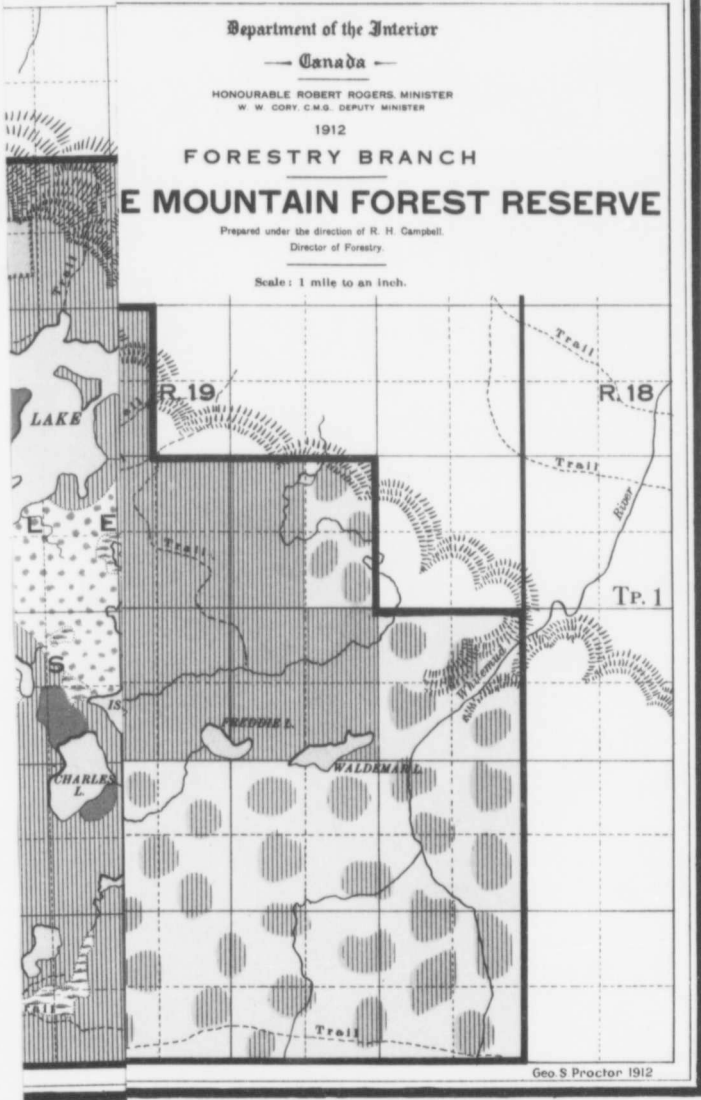
1912

FORESTRY BRANCH

# E MOUNTAIN FOREST RESERVE

Prepared under the direction of R. H. Campbell,  
Director of Forestry.

Scale: 1 mile to an inch.



D OVER, CAIRIE.

D OVER, S



Department of the Interior

— Canada —

HONOURABLE ROBERT HOODS, MINISTER

H. W. COPE, C.M.G., DEPUTY MINISTER

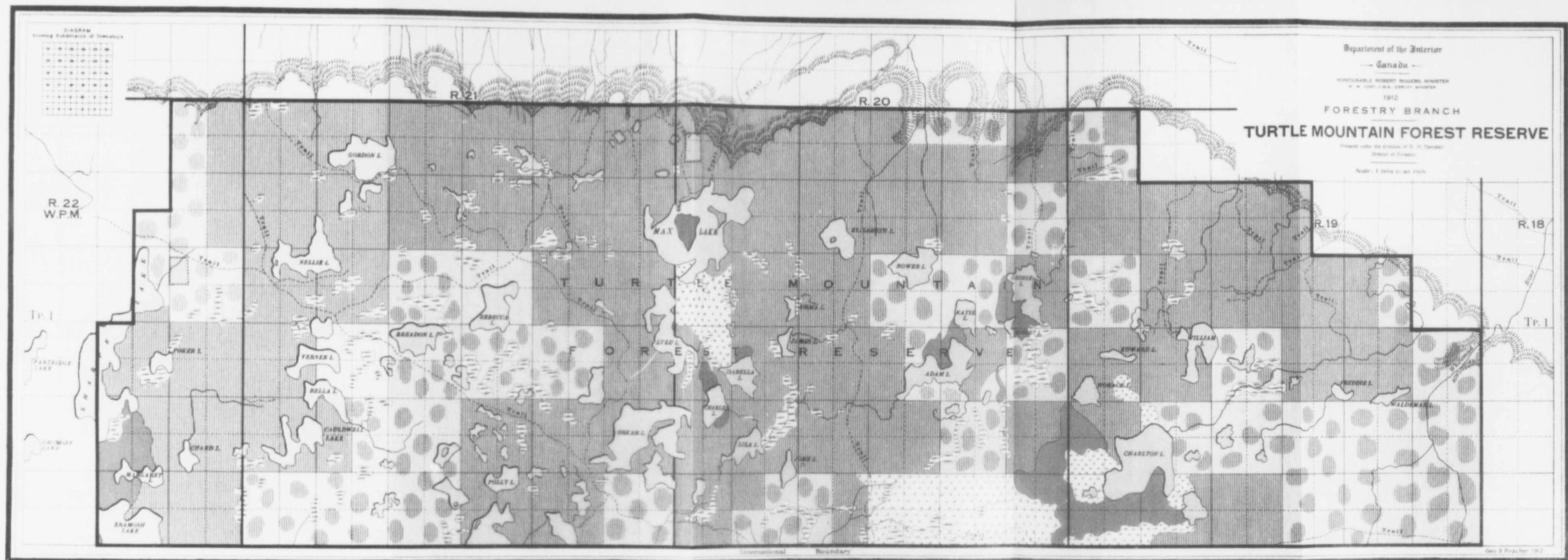
1912

FORESTRY BRANCH

**TURTLE MOUNTAIN FOREST RESERVE**

FORMED UNDER THE PROVISIONS OF S. 11, CANADA  
ACT OF FORESTRY

Scale: 1 mile to an inch



GREEN TIMBER - 2,000 TO 5,000 PER ACRE.  
 BURN, SCATTERED TREES.

BURNED OVER, COVERED WITH DENSE GROWTH OF YOUNG TREES.  
 BURNED OVER, SCATTERED GROWTH OF YOUNG TREES

BURNED OVER, REVERTING TO PRAIRIE  
 CULTIVATED.

International Boundary

Geo. S. Praxter 1912