

THE CANADIAN WEST

McINTYRE



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FIG. 1. — Ploughing Scrub-land on the Western Prairie.

MORANG'S PROVINCIAL GEOGRAPHIES

THE CANADIAN WEST

A GEOGRAPHY OF MANITOBA AND
THE NORTH-WEST TERRITORIES

BY

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PREFACE

As far as it has been found possible, the geography of Western Canada as outlined in this little work has been treated from an inductive standpoint, based on the assumption that those who study the "home region" have a fair knowledge of the "earth as a whole" and the "continents."

While this is in no way a picture-book, an effort has been made to assist the child to grasp a broad and strong picture of the country by presenting a series of related topics rather than a great number of uninteresting and unrelated facts. The illustrations have been chosen and the maps prepared with the purpose of assisting in the understanding of the text.

Each chapter, or lesson, is followed by a number of questions carefully selected. These make a desirable review of the topic. They also invite the student to inquire into geographical facts outside the text, and thus prepare for the more practical geography when the school days shall have ended.

Considerable space has been given climate and life, topics our pupils are usually very ignorant of. It is not enough to-day, when our woods and our wild animals are

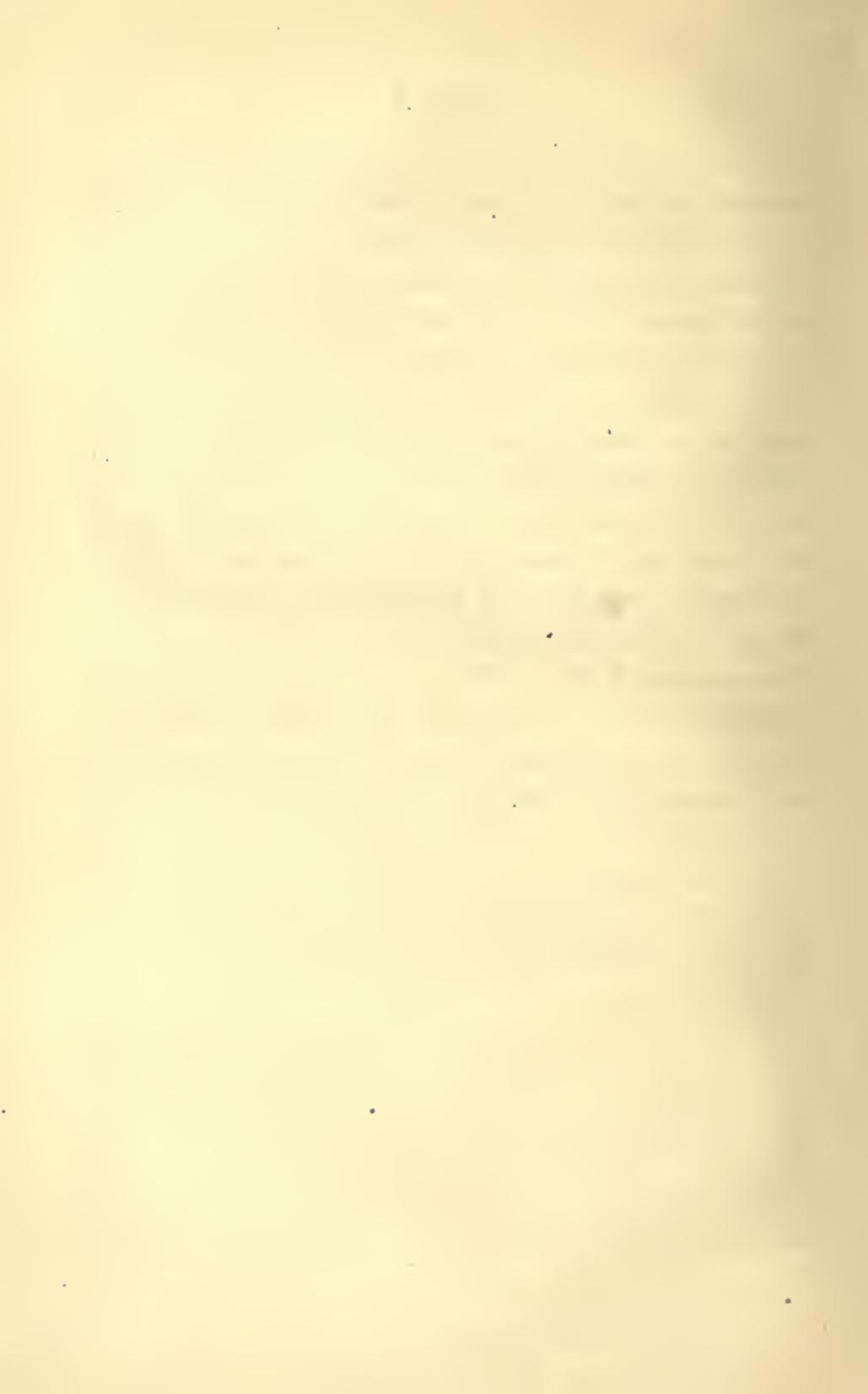
disappearing, to say merely that the wild animals of Manitoba and the North-West Territories are the deer, the bear, and the wolf. These are the days when nature study should be in evidence in such natural history as geography finds necessary to use for its own purposes. Special attention has also been paid to the industries of the country, as it is felt that the boys and girls of to-day should be thoroughly familiar with the conditions as they now exist, and should be able to give a reason for their faith in the future of the home land.

It is to be hoped that this book may be found to possess a value of its own apart from any use that may be made of it as a school text-book and as a volume supplementary to "Our Earth as a Whole."

The author has to acknowledge very valuable assistance received from Dr. James Bain, Chief Librarian of the city of Toronto; from Mr. C. C. Chipman, Chief Commissioner of the Hudson's Bay Company, Winnipeg; from Mr. James A. Smart, Deputy Minister of the Interior, Ottawa; from Mr. Frank Pedley, Deputy Superintendent-General of Indian Affairs, Ottawa; from Mr. J. D. Scott, Superintendent of Immigration, Ottawa; from Mr. E. Deville, Surveyor General of Dominion Lands, Ottawa; from Mr. James White, Geographer of the Interior Department, Ottawa; from Dr. Robert Bell, Director of the Geological Survey, Ottawa; from Mr. Percy H. Selwyn, Secretary of the Geological Survey, Ottawa; from Mr. W. F. McCreary, M.P., Winnipeg;

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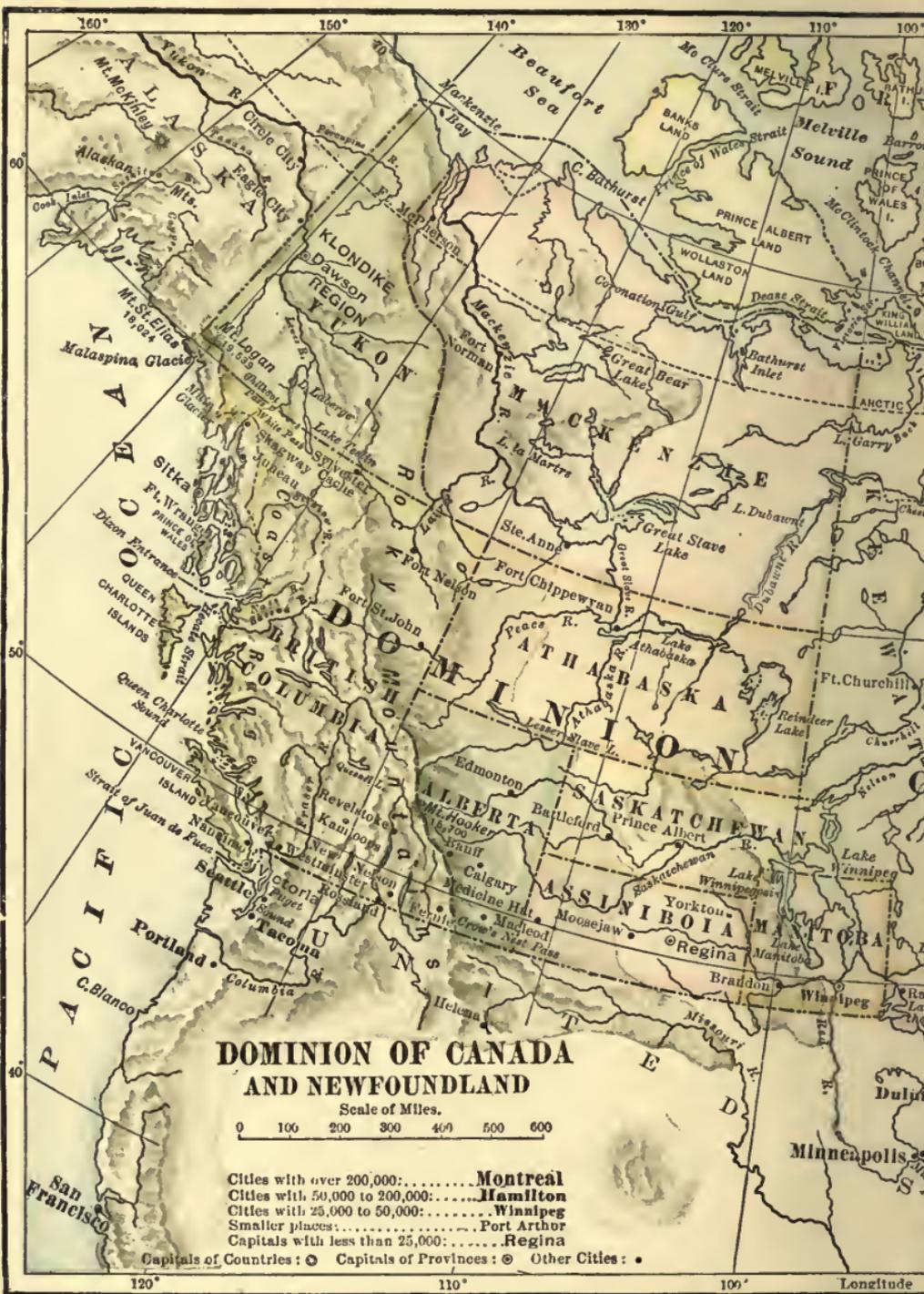
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120° 110° 100° Longitude

THE CANADIAN WEST

CHAPTER I

THE HOMELAND

THE country we should know best of all is Canada. The part of Canada the boys and girls of the prairies should find the most interesting is that which extends from Hudson Bay to the Rockies, and from the United States at the south to the great ocean at the north.

This part of Canada was called in the days when none but hunters and trappers lived in it the great "Lone Land," but now people delight in calling it the "Canadian West," the great "Western Country," the "West," and the "Garden of the Empire" — all names which try to express its vastness and fertility and its probable future. We have not yet had time to learn all about the Canadian West. Indeed, there are large areas that are still unknown, but we can see a few things that will help us to understand why people speak of the whole land as *great*. What are some of these?

Find, by using your foot-rule and the map of Canada (Fig. 2), how wide and how long this country is. How many countries as large as Great Britain do you think it would make? What part of the whole of Canada is it? Look now at the two mighty rivers, the Mackenzie and the Saskatchewan. Both are over a thousand miles in length, and the basin of the latter is so large and so

fertile that it may itself some day support a nation. Look again at the two great groups of lakes in the basins of these rivers. These may be counted among the largest bodies of fresh water in the world. Can you now think of the size of the prairie country that stretches in an unbroken line almost from the western boundary of Ontario to the foot-hills of the Rockies, and far to the north? How many homesteads can be carved from the grassy plains that fed for so many years the vast herds of buffalo which once roamed over them? Time alone can answer this for us.

Beyond the region of the prairies are wide forest lands, the natural home of many of the wild animals that have helped to make the Canadian West valuable. Under the soil in many districts to the west and the south-west are great quantities of coal which we will use to warm our homes and drive our engines. Over all is the dry, clear, health-giving, and sunny atmosphere.

Nature has indeed given us a fine land in which to live. It remains for us, therefore, to learn all we can about our country and particularly this portion of it, so that when the day comes when we shall be the men and the women who must help to make the nation, we may not be ignorant of its resources.

QUESTIONS.—In what part of Canada is the Canadian West? What is the northern boundary of this land? The southern? The eastern? The western? On a globe trace the southern boundary around the world and note all the great cities near this line. What direction from this line are London, Edinburgh, Brussels, Berlin, and St. Petersburg? Are these cities situated in regions of severe cold? If not, what can you say of Winnipeg and Regina? By using the scale of miles find the distance from Winnipeg to Calgary. To Edmonton. Trace a line across the map that will separate the

rivers flowing into Hudson Bay from those flowing into the Arctic Ocean. Do any of the rivers come from the United States? Do any enter the United States from the Canadian West? To what river system do the rivers of the north belong? To what the rivers of the south-east? Locate on the map where you live. How far are you from the mouth of the Mackenzie? The mouth of the Nelson? Lake Superior? Vancouver? Toronto? Montreal? St. John? Halifax? In what river basin is your home?

CHAPTER II

THE HUNTER OF THE PLAINS

WHEN the earliest explorers reached this western land they found the greater part of it already in the hands of several Indian tribes. Between Lake Winnipeg and Hudson Bay were the Crees of the Musk-
The Indian tribesegs, or the Swampy Crees; along the northern Saskat-

chewan were found the Crees of the Woods; farther south, on the prairies of Assiniboia and central Alberta, the Plain Crees had discarded the canoe and the bark wigwam, and taken to the wild horse and the leather tepee. Around the upper waters of the South Saskatchewan dwelt the nations of the Blackfoot; to the north of the country of the Crees, in the region stretching from the Peace River to Hudson



FIG. 3. — The Indian of to-day.

Bay, lived the Athabaskans or Chipewyans, while the Assiniboines, or "Sioux on the Stony River," hunted in the

country watered by the Assiniboine and its tributaries. Where these red people came from in the first place we cannot tell, but some writers claim that they must have crossed over from the continent of Asia. Can you see how this was possible?

What have the Indian people done for the country? Have they, in any way, made it ready for the coming of the settlers from Eastern Canada, Europe, and the United States?

In order to answer these questions we shall have to look at the occupation of the Indian. What did he follow as a business? What was his work, if



FIG. 4. — Indians landing on the shores of Great Slave Lake.

work you may call it? He was a hunter. Sometimes, when game was scarce, he had to stare starvation in the face for days and weeks perhaps, and his life on the whole may have been more toilsome than it would have been were he simply a tiller of the soil; but hunting was the one thing his whole being longed for, hunting was the one work in which, apparently, the white stranger could not excel him. But is hunting a good occupation upon which to build a great nation? Let us see. If hunting is to be made profitable there must be an abundance of wild animal life. Now the number of

A hunter

wild animals in any district can never be very great. No locality, then, can support a very numerous tribe of Indians. Indeed, it is said that each Indian would need, in order to support himself, a piece of country as large as one of our townships. This would make rather a scattered people, would it not?

Again, the business of hunting makes it necessary that the hunter should follow the herds of deer and of buffalo

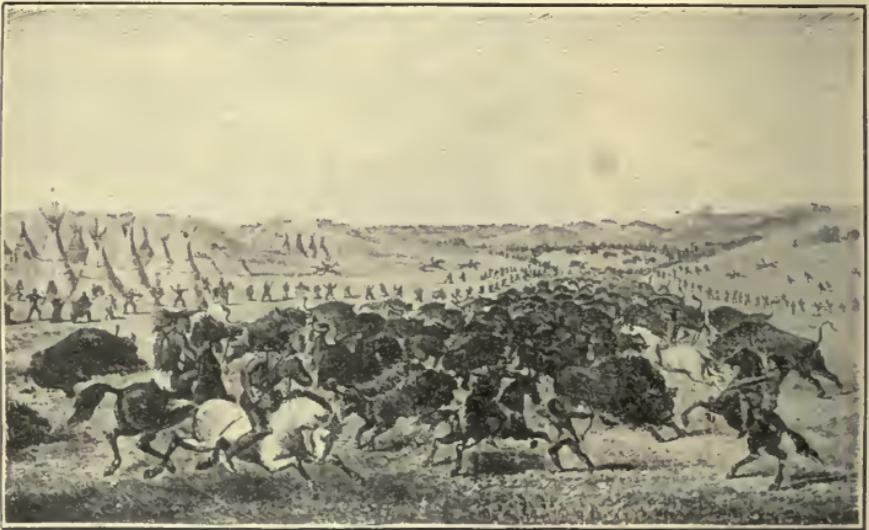


FIG. 5.—Hunting the buffalo. Notice how the buffalo are being driven into the pound in the background. What weapons are used?

(Fig. 5) from place to place over great stretches of country. How, then, could these people settle down for more

A wanderer than a short time in any one place? A hunter, in fact, is for the most part a wanderer, and a wandering people can never hope to grow great; it is only the settled home that can prepare people to learn great things. Had the Indian farmed the prairies instead

of giving his whole time to the chase, he might have become of far more importance.

Some people who have not made a careful study of the Indian consider him to have been lacking in general intelligence. But this is far from being true, for the Indian has many times shown wonderful skill as a general and as a speaker, and we know that these gifts are rare even among the civilized men of to-day. It is true that he has often shown his savage nature, but he has also been ready to help in the time of trouble those who have befriended him. Why,



FIG. 6.—Indians on horseback.

then, did he not make more of the country so many settlers from the older lands are now finding very fertile? Can you not see that the country was really against him? What would you do were nature to prepare all your food with but little work on your own part? This was largely the position of the Indian. The plains were so wide and the animal life so abundant that it was much more delightful to follow the hunt than to till the tough soil of the prairies. Perhaps you would have done the same were you placed as the Indian was many years ago. Have you ever thought of how we could get along without the cow, and the other tame animals we

His only
occupation

know so well? Why did the Indian not tame some of the wild animals about him? What animals could be tamed? Why did he not attempt to cultivate the plants? Which plants? Were any of these equal to the wheat, oats, and barley brought by our ancestors from across the ocean? Why did he not make greater use of the metals found in the country? What metals? He was only a worker in stone and in bone, and these cannot be compared with the iron and steel of to-day.

Has he done any good then? We shall see. His occupation, while it kept him back in many ways, still gave him a splendid training in local geography. His knowledge of the country None, even to this day, know so well as the Indian the rivers, lakes, plains, and woodlands of the country. His villages were placed in carefully chosen sites along the natural highways. He would therefore settle for a time at the junction of two streams. Here the fur trader found him, and here the trading-post, which afterwards grew into an important centre, was placed. Another village would be located where some difficulty in the waterway made a *portage* necessary (Fig. 7). Perhaps you are acquainted with such a place?

Again, in journeying from point to point across country, he knew how to keep away from the marshy grounds and dangerous spots. He also knew that a road over which many travelled would be much better than a fresh trail. The Indian was, therefore, our first road-maker, and Road-maker and guide we have used his trails, when no other roads were ready. Have we ever thought of thanking him for these? Finally, we must bear in mind that the Indian had the first real knowledge of the country,

and that he was willing to share this knowledge with the white strangers at the entrance of the land. What would the early explorers, Back, Simpson, and Mackenzie, have done without their Indian guides? What would explorers even at the present time do without the help of the red people? Who would pilot the canoes down unknown



FIG. 7. — Making a portage.

streams and lead the pioneers through deep forests and across wide prairies?

The Indian has done his part. His work may have been very imperfectly done, it is true, but such as it is, he deserves some reward, and it is a satisfaction to know that he has been well treated by the Canadian people and that "Indian Reserves" have been ^{Reserves and schools} set apart here and there (Fig. 8), where a little farming as well as hunting may be carried on, and where the once

noble red man can always be sure of a spot he may call his home. This, however, is not all, for "Industrial



FIG. 8. — Map showing location of Indian reserves.

Schools" (Fig. 9), encouraged by the government, and cared for by the various religious bodies of the country, have been located in desirable situations, for the purpose



FIG. 9. — An Indian industrial school.

of teaching the Indian boys and girls to forget the wandering habits of their ancestors, and to learn how to work and act and live like the white races about them.

QUESTIONS. — Where did the Indian come from? Locate on the map of Canada the homes of the various Indian tribes. What would likely be the difference between the Indian tribes living about Lake Athabaska and those living in southern Alberta, or along the course of the Assiniboine? What was the occupation of the Indian? What is his present occupation? Why did he follow hunting rather than agriculture? In what way is a thickly settled district of more importance than a sparsely settled one? Make a list of the rivers and towns of the southern part of the country, also of the rivers and lakes of the northern part. Do you see any difference between the names on these lists? How do you explain this difference? Is anything to be gained by retaining the Indian names of villages, towns, cities, rivers, lakes, and hills? In what way? How did the Indians make their trails and discover the best roads? Has the Indian been able to make a ship? Has this kept him back at all? What reserves are nearest your home? What Indians live on these? Industrial schools for Indian boys and girls have been built at Birtle, Middlechurch, Indian Head, Brandon, Portage la Prairie, and at other points: for what purpose? *Read Appendix B.* Are there any Indian schools near your home? What is done in these? Do you know if the Indian learns readily?

CHAPTER III

THE MOUND-BUILDERS

IN portions of the south-eastern country are found strange earthworks and round-topped mounds (Fig. 10).

The mounds Any person seeing these banks of earth for the first time would know at once that they were not hills, for there is something about them which proves them to be the works of men. What men?

“A race that long has passed away
Built them.”

From the earliest days of the white settlements these mounds have been objects of wonder to the people.



FIG. 10.—Mounds. How many do you see in this picture? How do they differ from hills? Notice the small tree on the mound to the left.

What could have been the purpose of building such earthworks? The Indian has been often questioned, but his only answer has been, “The mounds were in the country when we came.” No wonder then that these banks of earth came to be looked upon

as the work of a race of men and women that settled in the land before the Indian. What became of this ancient

people? Did they disappear on account of their more savage rival? In order to answer this question many mounds have been dug into and examined. A variety of objects have been found, among these being human skeletons, stone hatchets, flint arrow and spear points, fragments of crude pottery and stone pipes (Fig. 11). Some of the mounds were certainly used as burial places. Others, being placed on the tops of hills, must have done duty as signal stations, while others may have been used as places of worship.



FIG. 11.—Soapstone pipe found in a mound.

What people were buried in these mounds? Were they the ancestors of the tribes mentioned in the last chapter? Why were these mounds very frequently built in the regions found now to be the best for farming purposes? Were these ancient people farmers? These are a few of the questions we should like to have answered, but there are many men to-day who are of the opinion that there should be no mystery about these earthworks. It has been found that not only did certain Indian tribes know much about the mounds, but that they were the actual builders of some of them. If we were to find articles of European manufacture in some of the mounds, would this tell us anything of the builder? The discovery of such articles made people suspect that the Indian was the real mound-builder, and a closer knowledge of Indian character makes us all the more certain of the fact.

The builders

Many mounds in western Canada have been already opened (Fig. 12), but many still remain untouched. It is our duty, being the first on the ground, to care for them, so that they may be saved from destruction.

The most extensive works built by the mound-builders are situated in various parts of the Mississippi valley to the south. The Ohio valley alone contains about ten thousand mounds. Among the greater are the "enclosures," which were of two kinds, namely, those built on the lowlands, and those built on the

The enclosures

high grounds. The former contained an area often as great as twenty or more acres. This plot was surrounded by a wall of earth, higher than a man's head, and having several entrances. On the inside of the wall was a deep ditch. What use was made of these enclosures

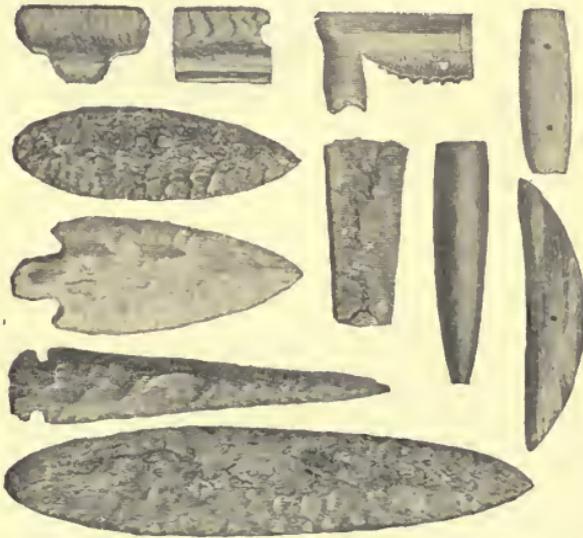


FIG. 12. — Arrowheads, pipes, and ornaments found in a mound.

is not known. The enclosures on the higher grounds could be seen from great distances, and were probably used as places of safety in times of peril. In addition to the enclosures, there were also huge banks of earth a quarter of a mile long, and so broad and high that it must have

taken a great deal of hard work to build them. It is quite clear that they were not built by a few people nor in a few weeks. Altogether, there are no more interesting remains of the days gone by than these mounds.

QUESTIONS.— Are there any mounds in your locality? How near? What are they like? Make a map of a mound and its surroundings. Have any of these mounds been dug into? What has been found? What is being done to preserve the mounds? Has the government done anything to help? Can you help?

CHAPTER IV

THE PEOPLE OF THE NORTHLAND

“ All in robes of ermine white,
Woven out of snowflakes light,
Crowned with ice gems day and night,
Stands the Land of Winter.”



FIG. 13.— Eskimo family. The man holds in his hand a knife made from a file and used to cut the blocks of snow in making snow houses.

THE Indian was not the only inhabitant of the Canadian West when first this country was brought to the attention of the European. Scattered along the Arctic coast and inland to the watershed separating the streams flowing into the Mackenzie River from those moving towards Hudson Bay and the north-eastern Arctic, were several tribes of another race, the Eskimo, or Esquimaux. These people, while wel-

coming strangers to their homes, have apparently never sought any companionship outside of their own race, and

never longed for regions more sunny than their own ice-bound land.

What do we know about the Eskimo? What is their country like? We may safely infer from its position that it is a region of ice and snow for the greater part of the year; that even in the summer-time

The Eskimo
country

frozen ground may be found a few inches below the surface, and that the land is ill suited to the growth of the plants which we are accustomed to look to for a part of our food. Indeed, were it not for the continuous sunlight of the short summer season, vegetation of any kind would be extremely rare in this far north-land. As it is, the friendly sun is favorable to the growth of mosses and li-

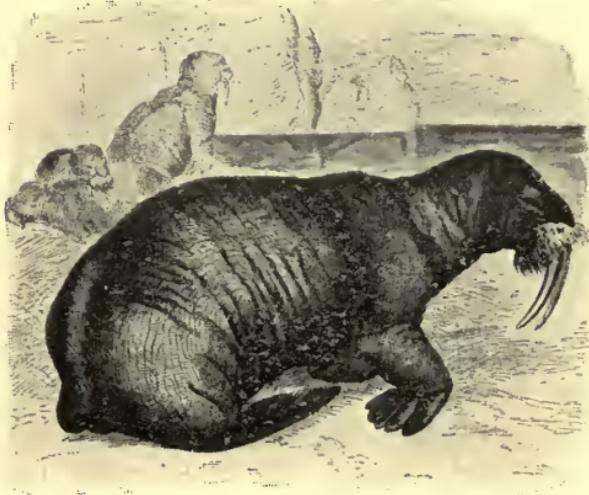


FIG. 14. — The walrus or whale-horse.

chens, and even of many other plants related to some of those found about our homes. How these plants learned to grow so far away is a question we may well think over. The Eskimo, however, has had to adopt an animal diet, and raw meat is as much relished by him as bread and butter is enjoyed by us, while a strip of blubber or whale-fat is looked upon as a very great delicacy indeed.

The sea and the rivers bring to him the seal, the walrus

(Fig. 14), the ice or white bear, and an abundance of fish, while the barren grounds are the home of ^{His food} herds of musk-ox and caribou (Figs. 81 and 82). Of these the caribou is in every way the most valued. Indeed, one can scarcely understand how these northern people could get on were it not for this animal. It is no wonder then that the caribou is hunted diligently with bow and arrow, or spear, the weapons which the Eskimo has made for himself out of the material around him. But does it not seem a strange thing that in this country, where trees have refused to grow and where wood of any kind is brought only by accident by the rivers coming from the forests to the south-west, these children of the cold should have learned how to fashion very excellent weapons out of such crude materials as bone, horn, and driftwood, held firmly together with the sinews of the deer?

This is not all, for, strong though the weapon may be and ingenious the workmanship, a trained and intelligent mind is required to direct it aright, and the Eskimo gets this training in the hard school of experience. Life to him is not one round of pleasure, and the school days of the children are not spent in learning to read and to write, but in learning the habits of the food animals about them, in learning how to handle the kayak or skin-covered canoe (Fig. 15), and how to make and to use the weapons that are employed in hunting and fishing. To be a successful deer-hunter in a country made up of open plains and rocky barrens is no easy matter, and the sagacity of the man must often be opposed to the keen scent of his prey. Occasionally vast herds are met with, and at such times numbers appear to give these animals

a foolish confidence, which permits of the easy approach of the hunter, the result being an abundance of food for present wants and a stock of venison for winter use, stored beneath a pile of stones, away from meddling wolves and foxes. Again, at certain seasons of the year, many deer are speared in the water in going to or returning from their summer and winter grounds. The hunters, knowing that these animals have regular trails, wait at the crossings and slay them as they are swimming past.

Hunting the deer



FIG. 15. — Eskimos in their kayaks. Notice the stone ornaments one of the men has in his lips. These are inserted from the inside, a shoulder being used to prevent them from coming all the way through.

Quite as much cunning and skill, too, is displayed in the hunting of the seal, the white bear, and the walrus. Perhaps the most interesting, exciting, and dangerous occupation of the Eskimo is the struggle with the walrus or whale-horse, an animal large, powerful, and vicious. The hunt takes place sometimes in the open sea, and sometimes near the shore, and is conducted from the kayak, the only weapons used being the home-made harpoon, a lance, and a heavy line attached to the harpoon. Thus armed, the hunter goes out in quest of the walrus, and finds him probably engaged in hunting clams. The clams being in the sand

Hunting the walrus

at the sea bottom, the animal has to dive to get them. Being a lung-breather like ourselves, he is forced to come to the surface every few minutes for a fresh supply of air. While the animal is below, the hunter steals on him, and waits for him to rise. The moment he reappears the harpoon is shot with all the strength of a practised arm, and the walrus disappears, carrying with him the harpoon, to



FIG. 16. — Hunting the hooded seal. Compare this seal with the walrus in Fig. 14.

which the line is attached. To prevent the canoe from upsetting, the hunter has about three hundred feet of line, which he pays out as the animal sinks deeper; and to make sure of his prey, there is attached to the end of the line, near the harpoon, a float as large as

a big football. What can this be used for? Sink your football or even a hollow rubber ball in water, and you will have the answer. The float tries to get to the surface, and when it reaches this, it gives the hunter warning when and where to expect the reappearance of the walrus so that a second harpoon may be placed. In the course of time the animal becomes exhausted, and he is then killed with the lance. This may seem very easy sport, but

very frequently the tables are turned, and the hunter becomes the hunted. At such times only experience and the skill that comes from experience can possibly save the hunter.

Much has been said in this chapter of the Eskimo as a successful hunter. You will understand how necessary it is that he should be so when you think of the character of his surroundings, and the constant struggle he must make to keep himself and his family from starvation. To the Eskimo, hunting is the art of arts ; his very existence is wrapped up in it.

But man, wherever he is placed, needs shelter as well as food and clothing, and the Eskimo has provided for this in his skin-covered tents for summer use and his half-buried huts of driftwood, earth, or stones Home for the winter. In places where these materials are not to be had, and often when on a hunting or a fishing trip, temporary houses made of cut blocks of snow are erected. The furniture of an Eskimo's hut is always very simple, the important things being a bed to lie upon and a stove to supply heat. The latter is only a stone vessel filled with seal-oil into which a bunch of twisted moss is placed to answer the purpose of a wick. Still this lamp-stove is sufficient to supply all the heat necessary for the comfort of these hardy Canadians, but it is a black day for the family whenever the supply of seal-oil runs low.

The home life of the people of the northland (Fig. 13) is usually a happy one. The children have their little games, and the women busy themselves in preparing the clothing so essential to the comfort Home life of themselves, their husbands, and their children. The Eskimos are not divided into rich and poor, but all live

together in peace and unity. They have their own standard of right and wrong, and we must learn to respect them for any advance made towards a higher civilization, and not judge them too harshly because they happen to have their lot cast under a more northerly clime.

Although there is in the northland a great abundance of animal life, yet the the only animal tamed by the Eskimo is a wolfish dog, commonly called the Husky (Fig. 17). The Husky is a necessity not only to the Eskimo, by whom he is not always well treated, but also to all travellers in the north country in the winter



FIG. 17. — The Eskimo dog or Husky.

season. Here the dog takes the place of the horse, and is driven in teams varying from three to a dozen or more dogs, all tied by separate lines to the carryall or sled (Figs. 20 and 124). In order to manage such a team, the driver carries a

short-handled whip bearing a lash from twenty to thirty feet in length, and woe be to the dog that attempts to shirk.

We have described the Eskimo, not because he has done much to prepare the country for us, but because he is a part of the life of our far north. In addition, he shows so well what man is able to do in circumstances seemingly all against him.

QUESTIONS.— Mark on a map the home of the Eskimo. Where did he come from? What makes you think this? Why should the Eskimo leave Siberia to make his home in Arctic America? Why has he not tamed the caribou? Has the Eskimo ever lived farther south than we now find him? Why does he not now leave so desolate a country for regions farther south? What articles of trade valuable to us has he to sell? In what ways has he mastered his surroundings? Describe an Eskimo bear-hunt. What use is made of the dead animal's skin, flesh, and bones? How has the Eskimo been able to procure the rifle? What other articles has he received in exchange for his goods? Have these articles helped him in any way? How? Does he value our gold, silver, and paper money as we value it? What means of exchange has he then?

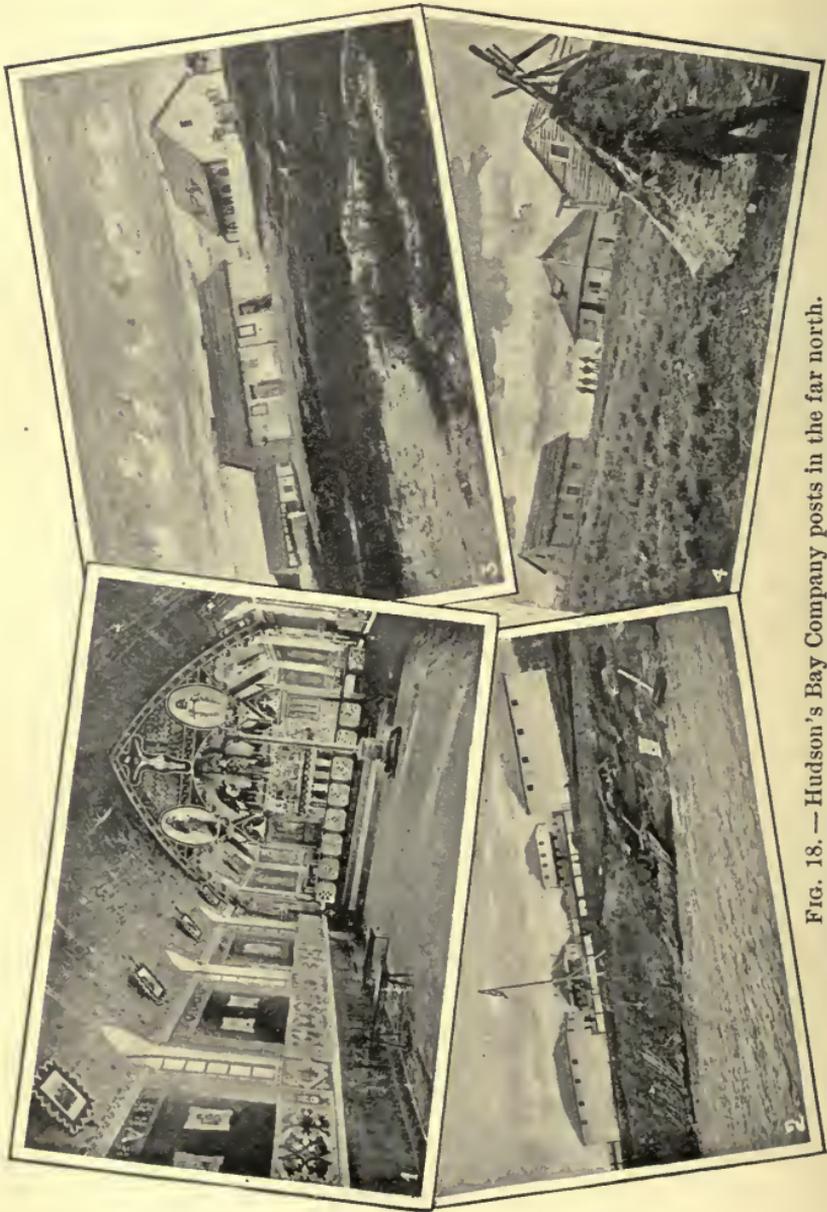


FIG. 18. — Hudson's Bay Company posts in the far north.

1. Interior of the Roman Catholic chapel at Fort Good Hope.
2. Fort Chipewyan on Lake Athabaska.
3. Fort Good Hope on the Arctic Circle.
4. Fort Macpherson within the Arctic Circle.

CHAPTER V

THE FUR TRADERS

THE country west of Hudson Bay and the Great Lakes was, for a great many years, in the possession of fur-trading companies before the farmer was permitted to take up land and to till the rich prairie soil. It may seem to us unfortunate that this should have been the case, but it must be remembered that the conditions of western Canada a hundred years ago were quite different from those existing to-day, for the West was at that time practically shut out from the rest of the civilized world. Some time, therefore, had to elapse before the land beyond the Great Lakes could be placed in easy communication with the eastern provinces and the mother country. The early history of the Canadian West is the history of the fur trader and the explorer, and there is no doubt that when the men who made the Dominion of Canada are counted over, the nameless pathfinders of the north will not be forgotten.

To understand the position in which this portion of Canada was then placed, we must remember that the English and the French settlements were made very largely along the Atlantic coast and up the valley of the lower St. Lawrence River. Now between these settlements and the prairies there lay a wide strip of difficult country which had to be crossed before the Canadian

plains could be reached. Another entrance, however, was by way of Hudson Strait and Hudson Bay, and, strange to say, the country was entered from both directions at about the same time. English ships reached the western shore of the bay over two hundred years ago, and in the course of time trading-stations



FIG. 19.—Trappers in the woods of the far north.

were opened and a rich trade commenced with the Indians, who came from great distances up the rivers in their canoes.

In 1731 *Sieur de la Verandrye*, a brave French explorer, entered the West by way of the Great Lakes and later, in 1738, made his way as far as the site of the present city of Winnipeg. His sons a few years afterwards reached the Saskatchewan, and later still, a relative of the explorer crossed the continent as far as the

The French
explorers

foot-hills of the Rocky Mountains. The countrymen of Verandrye, however, did not place much value on these discoveries, and no advantage was taken of the fine field opened by him. In the meantime Canada passed out of the hands of the French and became a possession of Great Britain, and the history of the prairie country for many years was simply a story of a struggle for the whole trade in furs between the Hudson's Bay Company¹ and its rival, the North-West Company.

For a time the Hudson's Bay

Company made no attempt to extend its power by opening up new routes and planting trading-posts here and there over the country, but as the fight grew fiercer every effort was put forth by both companies to cover the Indian lands. Intrepid explorers and traders made their way into the far interior, and made known to the world the



FIG. 20.—Fur traders on their way to the northern posts.

¹ “The full name of the Company given in the charter is ‘The Governor and Company of Adventurers of England, trading into Hudson Bay.’ They have usually been called ‘The Hudson’s Bay Company,’ the form of the possessive case being kept in the name, though it is usual to speak of the bay itself as Hudson Bay.” — Bryce’s *The Remarkable History of the Hudson’s Bay Company*.

great lakes and rivers with which it abounded. In 1771 Hearne reached the Coppermine River; in 1789 Mackenzie (Fig. 21) discovered the river which bears his name; a few years later Fraser and Thompson crossed the Rockies



FIG. 21.— Sir Alexander Mackenzie, the discoverer of the Mackenzie River.

and made their way to the Pacific coast. In this way the trading companies became almost as well acquainted as the Indians with the rivers, lakes, woodlands, and prairies (Fig. 20), but as yet no thought was given to the introduction of the farmer, for farming and fur-trading would not support each other very well.

However, about a hundred years ago, at a time when the rivalry between the two companies was at its height, Lord Selkirk obtained from the Hudson's Bay Company, of which he was a member, a large grant of land in the part of the country now known as the province of Manitoba. In this district, at Kildonan on the Red River, near the present city of Winnipeg, were settled the first people who came to the new land in order to engage in farming. It was only a small community, but its settlement was one of the greatest events in the whole history of western Canada; for it has been the farmer, and not

The Selkirk
settlement

the fur trader, who has made the country what it is. The people of the New England States have always looked back with pride to the "Pilgrim Fathers," the men who founded their country. The boys and girls of the prairies should learn to know and to honor their pioneer settlers; first the self-sacrificing missionaries (Fig. 22), who dared the pathless forests and the rapid streams for the sake of assisting and teaching their fellow-men, and also the pioneer farmers, the men and the women of the "Selkirk Settlement," who endured suffering of every kind, but in the end proved that this is a goodly land and not merely a "few acres of snow and ice." But we must not forget, however, that we owe much to the fur-trading companies, for, with all their defects, they were at all times intensely devoted to the interests of their



FIG. 22.—Missionary visiting the Indians. Notice the peculiar sleigh used.

adopted land. By means of these traders great advancement was made in laying the foundations of the country at a time when the rest of the world considered it as nothing more than a fairly good hunting-ground. Through these traders the Canadian West was won and saved for the Dominion.

In 1870 the Hudson's Bay Company, which by that time included its rival, handed over its claim on the prai-

ries and woodlands of Canada to the Dominion for a million and a half dollars, one-twentieth of the land lying south of the north branch of the Saskatchewan River and west of Lake Winnipeg, and the right to keep its trading-posts and carry on its trade with the Indians.

QUESTIONS.—How did the first explorers reach the Canadian West? Why is it more easy to enter the West to-day than it was fifty years ago? Why did not the French take a greater interest in the discoveries of Verandrye? How were furs collected and shipped out of the country? Is this the method followed to-day? Why was not the farmer invited to enter the country long before he was? What were some of the difficulties of our pioneer farmers? How have these difficulties been removed? How do you account for the number of Hudson's Bay Company posts in northern Canada? Will this land in the far north ever grow grain? In what way did the fur trader win the Canadian West for the Dominion? *Read Appendix C.*

CHAPTER VI

SURFACE AND DRAINAGE

The Great Central Plain. — The country we have been describing is the northern part of what has often been called the “Great Central Plain” of the continent. How has this plain been formed? Follow Figure 23 carefully.

On the west is the plateau of the Rockies which runs in a north-westerly and south-easterly direction. What slopes would this cause the continent to have? About Hudson Bay is the wide but low

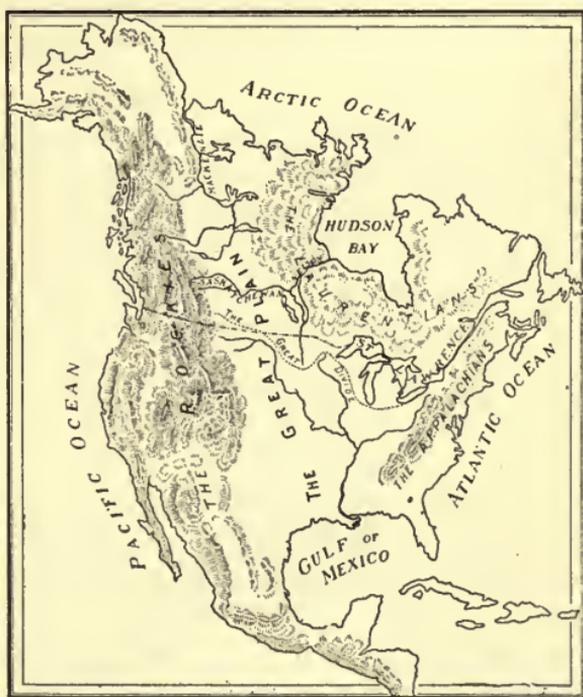


FIG. 23. — Map of North America showing the extent of the Great Plain and its relation to the North American Highlands.

plateau of the Laurentians, while on the Atlantic coast is the plateau of the Appalachians. The inner slopes of these plateaus by meeting have formed the broad and long plain already mentioned.

In what direction does this plain incline? It may incline towards the Arctic Ocean, the Gulf of Mexico, or the St. Lawrence valley. An examination of the map will show you that it slopes in two of these directions; but the St. Lawrence is separated from it by the high land west and south of the Great Lakes. In other words, the plain is divided into a north slope and a south slope by a "height of land" situated sometimes north and sometimes south of the boundary line between this part of Canada and the United States. You must not, however, try to picture this watershed as a mountain chain, for one might cross this height a hundred times and never see any mark that would cause one to call it a "height of land." Only the rainfall can locate the exact position of this divide.

We are now ready to examine the Canadian portion of the Great Central Plain. We have found that it slopes northwards. We are now to find that this is not strictly correct, for the southern and south-eastern portions of the plain incline towards Hudson Bay, the Nelson-Saskatchewan rivers being able to reach this body of water by breaking through the old and worn down Laurentian plateau between Lake Winnipeg and Hudson Bay. The remaining portion where the Mackenzie River is found, dips north-westwards towards the Arctic Ocean. Can you trace the position of the height of land that divides these river basins? This is the third watershed to be noted.

The plateaus

A plain sloping north and south

The Canadian portion of the plain

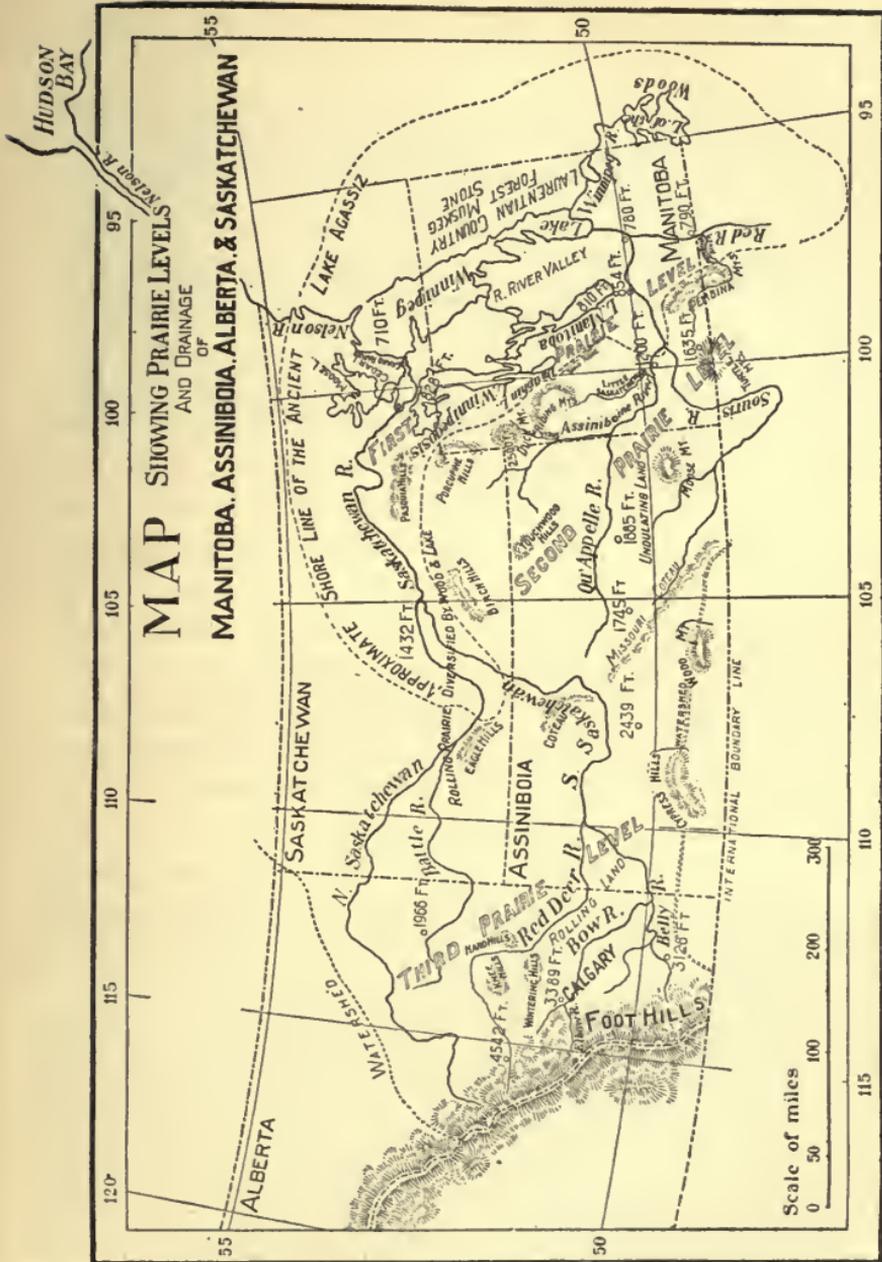


FIG. 24.

The First and Second Prairie Levels and the Manitoba Lakes. — Having now an outline, as it were, of the surface and drainage, we shall try to add the less prominent but perhaps more important features, so that all may have a true picture of this broad land; but where shall we begin? Let us follow for a while along the line of settlement-making by beginning with Manitoba, and proceeding westwards and northwards until the whole country is covered.

The eastern and north-eastern parts of Manitoba cover a portion of the rocky and wooded Laurentian plateau, a region of rough and broken country, full of bogs, and covered in part with forests of small trees, while the central and western parts lie within the area of the great plain.

West of the country just described are the valley of the Red River and the valley of the lower Saskatchewan, two regions that slope towards Lake Winnipeg and form the first of a series of steppes or plains stretching all the way to the Rocky Mountains.

The Red River valley slopes northwards and has the Red River in the southern part and Lakes Winnipeg, Manitoba, Winnipegosis, and Dauphin, and the flat country surrounding them, in the north. To all appearance this valley is perfectly level, but it is not so flat as it seems, for the river from which it gets its name has a fall of about twelve inches to the mile, and the country on either side a much greater fall. It is wooded along the banks of the stream to the south. Scattered groves of trees are common even at a distance from the river, and the lake portion is rather heavily timbered. The soil, a rich, deep loam

The first
prairie level

The
Red River
valley



FIG. 25. — Macgregor, a typical village on the first prairie level.

overlying a clay subsoil, is able to support not only a fine growth of grass, but also fields of grain and gardens of vegetables and roots.

On the west the valley of the Red River is bordered by several ranges of hills which enter the province from the south under the name of the Pembina Mountains, and con-



FIG. 26. — Birtle, a typical village on the second prairie level.

tinue north-westwards as the Riding Mountains, Duck Mountains, and Porcupine and Pasquia hills. These hills form the front of a second plain (Fig. 24) of greater height and more rolling surface. (Compare Figs. 25 and 26.) This second plain occupies the whole south-western part of Manitoba, stretches halfway across the district of Assiniboia to the west, and includes a large portion of the district of Saskatchewan to the north-west.

The streams of this second plain flow through deep valleys bordered by narrow belts of timber. The soil, though excellent, is not so uniform nor yet so deep as

The levels compared

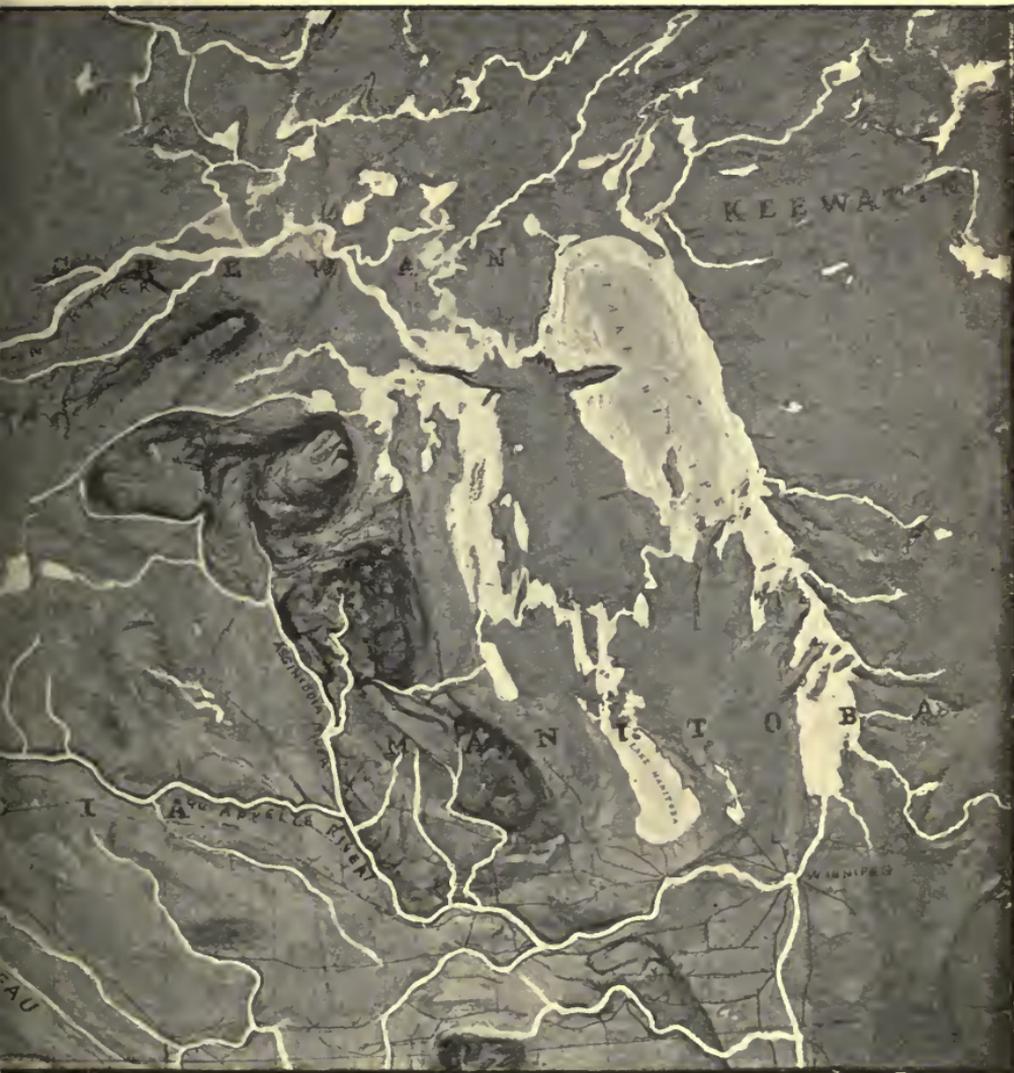
that of the first prairie level. Still, there are large areas, for example, the Regina plains, where great depth of soil is very evident. Another difference between these levels is seen in the presence of certain hilly regions found in the second plain in what are named the Turtle Mountains, Moose Mountains, the Touchwood Hills, and other hills of a similar character (Figs. 24 and 27). The portion of the second level in the district of Saskatchewan, northern Assiniboia, and north-western Manitoba combines both prairie and woodland features to a greater extent than does the remainder. Here we may find the surface ranging all the way from a gentle slope to rolling grounds. Here too we may find grass-covered plains and heavily wooded hills. Let us now look at the way this part of the country is drained.

You will notice that all the streams of the first and the second levels belong to the Saskatchewan-Nelson system of rivers, for their waters all drain into Hudson Bay by the Nelson. Commencing with the most easterly, the Winnipeg River, which is fed by the waters of the Lake of the Woods, we have a

The Winnipeg River



RELIEF MAP OF
SASKATCHEWAN



WINNIPEG, ASSINIBOIA,
AND ALBERTA.

large stream, which, too rapid for ordinary navigation (Fig. 28), is yet a capital river for supplying electrical and other driving powers on account of its many rapids and falls. Next we have the Red River, a ^{The} Red River stream which rises near the source of the Mis-

issippi, and flows northwards seven hundred miles in a winding channel to Lake Winnipeg, where it drops its heavy burden of mud. The channel of the Red River is wide but shallow. This is due to the gradual fall of the river, and also to the abundance of sediment carried. This sediment, by constantly dropping to the bot-



FIG. 28. — A rapid on the Winnipeg River.

tom of the channel, protects the river-bed from being worn by the water. The sides, being without this protection, are undermined and washed away by the current. This is the stream of which Whittier wrote : —

“ Out and in the river is winding
The links of its long, red chain.”

The principal rivers emptying into the Red are the Assiniboine and the Pembina. The former, with its many tributaries, drains the greater part of eastern Assiniboia, a small part of south-eastern Saskatchewan, and all the

western and south-central portion of Manitoba. The

The Assiniboine River Assiniboine rises in north-eastern Assiniboia and enters Manitoba west of a point midway between the Riding and the Duck Mountains.

At first its course is to the south, but it gradually swings more to the east, the south-east, and the north-east in a great curve, and enters the Red at the city of Winnipeg, six hundred miles from its source. The tributaries of the Assiniboine are the Shell River from the Duck Mountains, the Little Saskatchewan River from the slopes of the Riding Mountains, and the Qu'Appelle and the Souris Rivers from eastern Assiniboia. The Souris

The Souris River River commences a little east of what you will learn to know afterwards as the Missouri Côteau (Figs. 24 and 27), runs southwards across the international boundary line into Dakota, where it curves again towards the north-east, and enters Manitoba a little west of Turtle Mountain. From this point it flows in a north-easterly direction and empties into the Assiniboine several miles below the city of Brandon. The Qu'Appelle River drains what is termed Long or Last Mountain Lake, forty miles north-west of Regina, and flows

The Qu'Appelle River eastwards through a deep and beautiful valley which connects with the valley of the Assiniboine a little east of the western boundary of Manitoba. The Qu'Appelle during its course widens into a number of beautiful lakes, the principal being Round Lake, Crooked Lake, and the Qu'Appelle Lakes.

The other important tributary of the Red is the Pembina, which rises in a small lake a few miles north-east of the village of Cartwright in southern Manitoba (Figs. 24 and 27), and flows from this source,

The Pembina River

first to the north-east, then to the south-east, and finally crosses the boundary west of the Pembina Mountains, entering the Red a few miles south of Emerson.

The Manitoba group of lakes is deserving of a little attention, not only on account of their value in the way of

navigation, their fisheries, and their importance as pleasure resorts (Fig. 29), but because they are believed to be the deeper portions



FIG. 29.

1. Summer residence on Big Island, Lake Winnipeg.



2. One of the many beautiful wooded islands in Lake Winnipeg.

of an old lake that covered nearly all of the province of Manitoba and extended far into Ontario and the

United States. The name of this ancient lake is *Agassiz*, named in honor of Louis Agassiz, a famous Swiss scholar, who for many years was one of the professors of Harvard University in the United States; and there are still to be found here and there in the province many remains of its gravelly beach, and many banks and hills of sand formed along its shores by the winds and the waves of the days gone by, or carried there by the flooded rivers that must at one time have

poured their waters into its mighty bosom. Figure 24 will illustrate what we have said. Study it carefully, making particular note of the boundaries and size of Lake Agassiz.

As the lakes mentioned are second in importance only to those of the St. Lawrence basin, as they are also such prominent features in the surface of the Canadian West, and a particular feature of the first prairie level, it will be well for us to learn, not only the characteristics of each, but also to find how these waters are arranged so as to form one connected whole.

Lake Winnipeg, the largest of the group, is two hundred and fifty miles from north to south, and its southern and northern expansions have a width of twenty-five miles and sixty miles respectively. Its depth is never greater than sixty or seventy feet, and this shallowness on the part of such a great body of water often proved dangerous to the boats of earlier days. Indeed, as you are seated upon the deck of one of the modern steamers of this lake and are watching all the twists and turnings made, you are more than surprised at the crooked course of the vessel. There is an abundance of water everywhere, no islands or rocks are in sight, not even the shore of the lake (Fig. 30) can be seen on the horizon. How is the winding course explained? Were we to take the depth of the water we should soon learn that the lake is no place for any but experienced captains, who know every foot of the lake bottom. So shallow is Lake Winnipeg that many places miles from shore are covered only by a few feet of water.

Lake Manitoba, from which comes the name of the province of Manitoba, lies about forty miles to the west



FIG. 30. — Scenes along the shore of Lake Winnipeg.

of the southern half of Lake Winnipeg; while Lake Winnipegosis, separated only by about two miles from the north end of Lake Manitoba, is situated about forty or fifty miles west of the northern portion of Lake Winnipeg. These lakes are in many respects simply smaller models of the one already described.

Lakes Manitoba and Winnipegosis

Both take a north-western and a south-eastern position; both are shallow and surrounded for the most part by low shores; both have a great shore-line in proportion to their size; both are well filled with numerous wooded islands (Fig. 29); and both are abundantly supplied with valuable fish.



FIG. 31.

Lake Winnipegosis overflows into Lake Manitoba by the Waterhen River and the Waterhen Lake, while Lake Manitoba, in turn, is connected with Lake Winnipeg by the Fairford River, Lake St. Martin, and the Dauphin River (Fig. 31).

Lake Dauphin lies south of Lake Winnipegosis, with which it communicates by the beautiful, winding Mossy River, a stream twenty-two miles long and from thirty to

sixty yards wide. Dauphin Lake, though small in comparison with those mentioned before, is associated with the very earliest explorations of the ^{Lake} Dauphin Great West. Here, in the long ago, on the north-western shore of this little lake, a fort was built by Pierre, one of the sons of the great Verandrye, who crossed the prairie portage from Fort La Reine (Portage la Prairie) to Lake Manitoba, and from thence journeyed northwards to Lake Dauphin. Between Lake Winnipegosis, Duck Mountain, and the Porcupine Hills lies the district of the Swan River, a country well adapted to mixed farming.

All the larger lakes of this group are easily affected by the winds. It is therefore not at all an uncommon thing to see the waters pile up and flood the shore towards which the wind is blowing. Perhaps you can explain this.

The Third Prairie Level.—We said that the second prairie level extended about halfway across Assiniboia. At this point the third level begins in the Missouri Côteau, a rough line of hills, thought by some to have been the shore of an ancient sea that has long since disappeared. In western Saskatchewan this level commences at the Eagle Hills, and its eastern edge extends to the north-west, along a line joining the hills with a point midway between the western end of Lake Athabaska, and the north-eastern corner of Alberta. To get a better idea of what these levels mean, think of the Red River valley as being about seven hundred or ^{The surface} eight hundred feet above the level of the sea, the second level eight hundred feet higher than this, and the last level between twenty-five hundred and three thousand feet above the sea. The third level ends with the foot-hills, and its surface is on the whole a little more rolling

than the others. Among the surfaces least affected by the weathering or wearing of centuries (Fig. 32) are the Cypress Hills and Wood Mountain of western Assiniboia. These are, however, deeply channelled by ravines (Fig. 32), showing that they have not escaped altogether. The



FIG. 32. — Weathered rocks in the Cypress Hills.

soil of this region is often of the finest quality, the only exceptions being the cactus and sage-brush land a little to the south-west of the Cypress Hills, and several other small districts, covered by sand-hills, or else of too hilly a nature to provide profitable pasture-grounds for horses, cattle, or sheep.

The southern portion of this level, that is, the land covered by western Assiniboia and southern Alberta, is

almost treeless. The northern and north-eastern parts are generally wooded, but the line between the two portions is not very well marked; ^{Prairies, park lands, and forests} for while many prairie areas are found within the forest country, belts of woodland follow most of the larger rivers far into the otherwise treeless prairies. Almost the whole of the district of Athabaska¹ is timbered, but in the region of the Peace River many fine prairie stretches are found. The prairies to the south of the wooded country are, on account of their fertile soil and delightful climate, among the most valuable in the North-West Territories for grazing purposes, while the wooded country is more suitable for fuel and lumber and in the northern regions is a great preserve for our wild animals.

Near the international boundary line, the Rocky Mountains rise abruptly from the plain, and often present, to the east, a wall of perpendicular rocks. A short ^{The foot-hills} distance farther north, however, they become bordered, or fringed by the foot-hills, and these continue, with varying breadth, at least as far north as the Peace River country.

How is this part of western Canada drained? For the present we may say that it is the country of the great river Saskatchewan, which commences as a double stream in Alberta. The north branch drains the northern part of this district and the western half of the ^{Drainage} district of Saskatchewan, while the southern branch, by means of the Belly, Bow, and Red Deer Rivers,

¹ By an order in council passed in 1902, the spelling Athabaska was officially adopted by the Dominion Government, the old spelling Athabasca being abandoned.

drains southern Alberta and western Assiniboia. These two branches unite in central Saskatchewan (Figs. 24 and 27) into a mighty river which flows to the east and empties into the northern end of Lake Winnipeg, while the whole system of waters is drained away into Hudson Bay by the Nelson River, a rough and rapid stream. The Nelson is therefore the great trunk river which empties all the waters flowing into Lake Winnipeg. Its length is about four hundred and thirty miles; its fall in this distance is seven hundred and ten feet; and its course is usually in a north-easterly direction. The river is full of lake expansions and wide channels, and, except for short distances, is unsuitable for navigation.¹

Boundaries, Width, and Area of the Three Prairie Levels.

— In the course of our description thus far, we have pointed out the presence of three great prairie levels and a few of the features of each. We have mentioned that a plain, rising from a height of from seven hundred to eight hundred feet above the sea level to a height of about three thousand feet above that level, extends from a point east of the Red River to the base of the Rocky Mountains at the west, and that this plain is divided into three distinct portions by the presence of two lines of hills stretching from the south-east towards the north-west. The width of the

Width and area lowest of these, or the first prairie level, is at the international boundary nearly fifty-two miles, while its width at the north is much greater. Its average width is about one hundred and twenty miles, and its area fifty-five thousand square miles. The middle or

¹ A very full description of this river is found on pages 22–32 of Part II of the Report of the Department of the Interior for 1884.

second prairie level is two hundred and fifty miles wide at the boundary, and this width is continued across the plain. The area of the second level is placed at one hundred and five thousand square miles, while that of the third level covers one hundred and thirty-four thousand square miles, and its width varies from four hundred and sixty miles at the south to less than half this width at the north. Some of the features described may be readily understood by a careful reference to the profile map (Fig. 33).

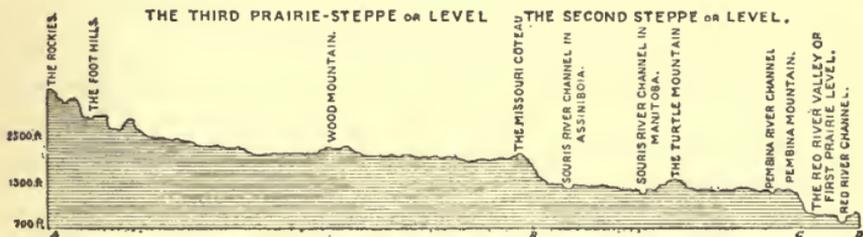


FIG. 33. — Profile map of the three prairie levels at the boundary line between Canada and the United States.

We have still to decide the question, How far northwards do these levels extend? To answer this we shall ask you to note the direction of the Rocky Mountains, and that of the outer or prairie edge of the Laurentian plateau (Fig. 23). Roughly speaking, the latter will be found to agree closely with the line of Great Lakes stretching from the Lake of the Woods, north-westerly through Lake Winnipeg, Lake Athabaska, Great Slave Lake, and Great Bear Lake. This plateau, then, has, with the Rockies, the effect of throwing the great plain to the south into the form of a huge triangle having one side along the international boundary, another side following the mountains for a thousand miles to the north and north-west, and

The plain a triangle

the third side agreeing with the direction of the line of waters comprising the Manitoba and Mackenzie groups of lakes. That this Laurentian line would form the northern boundaries of the prairie land is readily seen, but whether the levels actually extend to this line is another matter. We are all prepared to admit that it is possible for the features of the plains to be so defaced in passing towards the north as scarcely to be recognized by any but the most experienced. Indeed, those familiar with the study of land surfaces have said that there is always a great difficulty in following the features of the prairie levels even a short distance north of the Saskatchewan, for the marks by which the levels are known are there pretty well effaced. What has caused this difference between the southern and the northern portions of the prairie levels? Why are the marks less prominent as we go northwards. Perhaps this may be explained by the gradual blending of the prairie with the plateau. It may also have had something to do with the presence of a great river flowing across the country from the west to the east. We shall, therefore, follow the Saskatchewan from its source to its mouth, and try to find out what it has been doing all the centuries of its existence, for we may be sure that it has been anything but idle.

The Saskatchewan. — Commencing with the northern branch of the river (Figs. 24 and 27), we discover that it takes its rise in the Rockies of western Alberta, receiving from them the snow waters of this region, and that after passing the foot-hills it makes along down the valley with a current of from four to five miles an hour. Now, when you take into account the rapid descent of portions of this stream, and also remember

The north
branch

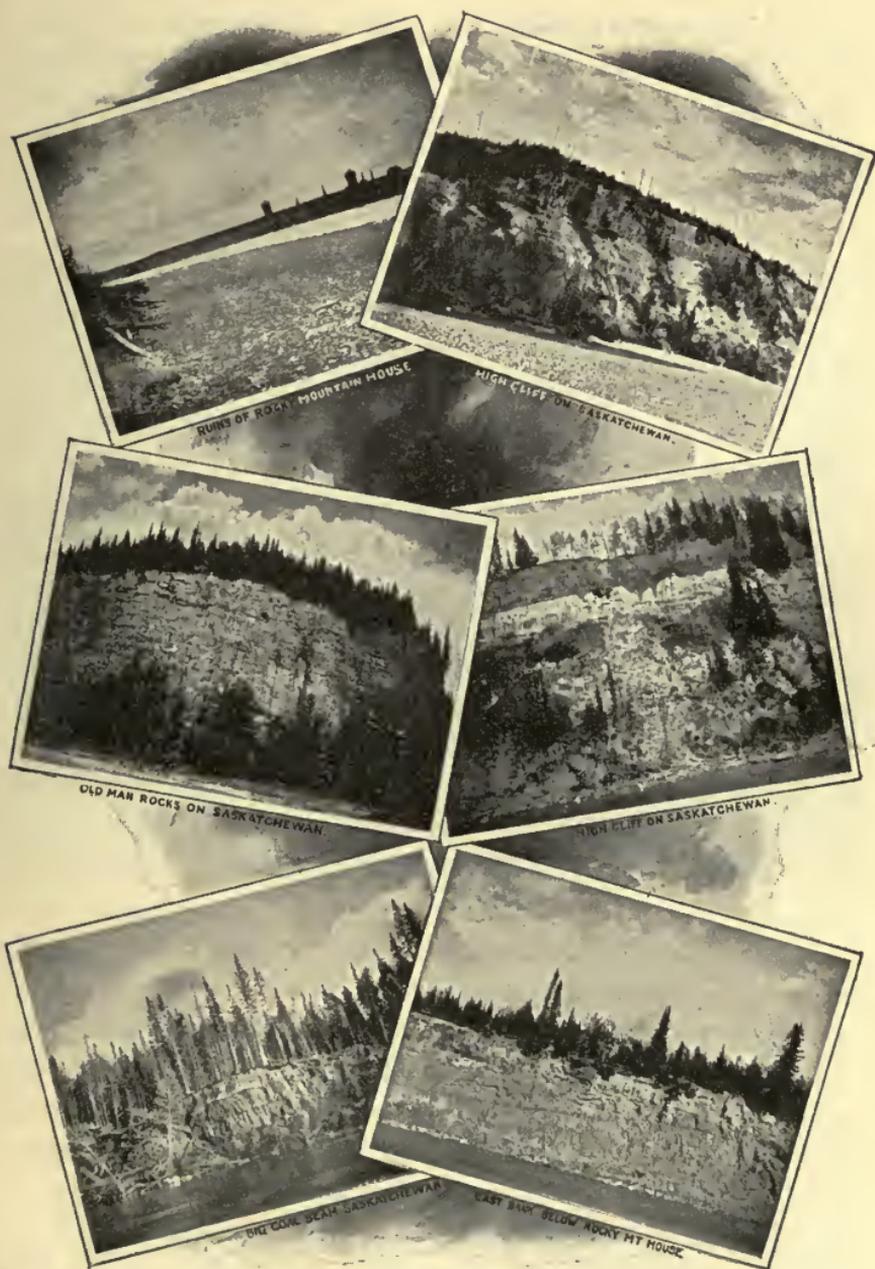


FIG. 34. — Scenes along the banks of the Saskatchewan River.

that this is not a rivulet, but a river four hundred feet in width only a few miles from its mountainous source, you may easily imagine something of its enormous digging power. You need not be told that rivers of this nature must have their channels enclosed by deep valleys with steep sides, and that the many tributaries feeding the main stream are engaged in the same work of land destruction.

From the foot-hills the course of the river is towards the north-east, past Edmonton, and on until in sight of the watershed separating the Mackenzie and Saskatchewan basins. From this elbow (both branches have many of these), the river turns to the south-east, and enters the district of Saskatchewan, where it receives the waters of the Battle River at the town of Battleford.

The Battle River The Battle, a winding stream flowing in a deep valley, rises west of Wetaskiwin in north-eastern Alberta and courses in a zigzag manner eastwards to the Saskatchewan. Leaving Battleford, the north branch continues its course south-eastwards, but before reaching the district of Assiniboia it swings round to the north-east and unites with the south branch some distance below Prince Albert and seven hundred and seventy-five miles from its mountain source. At Edmonton the

The high banks banks of the valley are about two hundred feet in height (Fig. 35), and this feature is characteristic of the Saskatchewan (Fig. 34) until its waters are far down the second prairie level, after which the river sweeps for the remaining two hundred and eighty miles in a majestic stream down a broader and shallower valley through the undulating country of the district of Saskatchewan, and on through Cedar and Cross Lakes, and the Grand Rap-

ids near its mouth, until it reaches Lake Winnipeg. The Grand Rapids of the Saskatchewan, considered by many to be unsurpassed in magnificence and volume of water, have a fall of about seventy-one feet in a distance of five miles, but this is in part

The Grand
Rapids



FIG. 35.—The banks of the Saskatchewan River at Edmonton.

overcome by a tramway on shore (Fig. 36) by which goods can be rapidly transported from steamer to steamer. For about two miles of this course, the river flows through a deep and narrow gorge cut out of the hard limestone rocks.¹

¹ A very full description of the Saskatchewan from the forks of the river to its mouth is given on pages 13-22 of Part II of the Report of the Department of the Interior for 1884.

The country drained by the north branch may be described as an immense plain, sloping, in the main, north-eastwards from the mountains and lowering rapidly from the height of four thousand feet at the foothills to sixteen hundred feet above the sea level, a short distance above Battleford. While this slope is fairly regular as a whole, and wonderfully fertile, it is broken here and there by numerous high hills,

The basin of
the north
branch

and also by deep river valleys. Lakes, too, are numerous and add much to the variety of the scenery. Many of these lakes are little better than so many evaporating basins, for the outlets are used only in times of flood.



FIG. 36. — The tramway at the Grand Rapids of the Saskatchewan. The house is the residence of a Hudson's Bay Company factor.

In thinking, therefore, over the features of this region, and, in fact, over the western and southern portions of the third prairie level, it is well to remember this peculiarity in its lakes.

Let us now examine the course of the southern arm of the great Saskatchewan, but let us observe again how well the river has invaded Alberta, Saskatchewan, and western Assiniboia. The country drained by the south branch includes the greater part of southern Alberta and western Assiniboia and a small por-

The basin of
the south
branch

tion of south-central Saskatchewan. In other words, this branch, which is eight hundred and ten miles in length, has something to do with a large part of the settled portions of the North-West Territories, and its basin is somewhat similar in surface to that drained by the north branch. Here you will find the same class of natural



FIG. 37.—Rapids on the north fork of the High River in southern Alberta.

features, the rolling lands, level stretches, scattered hills, and the deep ravines and river valleys (Fig. 37). Here, too, are the characteristic lakes, though fewer in number, and as a rule smaller in area.

The principal tributaries of the south branch are the Red Deer, Bow, and Belly Rivers, the two last by their union forming the river. The Bow River rises in the mountains

beyond Banff, and after receiving the Elbow at Calgary, courses along to south-eastern Alberta, where **The Bow River** it is joined by the Belly River, which with the help of its tributaries, the Little Bow, the Old Man, and the St. Mary's rivers drains southern Alberta. These southern streams are of great importance to the country, as they flow through or near what has been called the



FIG. 38. — An irrigation canal in southern Alberta.

“arid belt” or region of small rainfall. This tract of country has until lately been devoted almost entirely to ranching, but irrigation (Fig. 38) is gradually closing in on the ranches and changing the whole region to a garden. The higher reaches of the St. Mary's River have been tapped, and the water brought for miles over the country and even into the towns in open ditches or canals. Every street in Lethbridge, Stirling, and other towns,

may have its irrigating ditch, and every house-holder his own little canal from this ditch to his garden. At regular intervals gates are placed in the canals for the purpose of controlling the flow of water, so that every farmer and every owner of a town house may have whatever water is needed under lock and key. Irrigation is but in its infancy ; but the results are so satisfactory already that we may easily see how valuable the so-called "arid belt" is bound to be a few years hence.

The course of the south branch from the junction of the Bow and the Belly Rivers is at first eastwards towards Medicine Hat, beyond which it turns first to the north, then to the north-east, and afterwards to the east, receiving in this part of its course the Red Deer from the mountains west of central Alberta. The Red Deer flows, as you will observe in Figures 24 and 27, first towards the north-east and afterwards the south-east, through a valley often one hundred and fifty feet in depth, communicating with many similar valleys carrying the waters of its tributaries. A little below the Red Deer junction the Saskatchewan flows westwards, then southwards, and again eastwards, until the Côteau is rounded, after which the stream bends to the north and north-east and finally pours into the north branch a stream six hundred yards in width.

The Cypress Hills and Wood Mountain Plateaus. — We have now to look at a portion of country lying within the third prairie level (Fig. 39), but for the greater part situated outside the basin of the Saskatchewan. This region has for its northern boundary Wood Mountain, the Cypress Hills, and the Milk River Ridge, and for its

southern boundary the international boundary line. In reality this tract is a part of the Mississippi basin of the south, the watershed separating the northern and southern portions of the Great Plain passing here several miles to the north of the United States-Canadian boundary line.

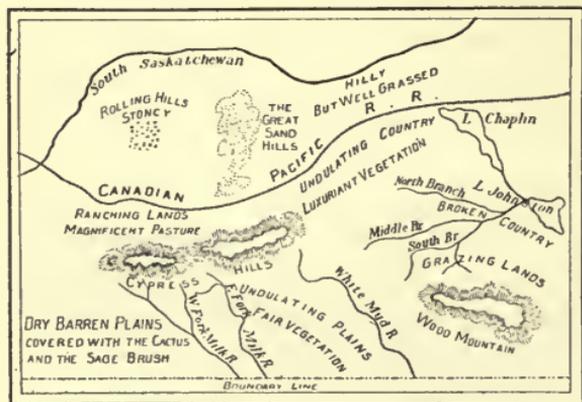


FIG. 39.—The plateau country of the Cypress Hills and Wood Mountain.

An examination of this country shows it to be composed of two classes of surface, namely plains and plateaus. The plains are but a few hundred feet above the average level of the surrounding

prairies; the plateaus, on the other hand, rise much higher and commence about thirty miles south of Medicine Hat in what are called the Cypress Hills, a region of more or less rugged country extending eastwards to the end of Wood Mountain.

At their western end the Cypress Hills are about twelve hundred feet above the general level of the country.

The Cypress Hills Their eastern end is much lower, though a great deal more rugged. The surface of this tableland is altogether too high for successful grain farming, but it is clad with an abundance of fine, nutritious grasses, and taken with the plain to the north forms one of the finest regions in the world for horse, cattle, and sheep raising. Wood Mountain, again, extends eastwards for forty miles,

or over half the length of the Cypress Hills. Its average height is thirty-two hundred feet above the sea level, and its sides are scored by numerous deep, dry, and wide coulées or channels of streams, thus hinting of a time when this part of the land was watered by heavier rains than now prevail. While portions of the plain to the south and to the south-west of the western half of the Cypress Hills contain stretches of fine ranching lands, other parts are extremely barren, the soil being a stiff clay studded with pebbles and boulders and unfit to support any vegetation other than the sage-brush, the cactus, and similar plants. We have also spoken of the country to the north of this region, namely the land between the South Saskatchewan and the plateaus. This plain forms part of the basin of the Saskatchewan, but its surface does not contribute much to this stream, for there is no very definite plan of drainage (Fig. 39), and the rivers and creeks for the most part wind along and empty into lakes having no outlet. This immense plain is very level in places, but some parts of it are quite hilly while others are covered by great masses of shifting sand.

The Mackenzie Basin. — The Mackenzie River country, which includes a portion of northern Alberta and the greater part of the districts of Athabaska and Mackenzie, is worthy of attention, not only because of the immensity of the river basin, but also on account of the importance of the upper Peace River lands. In this district the land is so fertile and the climate so moderate that ranching and even mixed farming should become profitable occupations.¹

¹ See Report of a Select Committee of the Senate of Canada on the Mackenzie River Basin, issued by the Dominion Government in 1888.

soil to that lying between Calgary and Edmonton, and bound some day to become the home of a numerous and prosperous people. The whole of the country described lies to the southern end of the valley of the Mackenzie.

Let us try to recall what we have already read in this chapter regarding the river basins of Western Canada.

We were told that a great watershed separated the waters flowing into Hudson Bay from those flowing into the Mackenzie basin, or to be more correct, from those flowing into the Arctic Ocean. Following this watershed (Figs. 2 and 41) from a point near Mount Hooker, in northern Alberta,

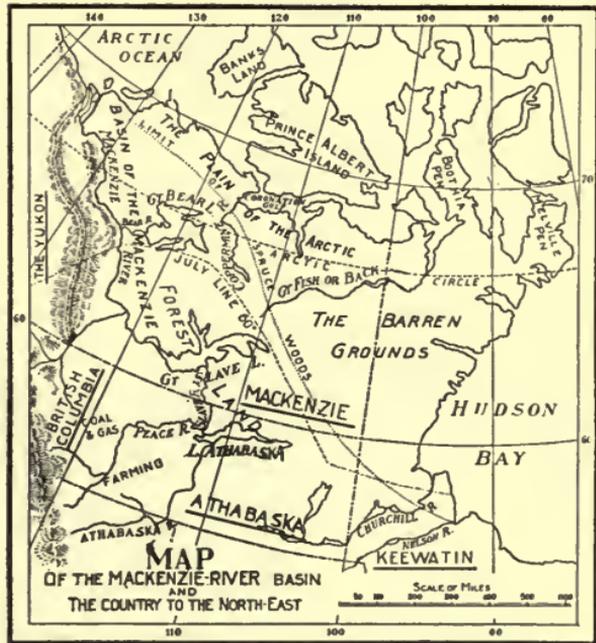


FIG. 41.

we shall find that it passes to the south-east, and then east of the Mackenzie River lakes, and on between Great Slave Lake and the Telzoa River to the Melville Peninsula at the north-east corner of the country.

There are many who make the mistake of supposing the Mackenzie but a small feature of Western Canada because the lower portion of its course passes through a region

that, as far as we know, can never be devoted to farming purposes. This is not a sufficient excuse for refusing to

“The King of Northern Rivers”

mention it here. Some people have called the Mackenzie the “King of Northern Rivers.”

It is one of the twelve longest rivers in the world. On the American continent it ranks next to the

Mississippi in size and length. From the head waters of the Athabaska to the Arctic Ocean the course is twenty-five hundred miles in length, and from Great Slave Lake to the same point the river bearing the name “Mackenzie” is one thousand miles long (Fig. 42). It drains an area of over six hundred thousand square miles. Two of its many tributaries, the

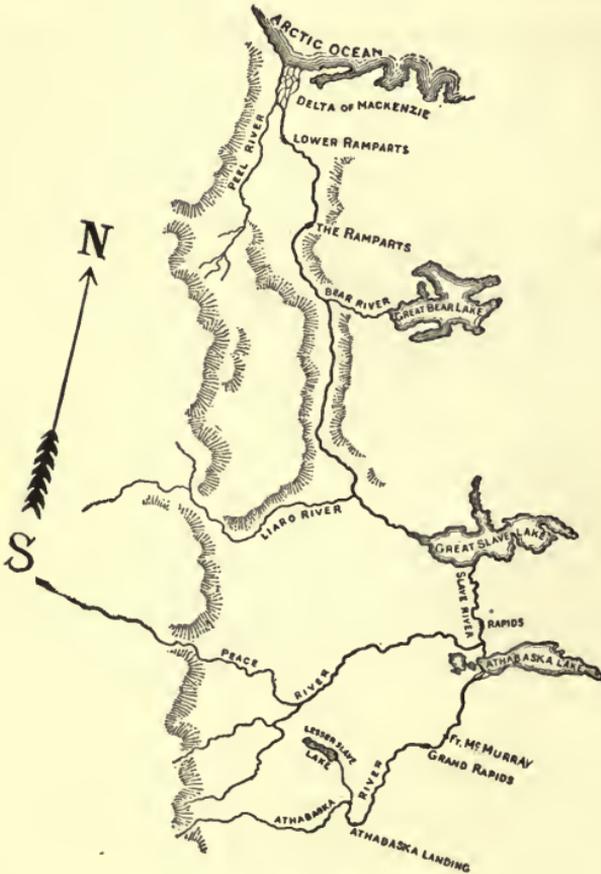


FIG. 42.

The basin of the Mackenzie River.

Peace and Liard, pierce the Rockies, and the latter river stretches to within one hundred and fifty miles of the west-

ern ocean. The country, too, which supplies the Mackenzie, takes in part of a broken plateau beyond the mountains, a wide portion of the Laurentian country, and even a portion of the Rockies themselves. From Great Slave Lake to the sea the average width of the Mackenzie is about a mile. Its waters are on the whole pure; there is an absence of the sudden bends so often noticed in the Saskatchewan, and the valley is long and shallow and follows most faithfully the channel of the river. Let us now trace its course more carefully.

The Mackenzie basin (Figs. 41 and 42) commences at the source of the Athabaska, which flows to the north-east towards Lake Athabaska, and

The Athabaska River

succeeds in crossing the boundary of northern Alberta three times. The banks above and also below Athabaska Land-



FIG. 43.

1. Towing scows over the rapids of the Athabaska.

ing, a point north of Edmonton, are high. One hundred and sixty-five miles below the



2. Grand Rapids on the Athabaska.

Landing, the Grand Rapids, the first of a series of rapids, is situated. Here the Athabaska has a fall of from seventy to eighty feet in a few miles, and below this, to Fort McMurray, about eighty miles, the current is too rough for boats, and scows (Fig. 43) suited for the work are used to carry the goods across this obstacle. At the Grand Rapids, then, the first stretch of the Mackenzie suitable for navigation ends. But from this point up the river, about one hundred and fifty miles beyond the Landing, there could be no better stream for steamers, a feature we should not fail to note, as it may have much to do with the West ten years from now. From Fort McMurray the second stretch begins, and ends at Fort Smith on the Slave River, where another series of rapids (Figs. 42 and 45), about sixteen miles in length, has to be overcome by an ox roadway (Fig. 123) on the shore. Below this the river meets with no obstacles and finally enters the Arctic Ocean.

About fifteen miles below the Grand Rapids, on the left bank of the river, there is a great flow of natural gas bubbling up from the water and also escaping from rifts in the sand. Farther down the wonderful tar sands are met with, and on a warm summer day the river banks present the appearance of running tar. Such a country should be rich in coal oil, a product we may have to learn more about should this prove true.

As the Athabaska nears Lake Athabaska, into which it empties, its channel divides into a number of streams which flow into the western end of the lake and leave their load of sediment.

Lake Athabaska, the first great expansion of the Mackenzie, is a beautiful sheet of water over twice the size of

Lake Manitoba. At the west end of the lake the water is clouded, but at the centre and eastern end it is clear. The north shore is hilly, mostly ^{Lake} Athabaska barren, but rich in gypsum, a substance from which plaster of Paris is made. The land to the south is level and well wooded.

The Slave River leaves Lake Athabaska near Fort Chipewyan (Fig. 18), receives the Peace River from the west, flows to the north-west, and enters Great Slave Lake. One hundred miles below its source ^{Slave River} the river is free from all obstructions, but from this point the second set of rapids, already mentioned, commence.

Great Slave Lake, the second expansion of the Mackenzie, ranks fifth among the great lakes of the continent. Its total length is about three hundred ^{Great Slave Lake} miles, while its width in places is fully sixty miles. Originally in the form of a huge cross, it bears now but three arms, the fourth being filled up by the sediment brought from the south by the Slave River. The eastern portion has an irregular outline and its waters are also much clearer than those of the central and western parts. The country north and east of the eastern arm is covered with bare, rounded hills and ridges, which rise gradually from the water's edge to a height of from one thousand to twelve hundred feet. These hills and ridges are separated by poorly wooded or else moss-covered valleys. Figure 44 will give you a fair view of the country along the Hanbury River. The southern shore has a more gentle outline, but its low banks are heavily sprinkled with boulders. The northern arm is indented to a certain extent, while the country in this direction is made up of wooded, flat lands said to be quite fertile.



FIG. 44. — Scenes on the Hanbury River, north-east of Great Slave Lake.

From Great Slave Lake, the Mackenzie proper flows in a stream seven miles in width, but shallow and filled with many islands. A short distance below the outlet these islands disappear, and the river gradually narrows until it is only two miles across. The country along this portion of the river is very flat and covered with numerous marshes and muskegs separated by belts of forest. Below this there is a change for the better, agricultural lands are common, and even wheat has been successfully grown.

When the Mackenzie has gone about one-fifth of the remaining portion of its journey, it is overtaken by the Liard, a rapid stream draining an immense The Liard River area within and beyond the Rockies. After leaving the Liard junction, the great river works towards the mountains, meets them at the Grand Bend, and curves along to the north. Below the Grand Bend another ridge appears on the eastern bank, and between these hills the Mackenzie flows for miles. The eastern hills gradually lower and disappear, and the western hills move farther and farther away from the channel until they are lost to view. From the point where the Mackenzie meets the mountains the course is The mountains northwards until a few miles below the mouth of the Bear River, where it turns a little to the northwest and passes through the Upper Ramparts (Fig. 45), a remarkable gorge. For some distance above the Ramparts the river is unusually wide, but here it The Ramparts narrows to about five hundred yards, and, bending to the east, runs for three or four miles between huge walls of solid rock of a height varying from one hundred and twenty-five to two hundred and fifty feet above the water. Before entering the delta, similar rocky walls,

the Lower Ramparts, have to be passed, after which the Mackenzie flows through a dreary plain to the sea.

Great Bear Lake, the largest of the three lakes of the Mackenzie basin, is irregular in outline and has an area of about eleven thousand square miles, which places it at the head of the list of the lakes in the Canadian West. The shores of this inland sea are

wooded in stretches, some of the trees being of such a character as to be well worthy of a more southern home. The Bear River, by



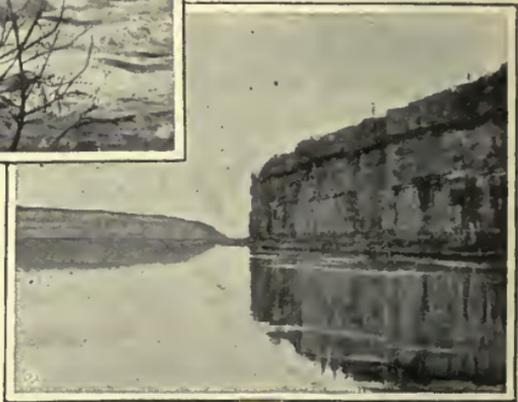
FIG. 45.

1. A rapid on the Slave River.

which this lake is drained, flows at first through a country destitute of trees; but this district gives

place shortly to fine forest-bordered banks which extend to the river's mouth and along the Mackenzie in a magnificently wooded country, over sixty miles wide, as yet untouched by the axe or the saw.

The Arctic Plain and the Barren Lands. — We have still to describe the country bordering the Arctic Ocean and



2. The Ramparts of the Mackenzie River.

Hudson Bay, the country beyond the great spruce forests (Fig. 41), or, in other words, the country north-east of a line joining the mouths of the Nelson and Mackenzie rivers. A portion of this country is known as the "barren lands" (Fig. 41), a name we must look upon as not altogether descriptive of this very wide region, for it is anything but barren in the spring and summer seasons, when the earth is covered with myriads of flowers and the air is full of insect and bird life. Nothing, Flowers and birds however, can be more dreary than these wind-swept plains in the winter period. Indeed, the whole country is a particularly difficult one to travel over, the valleys being usually swampy, and the swamps covered with little hummocks of grass. To slip off one of these means to plunge knee-deep into the ice-cold water of the swamp. We know but little of the "barren lands," and but little of the rolling, marshy, mossy plains, or *tundra*, along the Arctic coast, but what we do know of them has come largely from those who have had to bear The tundras every kind of peril and sufferings in their efforts to make known a few more of the dark places of the earth. While the mineral wealth said to abound in this region may bring thousands of people to its mines, these Arctic lands can never, so far as we can see, become the home of the farming class.

The principal rivers of this region are the Great Fish or Back, the Coppermine, and the Churchill (Fig. 41). The Great Fish River rises near Great Slave Lake, and flows north-eastwards through the Laurentian country to the Arctic. The Great Fish, Coppermine, and Churchill rivers The Coppermine flows through a partly wooded region, and empties into Coronation Gulf, an arm of the Arctic.

As the name indicates, copper is found in the basin of this river, but to what extent we do not know. The Churchill (Fig. 46) empties a series of lakes and rivers extending almost all the way from the height of land east of Fort McMurray to Fort Churchill, a Hudson's Bay



FIG. 46. — A scene on the Churchill River.

post, situated on one of the finest natural harbors in Canada. Opposite Fort Churchill are the remains of old Fort Prince of Wales, said to be the most extensive ruins on the continent.

Properly speak-

ing, the Churchill is south of the barren grounds and belongs to the same kind of country as the Nelson and the Albany rivers.

Southern Keewatin. — The remaining portion of the Laurentian country, in other words the country lying between the Churchill and Albany rivers, and between Lake Winnipeg and Hudson Bay, has already been touched on in connection with eastern Manitoba. A great deal of this land is made up of broken ground, bogs, muskegs, forests, and fertile fields. Whether much of this area can ever come under the plough, or be devoted to mining or manufacturing, is a question the future will have to settle for us. At present it appears to be the domain of the trapper and the trader. With this we

have completed our description of the surface and drainage of a great territory. Have you seen any features in it that will help to make the Canadian West the "Greater Canada" in the not far distant future?

QUESTIONS.—What causes the Canadian plains to slope towards Hudson Bay and also towards the Arctic? How are the Canadian and United States portions of the plains separated? Where is the watershed farthest south of the boundary? Would a south slope have been better for the West? Give reasons. Which parts of the country are arid regions? What has made them so? Can they be made fertile? What is the character of the Laurentian country to the east of the Red River valley? In what parts of the West are the Red River valley, the third prairie level, the barren lands, the Mackenzie basin, and the Peace River district? Describe these regions. Make a map showing how the water of Lake Dauphin may finally reach Hudson Bay. Where are the following rivers and what are their leading features: Winnipeg, Little Saskatchewan, Bow, Liard, and Churchill? Make maps of the country of the barren lands and the Mackenzie basin. Make a map of Alberta, showing how the country is drained. What river flows through the country of the Knee and Hand hills? Write a description of the banks of the North Saskatchewan, the Ramparts of the Mackenzie, and the country covered by the Cypress Hills, Wood Mountain, and plains south of these. Can you see any reason why the north branch of the Saskatchewan should be a larger stream than the south branch? What are these reasons? Describe the Côteau, stating its place in the country. Where are Winnipeg, Regina, Calgary, Battleford, Prince Albert, and Edmonton situated? What natural features should be of greatest value to these places? Point out three other localities thought by you to be placed in strong natural positions. Are towns or villages situated at each of these points? If not, why not? What advantages or disadvantages arise from the fact that the Mackenzie flows north-westwards, the Saskatchewan north-eastwards, and the Red northwards? Must all the railways crossing Canada from east to west pass south of Lake Winnipeg? Give reasons for your answer. Compare

the level upon which you live with the other levels. Explain the origin of the great triangle mentioned in this chapter. Make a drawing of the regions enclosed by the sides of the triangle and show the prairie levels, the Saskatchewan, the Canadian portion of the Mississippi valley, the Red River, the Assiniboine, and the tributaries of the Assiniboine. Describe the northern, or Arctic plain. Make a map of the Canadian West and mark on it the average height of the three prairie levels. Place also on this map the hills that are mentioned in this chapter. Mark also the positions of the lowest lands of the country. What is the meaning of "above the sea-level"? What are the areas of the three prairie levels? How do they compare in area with the basin of the Mackenzie? How is eastern Assiniboia drained? Why does not the Saskatchewan of the south flow through the deep valley of the Qu'Appelle instead of the main Saskatchewan? Where do these two rivers come nearest each other? Why does not the north branch drain into the valley of the Mackenzie? Can you give any reason why the Canadian lakes stretch about the margin of the Laurentian plateau from the Arctic Ocean to the St. Lawrence? What is the value of these lakes to the country? Describe Lakes Winnipeg and Great Slave. What districts are wholly in the Saskatchewan basin? In the Mackenzie basin? In the Red River basin? Is Great Bear Lake connected with the Mackenzie in the same way as Lakes Athabaska and Great Slave? Draw a map of Western Canada, showing the drainage of the country. Mark all the important lakes and rivers. What are the eastern and western boundaries of the three prairie levels? Place on your map the divide separating the two branches of the Saskatchewan, also the divide separating the Assiniboine from the Saskatchewan.

Read Appendix D.

CHAPTER VII

CLIMATE

WERE a stranger to ask you to describe the climate of Western Canada, would it be sufficient to say that the winters are cold and the summers hot? If your questioner were really anxious to learn something of



FIG. 47. — A snow-capped mountain.

the climate, we think he would ask you among many questions the following: How cold are the winters and how hot the summers? Is the rainfall great? When does the winter usually open and when end? Is spring

slow in coming, or does it come with a rush? Are the skies clouded or are they sunny the greater part of the time? Is the air calm or are high winds common? Perhaps you can suggest other questions that would probably be asked.

Again, if you wished to know something of the climate of a strange country, would you ask this information of one who had spent a week in that country, or would you prefer to hear the opinion of some old resident who had made a study of his country's weather for a number of years? We think you would prefer the latter, for have you not seen one summer dry and another wet? One spring late and another early? One fall clear and another clouded? What we wish you to see is this: climate requires us to take into consideration a great many facts and these facts must cover a long period of time. In this way only can we get at what people call *average weather*, and climate is really such weather. We shall now try to learn a few things about our western climate, and we shall take it for granted that everybody has done a little observation-work on weather. At any rate, all will know what is meant by sunny weather, changeable weather, cloudy weather, and a host of other weathers.

Many fea-
tures go to
make up
climate

Now, there must be some weather-cause not far to seek. What do you think this is? What object about you seems to be of greatest value to the world, the one we should miss the most were it to disappear entirely? Is this object not the sun? Is there any other thing more valuable, do you think? What kind of weather would we have were the sun to cease to shine for a whole month? If heat, like light, disappeared as soon as the sun set, would it make any difference to us? If heat were to remain just where it chanced to fall, would the world as a whole fare as well as it is now doing? If these questions are answered thoughtfully, we think that all will be able to see how it is that the sun, in more ways

The sun

than one, is the biggest thing in the world, for without the sun's heat we could have no such thing as weather, no such thing as climate. Indeed, we ourselves would not be here.

How is the earth's daily allowance of sun-heat distributed? Does each square yard of surface get the same amount of heat, or do some regions get a greater supply than others? Even the birds seem to know that the latter is the case. Figure 48 may help you to understand how the sun's heat affects a surface at the equator, and also a surface chosen nearer the poles.

The
distribution
of heat

R and *S* are two large sunbeams of the same size. They must then carry the same amount of heat. *R* strikes the earth's surface near the north pole and *S* near the equator. *AB* and *MN* show the

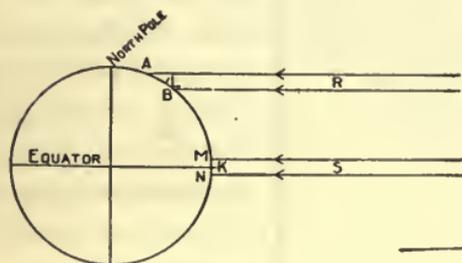


FIG. 48.

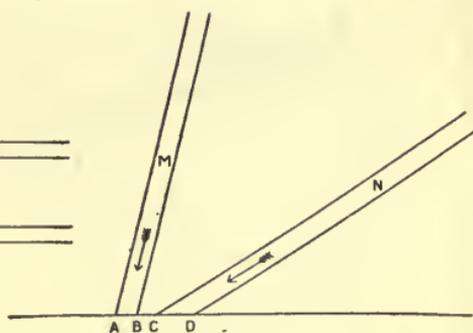


FIG. 49.

surfaces receiving the heat in each case. Now, the surface *AB* is much greater than the surface *MN*. This you can see either by measuring or by the eye. Still *AB* gets no more heat than the smaller surface *MN*. How does this happen? Let *L* and *K* stand for two persons, at *AB* and *MN* respectively. Notice the difference in these persons with respect to the rays of heat and therefore the sun. In other words, the rays of the beam *R* strike more on the slant than the rays of the beam *S*. It is just the difference between the morning

sun and the sun at noonday. It is also the difference between the midsummer sun and the midwinter sun at midday (Fig. 49). The rays of the former come slanting over the ground, while the rays of the latter strike more perpendicularly.

How does this apply to the Canadian West? Before answering this question, study Figure 50, that you may know the relation in which the country stands to the waters surrounding the continent, as



FIG. 50. — Map showing the relation of the Canadian West to the Arctic Circle, the Tropic of Cancer, and the coast waters of North America.

well as its situation with respect to the equator, the Tropic of Cancer, and the Arctic Circle. Being farther to the north, each square mile of the Canadian prairies will receive less heat than an equal area at the equator, or an equal area in the country to the south of us. Our climate then cannot be well suited to the growing

of oranges, pine-apples, rice, and such other fruits and grains as love a high temperature from one end of the year to the other.

Some people judge climate altogether by latitude or distance from the equator, and these people imagine that because the Canadian West is more than halfway between the equator and the north pole, it must be actually next door to the pole. Latitude, however, is only one of many factors to be considered in connection with the climate of a country. What are some of the other factors?

The first we shall notice is this. There is a difference between the climate at the top of a mountain and the climate at the mountain's base. You already know that high mountains may be snow-covered all the year round (Fig. 47), even though their tops are actually nearer the sun than are the lower grounds. People who have observed this fact make use of it when they say that the higher the surface of a country the colder must that country be. Why should this be?

To answer this question we must say something about the air, which like a great covering, surrounds our earth to a height of fifty miles or more. This air, though it cannot be seen by the human eye, yet has weight. In fact, air can be weighed like cheese or wheat, provided we have the proper kind of vessel to weigh it in. Elevation

If this be true, we may picture the air as being made up of layers like the boards in a pile of lumber, or the rows of bricks in the walls of a house or chimney. In these cases the lowest layers will have to support all above them, and if they were made of anything like rubber or anything else that would give with the pressure, they would be pressed so that their shape would be changed and their space lessened. Air can be thus pressed into smaller space. This is done every time that a bicyclist blows up the tires of his machine. It follows from this that the lower layers of air are com-

pressed much more than the upper layers on account of the extra weight of air resting on them (Fig. 51), and the air about a mountain top must be thinner than the air in the lower valleys for the same reason. What has all this to do with the climate at the top of a mountain? Only this. The thinner the air, the less heat it will hold.

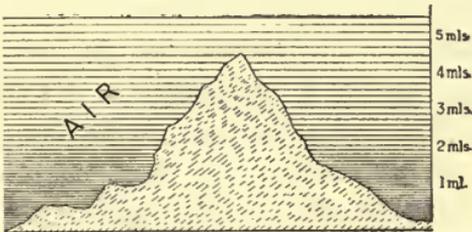


FIG. 51.

A gallon jar filled with boiling water has more heat in it than a pint jar similarly filled, because there is more water in the one jar than in the other. In the same way a gallon of thin air has

a good deal less air in the same space than a gallon of dense air. People who have done much mountain climbing tell us that they have to breathe oftener each minute at the top of the mountain than on the lower plain. Even the human body, then, can find that thin air has less material in it than more compressed air. Let us now see what bearing this has on the land surface of the prairies.

We have seen that the Red River valley is about seven hundred feet above the lowest earth level, namely, the sea, and that this valley lowers about a foot per mile as it goes north. Which part of this plain should have the warmer climate if height alone is thought of? We have also seen that the second and third levels are fifteen hundred feet and from twenty-five hundred feet to three thousand feet, respectively, above the level of the sea. According to this, the third level should be colder than the second, and the second should be colder than the first; this would be the case were nothing but

Height of
plains

height considered. But we must not be surprised if this is not so, because height of the land, or elevation, is but one factor of climate, and as the average height of the surface of the Canadian West is low in comparison with that of many other countries (Fig. 24), it cannot be said that we suffer much on the score of too great an elevation.

The next questions we shall ask are very important. Is air a heat carrier? Is the heat that helps to ripen our fields simply that which reaches us directly from the sun? Do we, in other words, get any heat ^{Air a carrier of heat} from without our boundaries? Can the air of one part of a country become laden with heat and move off, carrying this heat with it? Let us try to answer these. The sun's heat must pass through the air on its way to the earth. Now, the air is able to hold back about one-third of the heat that tries to get through. How does this heat affect the air? Again, the heat that actually gets through and strikes the earth's surface, warms that surface. This in turn warms the air above it in the same way that a hot stove warms the air above its surface. But the air above a hot stove is warmer than the air above a table in the same room. In other words, the air overlying a heated country is warmer than that resting upon a colder country. Warming the air is much the same as taking off some of its pressure; it causes the air to expand, that is, to take up more room. The half gallon of cold air may now become the gallon. Which of these would weigh the more? This is why balloons which are filled with heated air are able to rise. The air, therefore, over a heated region, because it grows lighter, by being heated, rises like a balloon, while the colder air about the heated space flows in in a circling manner, and it depends altogether from

what direction this moving air comes, and also upon how we are feeling at the time, whether we shall call it warm or call it cold. What has just been stated may readily be understood by placing lighted candles, as in Figure 52, at the bottom and at the top of a door opened slightly between a warm room and one a little cooler. This movement of the air is called *wind*, and

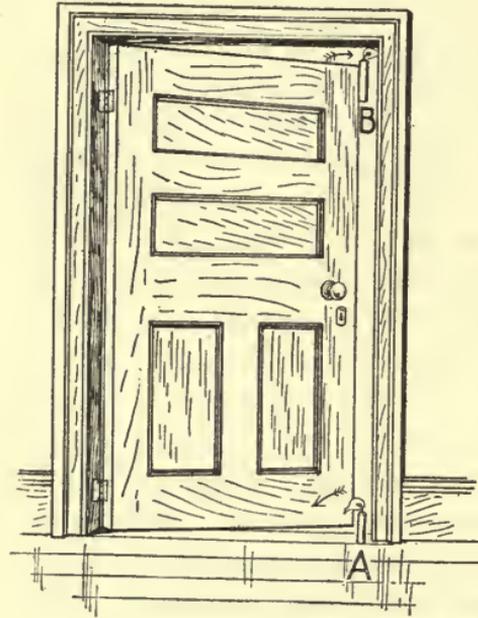


FIG. 52.—A and B are lighted candles placed at the bottom and the top of a door slightly ajar. The room on the other side of the door is colder than the room in front. Can you explain why the flames are blown in different directions?

we are now to make a note of the winds that are common in Western Canada, and thus learn something more of the character of our climate.

We have seen that the prairies are shut off from the Pacific by the great highland region of the Rockies. Has this arrangement any influence on the winds from the warm Pacific (Fig. 50)? These, coming from a south-westerly direction, reach the colder and higher mountain country, where they are more or less chilled and made to give up the

water they are carrying. How is this? Afterwards, they manage to work their way through the mountain passes and over the mountain tops and descend to the plains to the east, over which they move as warm dry

winds. The influence of the *Chinooks*, as these winds are called, is felt over a belt several hundred miles wide, and their general effect is to raise ^{The} *Chinooks* the yearly temperature of this part of the West, and in this way, more than make up for what the third prairie level loses by reason of its extra height. Another effect of these winds is to make the rainfall of southern Alberta and south-western Assiniboia less than that of the other levels. How?

As the whole country towards the Gulf of Mexico and the Atlantic to the south-east is fairly open to the Canadian prairie country, the Appalachians being much lower than the Rockies, warm and moisture-laden south and south-east winds (Fig. 50) ^{The south and south-west winds} may reach us and add to our rainfall and our heat. All the winds from the south, however, are not so desirable. We are all more or less familiar with certain hot, parching winds that invade our prairies in the summer season. These winds are said to have their origin in, or at least are affected by, the *bad lands* of south-western Dakota and southern Wyoming (Fig. 50), a region made arid by a scarcity of rain.

The country is also open towards the cold ocean at the north, and often in winter and now and again in summer, we are reminded of this fact by a lowering of temperature. If a mountain chain lay across ^{The north, north west, and west winds} the northern part of the country, do you think it would help at all? How? While cold winds from the north, the north-west, and the west may blow at times when the wheat crop is not in a condition to stand any rough usage, we may say that the heated plain of the prairies has the effect of tempering these winds, and

making them less harmful. Can you see how this may happen?

The Laurentian plateau is so worn down by the storms of the ages as to interfere but little with the winds from Hudson Bay and the Great Lakes, our north-eastern and eastern winds. Both are of great service to the country, because of their value as moisture bearers. All these winds are of very great importance. They should therefore be studied most carefully, and the wind-records of January, April, June, and September compared.

We have touched a little on another feature of climate, namely, that air is a carrier of water as well as of heat. You have all seen that wet roads grow dry again. You have also seen the sloughs and the streams dry up.

Air a carrier of moisture These are evidences of what we have said; for the air, like a great sponge, is drinking from every river, lake, sea, and ocean on the face of the earth, and then carrying this moisture off to drop some of it on the land in the shape of rain, snow, dew, or hail. Does it not seem strange that far-away Manitoba and Alberta may have their farms watered by rain carried by the air from the most distant seas?

How does the air do this? Have you ever tried to mix small quantities of salt and water? If so, you will know that the salt disappeared and that the water became salty.

Moist and dry winds You will also be able to explain this very wonderful change in the salt by saying that the water *dissolved* it. In much the same way that water dissolves salt, air becomes mixed with the vapor of water that the heat of the sun has caused to arise from every moist surface on the face of the globe. Now if you

wished to get a sponge to take up as much water as possible you would squeeze it before placing it in the water. Warmed air is like this sponge. Warm air dries things better than cold air. Make a note of the best and the worst drying days for a month, and you can prove this for yourselves. In other words, hot or heated air is more thirsty than cold air. You can understand now why winds from the heated south are moister than those from the colder north. Those from the north and west are drying winds and not moisture bearers. A south wind in passing north parts with its heat, becomes cooler, and has to give up some of its supply of moisture. This is how rain is brought. How does a north wind in passing south act?

There is another fact about air we should mention. It is like a blanket. It helps to keep the ground-heat from passing off into space, and the more moisture in the air, the better the blanket it becomes. This is a fine thing for the plants. Without it a summer night would be long enough to allow so much of this heat to escape that the plants would be frozen. Has the air over the Canadian West much moisture in it? The blue sky and the usually cool nights may help you to answer this.

We shall now take into account the amount of daylight and darkness of our summer and our winter seasons, as this will be very helpful in giving us a true idea of the heat and the light we can depend upon from year to year. During the growing season the sun rises early and sets late. This gives us a long summer day and a short summer night. This means that our fields and our gardens get an abundance of light and

of heat at the very time when these are most needed. This is how the wheat plant is able to pass from its seed-time to its harvest in from eighty-five to one hundred and five days. This is another of the important things to be noted about the western climate. This also



FIG. 53. — A pleasant summer scene in northern Alberta.

means that the plants have little chance to become chilled during the few hours that separate sunset from sunrise (Fig. 53). As to the short days and the long nights of winter time, these are not so important from the point of view of the farmer.

We must now take a look at the nature of land and water in respect to heat. Water is more slowly heated and more slowly cooled than land. All summer long our lakes and rivers are taking in heat from the sun. A portion of this is given back, but not all. Should a drop in temperature take place during the summer season, these water-storehouses of heat, by giving up some of their supply, temper the air for a few miles about them and thus prevent the land from chilling as much as it would were it not so favorably situated. What is the effect of this on the crops? What waters can we count upon? Are there any about our

The lakes as
storehouses
of heat

coast? Are these likely to be much heated? What other bodies of water are scattered throughout the country? Examine the large school map of Canada, or Figures 2 and 27, and note the many small lakes situated in Manitoba and the North-West Territories.

Finally, for the whole prairie region we may say that the skies are usually clear, bright, and sunny; that the air is dry, and the rainfall, while sufficient for the purposes of plant growth, cannot be said to be heavy; that the summer temperature now and again reaches the "nineties," while the thermometer in the severest winter weather drops to the "forties" and even lower. Now, the difference between "forty below" and "ninety above" is a difference of one hundred and thirty degrees. This is why our climate is spoken of as "extreme."

While the summer days are hot, the evenings and nights are delightfully cool and refreshing, facts that mean a good deal when farm labor is considered. We must not, however, forget what is perhaps the The seasons greatest charm of our summer days—the twilight hour, when the western sky takes on

"A wonderful glory of color,
A splendor of shifting light,
Orange and purple and scarlet."

The winter season, heralded by a week or ten days of lovely Indian Summer weather, commences, as a rule, in late October or early November and closes some time about the end of March or middle of April, when spring rushes in with a wealth of bud and bloom. The snowfall is usually light, but the snow wears well, and the fierce blizzards of the Dakotas very rarely find their way across the borders into Canada.

Manitoba and eastern Assiniboia, or the first and second prairie levels, have the same general climate, the annual rainfall being between seventeen and twenty inches. Western Assiniboia and Alberta being under the influence of the "Chinooks," and also on account of the greater elevation, have a rainfall a good deal less than this. In the wooded country to the north of the prairie belt the rainfall becomes greater because the country is cooler as a whole and less water is removed by the air, thus leaving more for the nourishment of the vegetation.

We should be able now to apply some of the facts of climate studied in this lesson to the district known as the Peace River country, but before attempting this, examine the position of this region in Figure 40. If latitude alone were considered, what kind of climate should this land possess? Do you know of anything that would help to modify this? This is the region of the Chinook winds. How will this affect the climate? Is the surface of the country high? Is it likely to be higher than northern Alberta or than southern Alberta? If we should tell you that the average height is two thousand feet above the level of the sea, would this be of any assistance? Is the northern part of the country higher than the southern? What will be the effect of this? Are the summer days likely to be longer or shorter than the summer days of Manitoba and Assiniboia? What effect will this have? If the difference in daylight is an hour more on June 21, than at Winnipeg, Regina, or Calgary, will this mean anything? Would this country likely have more moisture to spare to the grain than southern Alberta has? Why do

Climate of
the Peace
River country

The rainfall

the Peace River country

you think so? If the grass is just as thick as the grass in the districts to the south, will this be anything in favor of the climate? Have you any reason now for thinking that the country cannot become a farming region?

Again, let us consider a district farther down the Mackenzie basin; for instance, that in the same latitude as Great Slave Lake. Will this region ever support an agricultural class? If we can tell you of another region very similar to this, will this help you to answer the question? Well, there is a region in Russia in Europe fully as far north as the land we are considering. This land is situated on a slope facing the Arctic Ocean. It is also placed in the heart of a continent.

Its summer days are long and warm, while its winter days are short and cold. Still, the Russian land is thickly settled by a farming class, and its soil yields not only a great quantity of oats, barley, and hemp, but supports numbers of horses and cattle as well. Now, if the region about Great Slave Lake possesses features very much the same as this Russian district, what should be the result?

The Arctic and northern Hudson Bay country has already been described in Chapters IV and VI. All the land between the forests and the ice-clogged Arctic coast is a barren waste. During the summer the swampy ground is covered with mosses, lichens,

Climate of the
Great Slave
Lake country



FIG. 54. — The midnight sun.

From a photograph taken on the Arctic Circle at midnight by Mr. C. W. Mathers of Edmonton.

The Arctic
plain

small willows, and other plants, which mature quickly during the short season of perpetual sunlight (Fig. 54). In the long dreary winter it is one white wilderness, swept by winds and destitute of shelter.

QUESTIONS. — What is the source of the moisture that falls on the prairies? How is it brought? Why is it heavier on the first and second levels than on the third? Has Hudson Bay anything to do with this? Which is the farther north, Winnipeg or London, England? Why have these cities different climates? Why is the air of the Canadian West dry? What is the difference in climate between Alberta and Manitoba? What makes the difference? Show that a can of water gains heat more slowly and also loses it more slowly than a can of sand. What does this experiment teach you regarding the bodies of water found in the Canadian West? Can you see how great bodies of water, if properly situated, would delay the coming of winter, and also hold the spring time back? How? On Fig. 41 you will see a line marked "July temperature of 60°." What is the temperature of the country to the north of this? To the south? Why is the line much farther north in the western portion of the country than it is in the eastern? What are the commonest summer winds of your locality? Which of these bring rain? Which dry weather? What effect has the climate of your part of the country on the occupation of the people? Show the advantages and also the disadvantages of a dry atmosphere. What is the meaning of the dotted line called *Arctic Circle* on Fig. 50? Why is the noon-day sun warmer than the morning or the evening sun? Will spring open first at Calgary or at Winnipeg? Give your reasons. What portions of the West are not influenced very much by the presence of large bodies of water? What results should follow? Are the waters of the Manitoba Lakes easily heated? Is this a good thing for the climate of the neighboring country? If you were told that the ice on Lake Athabaska was four feet thick, that on Great Slave Lake six feet thick, and that on Great Bear Lake eight feet thick at the close of the winter season, what would you infer as to the winter climate of these regions? Would you expect frost to appear on the third level before it appears in the Red River valley? Give your reasons. Show in

as many ways as you can how snow helps the Canadian West. In what way is snow a disadvantage? From what you know of northern Alberta and western Manitoba, in which would you expect to find the greater effect of altitude on climate? Does anything help to modify this condition? What is it? Why would you expect the Cypress Hills plateau to be unfavorable to the growing of grain? Do you know why ranching is followed in the country between the plateau and the Saskatchewan? Which of the levels has the best conditions for the cultivation of wheat? Which for the shipping of wheat? Which do you think will grow the farthest north, wheat, oats, barley, or potatoes? What reasons can you give for your answer? *Read Appendix E.* Why should the spring season be later at the base of the foot-hills than in the country south of the town of Lethbridge?

CHAPTER VIII

HOW THE PRAIRIE SOIL WAS MADE

ALL the vegetable life of the earth depends upon the presence of soil. All the animal life would have no chance to exist were it not that plants are able to take food from the dead material called soil, and put this food into such shape that animals can get it. Indeed, few things are more important than soil, and yet thousands of men and women live and die without thinking of its wonderful value.

Animal and plant life

What is there in soil that is so necessary to the success of plant life? What is this soil that plants need so much? We may say that soil is the loose covering of the earth, but we want to know how far down it goes, how deep it is. Here people differ. Some say that soil is just the part in which plants are rooted, while others claim that it is the material that covers the rock beneath (Fig. 55). While the first view may be the important one, so far as the farmer's work goes, the latter is the more valuable for us to look into.

Depth of soil

How far below the surface is the rock upon which the soil rests? In some few places it is above ground, while in others it is just deep enough to serve as a cellar floor. In most cases the soil is from a dozen feet to several hundred feet in depth. This is a very great quantity. How has it been made?

Take a handful of soil from the school grounds, road, cellar, or field, and examine it. It stains the hands, it is more or less gritty, and it is of a darkish color.

If a piece of window-glass were rubbed with some soil and then examined, it would be found to be scratched. What hard substance has caused this? Fill a tumbler a quarter full of the same soil, add water,

Broken rock
is the founda-
tion of soil

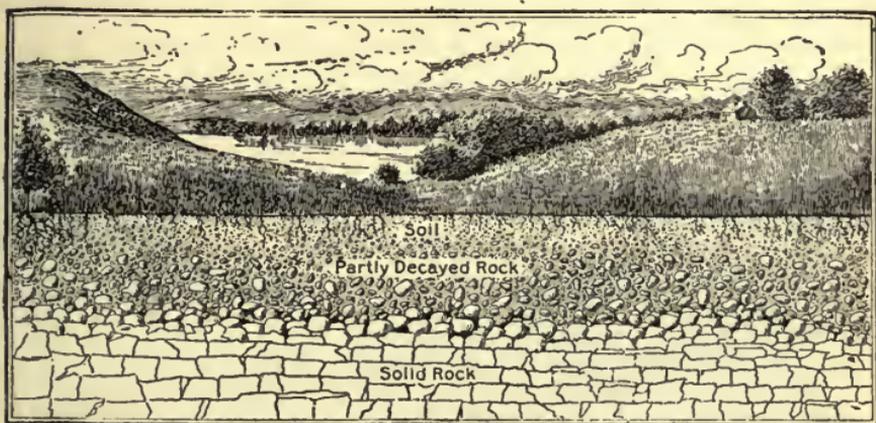


FIG. 55. — A section, as if the earth were sliced through, so that the part below the surface is seen. Tell what you see in this picture. Notice the roots of the tree on the left side.

and stir for a minute or two. Allow the mixture to settle for a few seconds, then pour off the muddy water. Repeat this a few times until the water runs off clear. Now look at what you have left in the tumbler. What are these little bits? Just small pieces of rock. You will find them in every soil and particularly in sandy soil, where they form the greater part of the whole. They are the remains of broken-down rocks. How have the rocks from which these bits have been taken, been broken into such small pieces? If we could answer this question, we would know the main things worth knowing about soil. In other

words, we would have found out the secret of nature's great soil-mill.

Let us go into some thick bluff or grove or forest, to where the ground feels springy and where the leaves of last year and many years before lie around, and let us try to find out what has become of these leaves since they fell. This is not a difficult thing, for their story is written in the layers of leaves beneath our feet. The first and second pages of this book are plain and easily read. If we are familiar with the leaves of the poplar, elm, and maple, we can say, "These are poplar leaves that fell last fall." "These are maple leaves that fell a year ago last fall," and so on. But the next page is not so plain. As it lies under the two layers already taken off, it must stand for the leaves of a year farther back. Still the form of the leaves is there, though the material is a little mouldy. As we remove layer after layer, we shall at last come to a spot where the forms, even, have disappeared. There is nothing left of the leaf but the harder midrib and leaf-stalk. A little deeper, and even those leaf signs are wanting, but the material is a fine, loose, black mould mixed with a little sand and clay, worked into it from below by the insect life which delights in such places. Under this mould or *humus*, as it is called, is the clay or sand, or sand-clay or clay-sand, forming the bed upon which the trees at first grew. This has given us one glimpse into nature's soil-mill. We have learned at least one way by which a part of the soil has been formed.

Our next lesson should be taken on a portion of the native prairie soil, that is, soil never disturbed by the plough. What has become of the grasses and the flowers

that have grown from year to year for hundreds of years perhaps? Each spring saw the anemone, the buttercup, and the violet come up. Each summer brought out its lilies, mints, and roses, and each autumn its goldenrods, asters, and gentians. What became of all these beautiful plants when their little life had run its course? The black soil one turns up with a spade can give the history. What is this history?

Soil-making
on the
prairies



FIG. 56. — The stony bed of a summer stream in northern Alberta.

From these two sources, then, the mould, loam, or humus that makes the soil so rich is manufactured, and this material may even color the surface-soil to the depth of several feet by being blown by the wind into the many cracks caused by the frosts and the dry weather. We have to look elsewhere to find where the mud and the bits of sand come from.

Let us go to the stony bed (Fig. 56) of some neighboring stream, or to the pebbly shore of the lake, and try to

find out something more about the manufacture of soil.

Soil-making and streams Examine some of the stones. Look at their shape and their smoothness. How have these stones been made? If we go up the stream a short distance, we shall find several places where it has undermined its bank and caused tons of earth to fall into the stream to be carried away by the more or less rapid current. As many large stones are mixed up with the fine earth, these would also find their way into the stream. Would they not remain where they fell? All depends upon the strength of the current; even a small stream can shove a very large stone if only its current is

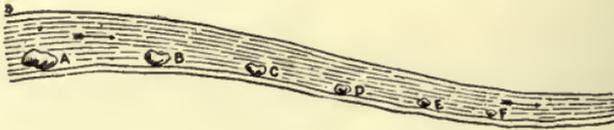


FIG. 57.

swift enough, and this is what actually happens. The stones are made to slide and roll on and over the bed of the stream, and as this movement is not always gentle, the stones knock and rub against each other. Every time they do this they are worn smoother and smaller. By the time they have made a journey of several miles they are not as large as when they set out (Fig. 57), and, being smaller, the current makes them move even faster than it did at first, until they are as small as the pebbles picked up.

Sorting the soils But the stream is doing another thing. It is sorting the material carried. The big stones stop altogether where the current is not strong enough to move them. These, of course, are not left in peace,

for the lighter stones on their downward journey give them many a sharp rap, and wear them down so that the current is again able to drag them along. The lighter and smaller stones are dropped lower down in the bed, where the stream is slower still, and the fine mud that comes from the wearing is carried farthest down only to be left in the spots where the stream becomes too sluggish to move even this light material. Should such a stream dry up during the summer, we would not be surprised to find a bank of clay in one place, a bed of gravel in a second, and a pile of stones in a third. But for this sorting by water we would not be able to get our clay, and sand, and gravel so nicely set apart as they are here and there over the whole country.

Now, all these processes are too slow to yield the enormous quantity of soil known to be placed over the rocks of Manitoba and the North-West. There must still be another method more rapid. To understand what this method is, we must first

make a closer study of our soil. Why are there so many large stones or boulders found almost everywhere? Take a good look at several of these. You will find the

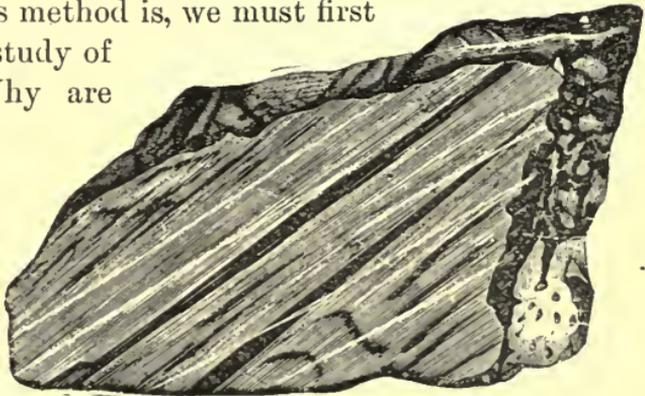


FIG. 58. — A scratched boulder.

majority roundish, and rather smooth. You may also find one now and again with a deep scratch across one or more surfaces (Fig. 58). Now break one or two of

The prairie
boulders

the smaller boulders with a blunt axe. The fresh surface is either whitish all the way through, showing it to be limestone, or it is speckled with black, light pink and white, or black and white. These last are granite stones. There is no rock near which is like these granites. The nearest rocks of granite are found in the north-east and in the northern Rockies. Look at the two giant rocks in Figure 59. Where did these and thousands of smaller boulders come from? What brought them here?



2. A boulder on the plain in southern Alberta.



FIG. 59.

1. A boulder on the shore of Lake Winnipeg.

Boulders are found all over the northern part of North America and the northern part

of the Old World as well. Whatever has brought them, has evidently been at work over a very great area. No wonder people puzzled over these "tramp" stones for a long time. Now their history is supposed to be known. What is this history?

In places where the light soil-covering of the rocks has been removed it was found that the surface of the rocks

was also polished and scratched. The boulders and the rocks must fit in some way, but what could make the stones move over the rocks, for this must have taken place? The ice did this, and we shall explain in what way.

Scatched
rocks

In some parts of the Rockies, in Greenland, and in the higher Alps the land is so high that nothing but snow is ever known to fall. Year after year snow has been falling, and were not something done to remove it, it would get so deep and so high that it would overbalance and bury the surrounding country. As this has not taken place, there must be some other way by which the snow can escape. What is this? The amount of snow in the upper part of the pile presses on what is beneath and turns it into ice, and this ice moves slowly in a stream down the incline until it reaches the sea, where it is broken

Pressed snow
becomes ice

into large pieces called *icebergs* (Fig. 60), or until it gains the lower lands where the heat of the sun and the air melts it, and causes it to move off in muddy streams.

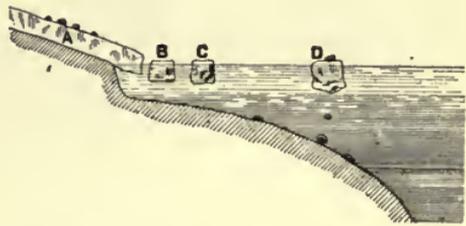


FIG. 60.—Section of a glacier entering the sea, and breaking into icebergs.

As this river of ice, or glacier, flows along at the rate of a few inches or a few feet each day, it gathers the loose stones in the way (Fig. 61) and uses them to grind out its channel. This grinding will wear down the stones and will also wear the rock bed upon which the great ice river moves. Were you to turn a glacier upside down, you would find its under surface filled with stones that it has picked up or

The glacier
as a soil-
maker



FIG. 61. — The great glacier of the Selkirk Mountains.

that have dropped through the large and deep cracks found in every glacier, and you would at once understand how much soil-making such an enormous ice-file can do. On the back of the glacier is the *moraine*, which consists of tons and tons of stones that have rolled from the mountainsides and are being carried down to the place where the glacier is melting, and dumped there, forming a *terminal moraine*, which in the course of time often grows to an enormous size. Any great heap of stones found in the country is just such a heap as we have described.

All the rock flour, that is, the fine material coming from the wearing, and the smaller stones are carried away by the streams that come from the rapid melting of the ice at the front (Fig. 62). These streams

drop their load as they slacken in current, so that the gravel is placed in one place, the sand in another, and the clay in another, for rocks making clay or sand are among those ground up by the ice-mill.

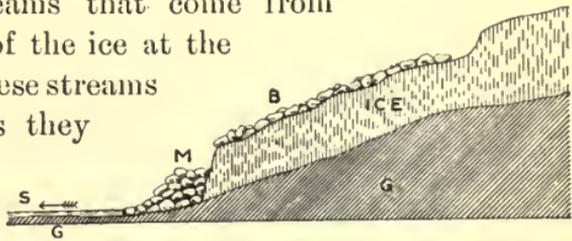


FIG. 62. — Section of glacier on mountainside. G is the mountainside; B, the moraine; M, the terminal moraine; S, the stream of water flowing from the glacier front.

While this may be true of a mountainous country, our prairie region is too level and too warm for a glacier to be found here.

This is true enough for the land as we find it to-day, but is it not possible that the present surface and the present climate were not always the surface and the climate of the West? Those who have made a study of this

subject tell us that our climate was at one time warm enough to support plants which can live only in countries like those about the equator; that this warm climate gave place to another so cold that only snow could fall; that during the many years of this cold climate, the northern part of the country was high, and the whole of Canada from the Rockies to the Atlantic, and from near the Arctic to the mouths of the Missouri and the Ohio rivers (Fig. 63), was covered

Canada
covered by
an ice-sheet



FIG. 63.—Map showing area covered by the great ice-sheet.

by an immense sheet of ice many feet in thickness.

When the glacier disappeared from this part of Canada, the surface of the country was entirely changed. The hills were worn down, and the valleys were partly or completely filled up; new hills of glacial material or drift were made; some of the rivers, perhaps, had

to find new paths and begin again to wear valleys; the rock surfaces were scratched and grooved. The soil, too, was completely changed, the new soil being in many cases

better than the old, but in some cases not so good; for the quality of the soil depends upon the kind of rock over which the glacier passed, just as the quality of flour depends upon the kind of wheat used in its preparation. While the ice was melting, great quantities of water were supplied, far more than the streams of to-day carry. These floods washed away most of the clay, only to deposit it in the quieter water of the stream or else on the bottom of some ancient lake. Beds of gravel and sand were left in a similar way, especially in the valleys. Some of these were built into broad plains, others into ridges, and as a result of the ice and the water working together, we often have different kinds of soil in a small area, even on a single farm. The beds of sand, clay, and gravel brought by the glacier and sorted by the water have already been of great value to the country. Perhaps you can give a few uses of each of these.

Surface
changed by
glacial
action

Where has the great ice-sheet gone?

In time the climate of this part of the world again for some cause or other became warmer, and this change was followed by the retreat of the glacier. Every now and then the melting would be checked by several years of colder weather, and the front of the glacier would again move southwards, gathering up the boulders and rubbish as it went along. When a period of warmer years followed, the moraine formed at the ice-front would be left to tell the people who settled in the land, long after the glacier had disappeared, something of its story. On the retreat of the glacier the boulders carried by the ice, dropped off as it melted, and thus the land in many places was sown with this

The retreat
of the glacier

rubbish. This is very marked between the several halting places of the great ice-sheet, which has vanished from the land, but has left the soil of the Canadian West all the richer for its presence. It took many years to get rid of it altogether, as there are traces over the country to the south showing that it must have gone backwards and forwards a few times before finally retreating. You will understand how the glacier would drop its load of rubbish, sowing the whole country with boulders, as it moved slowly from the south to the north.

This is the story of the making of the prairie soil. There are many things in it that you may not understand very well now, but keep them in mind, think about them, and they will likely be better understood as the days go by.

QUESTIONS. — What is soil? How is the loam of the woodlands made? How that of the prairie? Why is the loam of the prairies so light in some places and so heavy in others? Why is the loam on the hill tops more shallow, as a rule, than the loam of the valley? Show how running water has helped to make soil, and also how it has sorted the soils into clay, sand, and gravel beds. Why do the rains run off our prairie lands so rapidly? What effect will cultivating the prairies have upon the flow of water? What effect will the heavy rains have upon the fine material of the cultivated fields? What have winds, frost, and dry weather to do with soil-making? Which is the deepest well in your country-place, village, or town? Have you collected samples of the soil taken from this well? What is it like? Have you found any scratched boulders near your home? Are there many boulders near? Is any use made of them? Are there beds of clay, sand, and gravel near? What would you call the soil of your neighborhood? Is any of the land alkaline? Does this make good farming soil? What is a glacier? What has the Great Canadian Glacier done for the Canadian West?

CHAPTER IX

THE SURVEYOR

WE have seen how the Dominion of Canada came to own all the lands of the West. We are now to see how these lands were made ready for actual settlement. The first man on the ground was the surveyor. It was his business to block out the country into convenient plots. This he did by running lines due north and south, and also lines running due east and west, so that the whole was divided into mile-squares or *sections*, and each section in turn was divided into four smaller squares called *quarter sections*. The section and the township Thirty-six of these sections were next grouped into larger squares called *townships*, the sections in each township numbering from one to thirty-six, as in Figure 64.

In the fertile belt, that is, in the country west of Lake Winnipeg, and south of the north branch of the Saskatchewan, certain sections were granted to the Hudson's Bay Company. These are Section 8 in every township, and Section 26 in townships 5, 10, 15, etc., The ownership of the land and the south half and north-west quarter of Section 26 in the remaining townships. Sections 11 and 29 in each township are also set apart for the benefit of schools. The remaining even-numbered sections belong

to the country as a whole and are intended as *free lands* for settlers, while the majority of the odd-numbered sections are either in the possession of the various railway companies, or are held by the Dominion government.

As there are hundreds of townships surveyed, there must also be as many sections 1, 2, 3, etc., as townships. How can one tell where to find the particular section, 17 say, belonging to a man by the name of Thomas Brown? Which

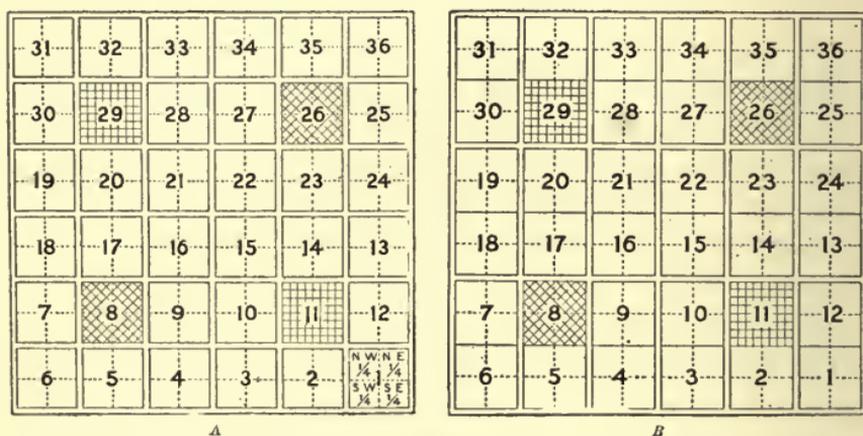


FIG. 64.

township is it in? This shows you that townships must be arranged in such an order as will permit of the location of any section or quarter-section with the least possible trouble. This could be managed by giving such names as Southwold, Mayfair, etc., to the townships, but this has not been the plan followed. We have an easier method. It is this. The first row of townships running east and west, with their south sides on the boundary, are all called *Township 1*. Now, if Thomas Brown's section were "Number 17, Township 1," we would know that it was to be found in one of these townships—but which

one? There are dozens of "Townships 1" all the way from Ontario to the foot-hills. We are obliged to bring in another factor to enable us to locate this section accurately. Let us think, also, of the rows of townships running north and south, just as sections **Ranges** 1, 12, 13, 24, 25, and 36 are placed in Figure 64. Let us call each of these rows of townships a *Range*, and let us number the ranges 1, 2, 3, 4, etc. Now, can we find Thomas Brown's section, supposing it to be "Section 17, Township 1, Range 5"? We think so, because it is in the fifth row of townships running north and south, and in the first of these. Could anything be easier than this? There is another matter, though, that we must be clear about. The townships all number from the boundary to the north. In other words, the boundary is the starting line. Where do the ranges commence? Where is "Range 1"? Were we to take the first range of townships adjoining Ontario as "Range 1," what would be the number of the ranges at the foot-hills? Find this by using your foot-rule and the map of Canada (Fig. 2). For greater convenience five **Meridians** north and south lines are selected between Ontario and the Rocky Mountains as lines from which to number the ranges. These are called the principal meridian, and the second, third, fourth, and fifth meridians. The first or principal meridian is placed a little west of the city of Winnipeg. The ranges east of it are called 1, 2, 3, 4, etc., East, and those west of it, 1, 2, 3, 4, etc., West. The latter ranges number up to 34, when the next meridian is reached, and the ranges west of it number from 1 to 30, reaching the third meridian and so on. Find these meridian lines on Figure 130.

Before leaving this, however, we should like to know how it is that a settler is able to go out into the wilderness, perhaps, and pick out from among the scores of sections the one he wishes to settle upon. How would you have the surveyor arrange this for him? Would you not have a post placed in the ground at one corner of every section, and would you not have marked on each post the range, township, and section? Figure 65 is such a post. It was found at the north-east corner of the section. What does it say? Is this enough?

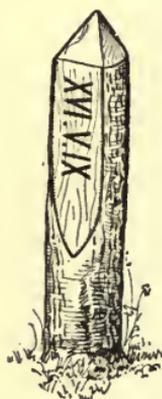


FIG. 65. — A section post.

Another feature of the survey is the marking out of what are called *road allowances*, or, in other words, the placing of the strips of land reserved for the

Section posts

Road allowance

common highways of the country. Two different systems of marking out these road allowances have been followed. In the greater part of Manitoba and in one or two parts of the North-West Territories, the roadways are one chain and a half, or ninety-nine feet wide, and are situated between each section running north and south and east and west (Fig. 64, *A*). In a small portion of the northern part of Manitoba, and in the greater part of the Territories a road allowance, one chain or sixty-six feet in width, is reserved between sections running north and south, but only between alternate sections running east and west (Fig. 64, *B*). This last method is the one now adopted, and all new surveys will follow this plan.

A glance at Figure 66 will call your attention to a peculiarity regarding the roadways running north and south. We will imagine that a man is driving along the

highway north from M with the purpose of reaching N . At the north end of the first township at A he would have to make a short turn to the west before the north road could be again entered. What is the cause of this jog or turn? Are these jogs found only in connection with the roads running north and south, or are they also found on the east and west roadways? Any land map of the West will help you to answer this. Let us now try to find out the reason for these turnings, as, were they not necessary they would not be there, but here you must use pencil and paper and do some thinking as well.

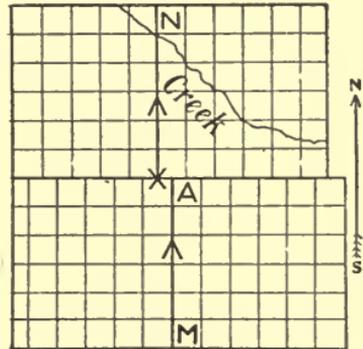


FIG. 66.

In the first place, all our north and south lines commence at the boundary line between the United States and Canada. Place on your paper a line representing this starting-line. On this line, take two points M and N , two inches apart. Let MN stand for the side of a township. How long is this? From M and N draw lines directly northwards. Call these MP and NQ . Now MP and NQ represent two road allowances. Continue MP and NQ as far as it is possible to produce them. They will meet at the north pole of the earth. If you do not understand how this can be, examine the north and south lines on your school globe. We have therefore learned that two road allowances running north and south, and bounding the east and west sides of a township, will meet if carried far enough to the north. How will this affect the shape of our first township, which we may call $MNBC$?

How long is *MN*? How do you know this? How long is *BC*? Why must it be less than *MN*? Is *MNBC* a perfect square, then? Will this affect the sections of the township as well? Is *BC* much less than *MN*? Think now of the northern boundary of the second township to the north. How will its length compare with *MN*? How with *BC*? It would seem, then, that the farther north we go the smaller the townships appear. If you have understood this, you will now know the reason for the jog. You can now see that it is necessary to start the north and south lines over again from fresh east and west lines in order to preserve the size of the townships. Wherever jogs occur, we have the *correction lines*, at each of which townships again start with exact measurements.

This, however, has not been the only plan of survey, for in a few of the earliest settlements the farms were arranged in long and narrow forms along some River lots of the rivers and lakes. This plan brought all the farmhouses to the water's edge, a feature which gave to each owner of a farm easy access to the river and frequently proved of no small value during perilous times.

QUESTIONS.—What is the number of your home section or quarter-section? Are the school lands of your district purchased or not? What are their numbers? Who are the owners of sections 23, 26, or 29? From whom were these sections purchased in the first place? Find the sections, townships, and ranges of the lands composing your school district. Make a map of your township and insert the names of the owners of the various sections and quarter-sections. Mark the south-east quarter of Section 17. Make a map showing the road allowances of your township. Are there any jogs in these roads? Are there any jogs in the township north of you? In the township south of you? Do these jogs occur on the roads running east and west? Compare the jogs east of the principal or any other meridian

with those west of this line. Find the section, township, and range of your post-office, and the township and range of your nearest town. Do jogs occur in any of the meridian lines? Is a township a six-mile square? Make a plan of the old survey. Where was this survey faulty? Where strong? How are the sections west of Meridian 4 located? How east of this meridian? Is the whole of Section 26, Township 17, Range 7, west of the 2d Meridian, Hudson's Bay land? Why?

CHAPTER X

MAKING THE SETTLEMENTS

“We'll tread the prairie as of old
Our fathers sailed the sea,
And make the West, as they the East,
The homestead of the Free!”

HOMESTEADS are being taken up, settlements are forming, and villages and towns are growing up all about us. These things are happening to-day before our very



FIG. 67. — The first summer on the prairie.

eyes, and yet we may have failed to catch their meaning just because they are so common. It may, therefore, be a good thing to picture a family on the ground trying to carve out a home from the unbroken prairie. If we are able to grasp what making a home means, we shall afterwards be the better able to understand how settle-

ments are formed, and finally how the nation itself is built up.

Let us select a district so placed that it is beyond the most distant settlement and many miles from the nearest railway station. The surveyor has gone over this locality, but its prairies continue to grow only the grass and the flowers, and its bluffs continue to shelter the birds and the beasts as they have done for ages.

Into this region at the close of a day in early May came a "prairie schooner" (Fig. 67) drawn by a team of horses. Behind the wagon was the cow, while a chicken-coop with half a dozen hens could be seen fastened to the end of the deep wagon-box. A collie ran here and there over the prairie in search of gophers. These are all important, but they are not the most important. On the

wagon-seat were a man, a woman, and a couple of children, and under the canvas covering were stored such things as settlers in a remote part of any country would need. There were farming implements, a few pieces of furniture, a stove and its pots and pans, provisions, clothing, bedding, a few patent medicines, a small collection of books, and several other necessary things which you will be able to suggest.

The settlers
and posses-
sions

A halt was called at a certain quarter-section and preparations made for the night's rest, for all were very tired after their long ride over the Indian trail from the station. Next morning, breakfast had scarcely been finished when an examination of the homestead was carefully made. The soil of the prairie was dug into in several places; this showed a rich, black ground, well able to support numerous crops of good wheat. The elbow of a spring creek entered the farm on one side. This was a very

valuable feature, for it made sure of a plentiful supply of good, wholesome water for house and farm use. On one bank of this creek there was a fine poplar grove. Here the material for dwelling-house, granary, stables, and firewood would be found without having to go off the farm. A low spot had already given much promise in the way of a good yield of native hay. All these discoveries delighted the newcomers, and more so when they had made a survey of the other sections of the wilderness and found the majority of them just as desirable as their own.

What could have brought these people to so lonely a portion of the country? Who are they?

They have come from Eastern Canada because they heard of the fertile soil and the cheap homes of the West.

Farms in their native province were altogether too high in price for people who had only good health and ready hands to hope to own their homes in a short time, and these people have always wished to call some spot their own. It was no easy matter to make up their minds to leave the friends of the homeland and take up their abode in a strange country, but here they are in the wilderness, where to be successful means to work hard. What are some of the first things that take up their attention? No one can answer, but we cannot go far astray when we say that they will be connected with man's chief wants, namely food and shelter.

As for food, there are provisions enough in the canvas-covered wagon to last for a couple or more months, and the wagon will do duty for a house until time can better be spared for the building of a more suitable shelter. But

The home-
stead

Why they
came to the
West

the provisions must be carefully used, and as roots and seeds have been taken from the eastern home, the evenings and mornings of the first week or so are devoted to digging and planting a small vegetable garden. The rest of the day is spent in *breaking* (Figs. 1 and 68), that is, in ploughing over the tough prairie sod, ^{Breaking} so that the June rains may help to rot the network of grass and other roots, and thus prepare it to be harrowed and placed in readiness for the wheat-sowing of the next spring.

How different is the work of the homesteader on the prairies from that of the eastern settler on his heavy bush farm! It is true, no doubt, that there are in



FIG. 68. — Breaking the prairie.

the West many fine farms that once were well covered with trees, but the labor necessary to remove these cannot be compared to the toil of clearing the homesteads in the eastern portion of Canada. What a world of hard work would have to be done in felling the trees, cutting the trunks into lengths more easily handled, piling the logs into heaps, burning the brush and the log-heaps, picking up all the smaller sticks and pulling out the tough stumps, all before a binder could be allowed to venture in with safety. It would require

The bush
farm and the
prairie farm

years to get such a farm into the same condition as the prairie when first the settler landed upon his homestead. Indeed, if he were only in time, he could have brought his binder on the same wagon that carried his plough. Boys living on prairie farms should sometimes think of what clearing an eastern bush farm means.

While the man is thus busily engaged in breaking and afterwards in backsetting, his wife is equally industrious. Even in the simplest form of life a division of labor has to be followed, and the care of the children, garden, cow, dog, and chickens all depends upon the faithfulness of the settler's wife. As it is no easy matter to go over the long prairie trails to the station for everything that is needed, it is necessary for every family to depend as much as possible on itself. Hence, every farmer becomes an independent manufacturer. He builds his own house and makes the



FIG. 69. — The log-house on the homestead.

most of his own furniture. His wife has to be tailor, seamstress, school-teacher, dairy-maid, and cook. In fact, these pioneers have to meet all the ne-

cessities of food, shelter, and clothing. In these early days of the settlement there is plenty of hard work for every one of the family who is able to do something.

When the winter season arrives, it finds this family well prepared. The horses and the cow have plenty of good

hay and a comfortable, though roughly built, stable. The "prairie schooner," too, has been deserted for the warmer walls of a log shack (Fig. 69).

About the middle of April spring opens, and soon the prairies are once more green and covered with blossoms.

After the seed-wheat and oats have been sown, and the farmer has only to wait for the long days of sunlight, the rich soil, and the frequent rain showers to bring his fields to the seed-time, more prairie has to be broken, a larger garden cultivated, and a granary built to store the first crop.

It will not be necessary to speak of the purchase of a binder, the cutting, the stacking, the threshing (Fig. 96),



FIG. 70. — A modern prairie home.

and the big loads hauled to the distant elevator. Other years come and go. Some are dry, others a little wet, and the rest just right. Once a hailstorm spoils a few acres. At another time a summer frost injures the grain on the lower grounds. On the whole there is from year to year a good average yield. The settler adds to his farm in horses, cattle, sheep, and pigs, and in time purchases the remainder of the section. Progress

Other settlers come into the district. A schoolhouse is built and a teacher employed. A Sunday-school is opened in the schoolhouse. This is soon removed to the

new church built a year or so afterwards. A post-office is opened in a farmhouse and a weekly mail service begun. A branch line of the railway reaches the settlement and at once makes the land more valuable. More substantial houses (Fig. 70) take the places of the temporary dwellings, and the settlement is complete.

The settlement complete.

QUESTIONS.—What is a homestead? Find out at home what “homestead duties” are. What is land worth in your locality? What has made it this price? What different nationalities are found about you? What brought these people to this particular spot? Who is your pioneer settler? When did he reach the district? How? Are any of the first houses still to be seen? When was the first schoolhouse built in your district? When was the first church built? How near is the nearest elevator, station, and market? What is the meaning of the stanza at the beginning of this chapter? *Read Appendix E.*

CHAPTER XI

PLANT LIFE

PLANTS, as we know them about our homes and in our fields, do not grow on the bare rocks, nor in the winter season. To be successful, plants must have a suitable climate and soil, both of which conditions are present over the greater part of the country. As to plant life, the Canadian West may be divided into a prairie region at the south, a wooded country to the north and north-east of this (*See Appendix D, 3*), and a more or less barren area between the Arctic Ocean and Hudson Bay, where mosses, lichens, and many other plants seem to thrive in spite of a short summer and a cold soil.

That the prairies have long been productive is shown by the great depth of mould which covers them. That they have been well covered with grass may be inferred from what is known of the immense herds of buffalo that once grazed on them. These grasses are of several kinds, namely, the sweet buffalo grass of the third prairie level which covers the ground like a mat; the bunch-grass which grows in tufts several inches apart, and the long hay-grass of the damp grounds, which is found by farmers to be an excellent winter food for horses and cattle.

Grass, however, is not the only covering of the prairies, for scarcely has the winter snow disappeared than spring **Wild flowers** rushes in with a mass of bloom of delicate tint and rich odor. Each month of the growing season has its own flowers, anemones, buttercups, marsh-marigolds, violets, roses, potentillas, lilies, wild peas, lady's slippers, dandelions, sunflowers, asters of all colors, golden-rods, gentians, and a host of others the boys and girls should know.

A soil and climate so favorable to the growth of our native flowers and grasses could not fail to be otherwise **Grain and vegetables** than well suited to the production of wheat, oats, barley, rye, pease, garden corn, potatoes, onions, beets, celery, lettuce, and such other vegetation as

northern peoples have found necessary to their well-being (Fig. 71). Unfortunately, however, these are also the very conditions most favorable to the growth of the many noxious weeds known so well to the careful farmer.



FIG. 71. — Vegetables grown near Edmonton.

Many people from the eastern and the southern lands are of the opinion that no fruits are to be found in the prairie country. This is a mistake, for we have an abundance of such native fruits as the strawberry, raspberry,

gooseberry, red and black currant, wild plum, pin cherry, high bush cranberry, choke cherry, and saskatoon, and to these, we have added in a few ^{Fruits} desirable spots, the garden raspberry, strawberry, and gooseberry, the Siberian crab-apple and the domestic apple (Fig. 72).

We have said that the great forest country lies to the north of the prairie region, but it must be remembered that there are in this area many fine stretches of beautiful prairie land, while belts of trees are

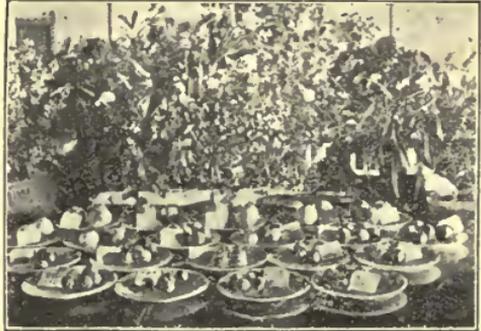


FIG. 72. — Fruit grown near Nelson, Manitoba.

also scattered here and there even in the prairies of the south. These belts are situated along the banks and in the valleys of some of the larger rivers, in fact any place where a supply of moisture and a proper fire-guard exists.

The trees are those common to northern latitudes, such as the ash-leafed maple, poplar, balm of Gilead, scrub-oak, elm, basswood, and ash, growing in the smaller ^{Trees} and more open groves and belts of the south, and the spruce, jack-pine, birch, and tamarack in the damper and deeper areas of the north. Few, if any, of these can be compared to the giants of the eastern and the western woods. Yet if we have not monarchs among trees, we have still a great timbered country (Fig. 73), though the length of time we shall be able to say this depends upon the interest our boys and girls take in our trees.

It is supposed that the earth in all the regions which have formed the homes of great populations, was, with very few exceptions, covered with a forest growth. That this was the case even in our prairie lands is evident from the remains of ancient forests preserved for us in the thousands of acres of coal fields of Assiniboia and Alberta. What causes led to the removal

Trees may be grown on the open plains

of the forests of the plains? No doubt, the Indian, the dry weather, and the lightning, all helped. The question we should be anxious about to-day is: Can these meadows be again clad with a covering of trees? Is such a covering needed to-day? If so, we are confident that trees can be made to grow where grass can find a foothold. Why should trees be grown, if grain pays better? While it is true

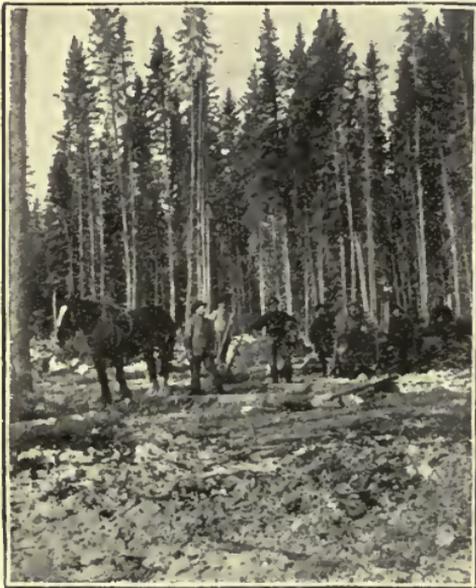


FIG. 73. — Spruce forest near Prince Albert.

that an acre of good grass land will nourish more animals than several acres of bush, still there are many areas that can never be expected to prove good farming-lands. Name some of these. Would it not be wiser to plant on such places (Fig. 74) trees that would continue to grow, and be of value to the land when once they were properly rooted? But we cannot hope to answer this properly

until we point out some of the features which people interested in forestry have discovered.

Wood is the source of much of our fuel. A timbered country near at hand means cheap heating, and a belt of trees on the farm is always a fine ^{Fuel} thing for the woodpile. Try to picture to yourself how we should fare if our forests were all destroyed.

Of the raw materials supplied by nature to be worked over by the art of man, one of the most useful is wood. Look about you and see if this is not true. No ^{How forests are wasted} matter how much we may use of brick, stone, glass, and iron, there will always be a vacant space left for timber, and timber is growing scarcer every year. The

woodman and the lumberman are both hard at work sorting over the trees of the present, for every tree that grows is not perfect for either wood or lumber. There is another agency at work, that pays no attention to the



FIG. 74. — Planting the seed of the ash-leaved maple at the Brandon experimental farm.

sorting. It sweeps up everything that stands in the way. This waster is fire, started sometimes by accident, but more often through carelessness. There are laws made to regulate the setting out of fires, but these laws are usually disregarded. In any case the best fire-guard a country

can possibly have is a people thoroughly in sympathy with the meaning and use of forests. These people would never set out a fire even to burn stubble without first seeing that sufficient assistance is at hand to control it.

But forests are valuable for other things besides fire-wood and lumber. They beautify our country and our homes (Figs. 75 and 76). They shelter the ground upon which they are placed. They also shelter the land to the leeward of them. The air in the bush is quiet even when a furious gale is blowing in the open. The high winds and drying of soil on the prairies

Shelter belts

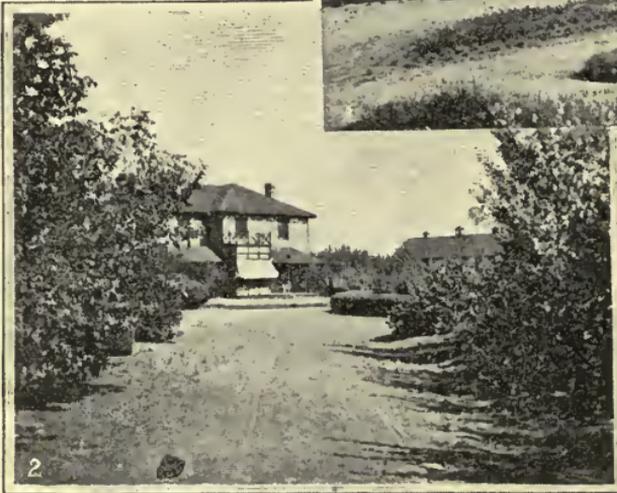


FIG. 75.

1. The residence of the director of the Indian Head experimental farm.

2. The same house five years later.

are due largely to the scantiness of the timber belts, and our wisest farmers are

trying to remedy this by planting wind-breaks or shelter-belts about their buildings (Fig. 76) and their

fields. Such a belt may be placed to screen the soil from a cold wind, but it is placed just as often along the south-west side of the farm to break the effects of the hot, dry wind that sometimes comes from this quarter. Timber belts also secure a better distribution of the snow over the ground by preventing the winds from sweeping it away from one spot and heaping it up in another.



FIG. 76. — A Manitoba home made beautiful by trees, shrubs, and flowers.

Again, how many of our

rivers and streams rise in the midst of a country forest-clad? Forests, as well as lakes, have a great deal to do with regulating the flow of water.

Streams and
forests

In the shade of the trees, the snow is protected from melting as fast as it does in the open grounds, and the water coming from the snow is held back by the tangle of roots, branches, logs, and leaves that cover the forest floor, and is made to go more slowly to the streams. In this way the lower grounds of the rivers are kept from being drowned, and the rivers themselves are prevented from running dry in the summer.

These are some of the things discovered regarding our forests. They are all worth pondering over, particularly when we remember that the timbered areas are the natural

shelter of our finest birds and our most useful fur-bearing animals. Can we afford to lose these by destroying that which protects them?

QUESTIONS.—Find out at home or from any other source whether the Canadian government has reserved any forest areas or not. Where are these situated? Is there any timber near your home? What is it used for? Is it disappearing? Can you see any way of making it last longer and yet of allowing it to be used? How? What wild fruits are found in your district? What vegetables are grown? Have any farmers in your locality tried to grow shelter-belts? Make a map of one farm having such a belt, and try to show why it was placed in that particular spot. Are you familiar with all the wild flowers mentioned in this chapter? Where would you find each? What is your favorite prairie flower? Why is this your favorite? Show how forests along streams will help to make those streams navigable. What forested country in the Canadian West is of service to our streams? State the value of forests and forest-belts to a country. Can you tell from the wild plants of a country what domestic plants would be likely to grow successfully? How? The growers of apples and plums find a shelter-belt placed at the south of the orchard a very excellent thing during the early spring; can you explain in what way? Pond-lilies in bloom are found in an arm of Great Bear Lake; roses are common in the lower Mackenzie valley: do these facts tell you anything of the summer climate of those regions? Would this knowledge be of any use to one who was debating whether he should settle there or not? Make a map showing the forest portion of the Canadian West.

CHAPTER XII

WILD ANIMAL LIFE

THE prairies, wooded areas, and barren grounds of the Canadian West have long been noted for the abundance of their animal life. In fact, there are but few regions anywhere which can be said to compare with this country as a home for fur-bearing animals.

Abundance of
animal life



FIG. 77. — Buffalo at St. James, Winnipeg.

What is there about the country that has made it so suitable to our kindred of the wild? Many things may account for this, but the chief reason lies in the fact that there is a variety of country. Our woodlands are more open than they are dense, and there is a happy mingling

of forests and prairies. The wild animals can, therefore, have in such an arrangement every chance for obtaining a range of food, and also a shelter to retire to in case of being pursued by an enemy.

Are you familiar with many of our commonest wild animals? Do you know those animals whose furs and whose



FIG. 78. — The beaver.

flesh have been sought after by the Indian, the Eskimo, and the fur-hunter? Would you like to spend a few minutes in getting acquainted with some of these animals, so that you may be in a better position to value animal life properly, and learn to understand a little

more of the surface, soil, and climate of this country?

We shall not stop to say as much as we should wish about the buffaloes (Fig. 5) that once dotted the prairie

The buffalo in countless herds, but are now found only in the national park at Banff, at St. James near Winnipeg (Fig. 77), and possibly in the quieter and more remote Peace River country. As one of our wild animals, the buffalo has practically disappeared. It is now too late to bemoan the fate of our

largest quadruped, whose extinction must surely have been a case of slaughter rather than one of fair sport; but when we remember that this is not the age of the bow and the arrow, but a time when the farthest and most hidden corners of the land are speedily reached by the modern hunter and his matchless rifle, we should all be anxious as to what will become of the remainder of our wild animal life. This is one of the problems that our boys and girls will have to settle for us, and they can settle it best for themselves and also for the wild creatures by spending a little time now in trying to get more familiar with the "ways of our wood folk."



FIG. 79. — The wolverine.

Toiling away unceasingly along our forest-bordered streams, but in the country far removed from the sounds of the busy settlement life, is our first Canadian lumberman, — the beaver (Fig. 78). In undisturbed solitude this animal builds his dam, makes his dome-shaped house, and cuts his food supply until frightened away by the advance of civilization, or removed without any thought by hunters and trappers who see in him

The beaver

only a beaver-skin and therefore a thing of value at the trading-post. We still have this very peaceful animal with us, but the remains of many old beaver-meadows scattered throughout the settled parts of the country show how fast he is disappearing. Only careful hunting will prevent the beaver from following the buffalo.



FIG. 80.—The polar bear.

The next animal we shall mention is the wolverine (Fig. 79), also known as the carcajou, or glutton. This animal seems very fond of the north country, where he makes himself a general nuisance by going along the trappers' miles of traps and removing the catch before the owners of the traps have had time to visit them. Those familiar with the wolverine describe him as being of about the size of a small bear, but possessing a somewhat bushy tail. The color of his fur is a darkish brown, banded by a lighter brown along the back and sides. There is no doubt that if the wolverine could be

exterminated the fur interests would not suffer any. Can you give any reason for preserving him?

Along the Arctic coast and among the many islands of this northern ocean, the polar, white, or ice bear (Fig. 80) is found. The food of this animal is obtained largely from the sea, and many a seal and many a fish caught have proved his skill as a hunter and a fisher. Indeed, in the animal world the polar

The white
and the
black bear

bear is looked upon as the monarch of the north. His greatest foes are the Eskimo, whom he provides with warm furs, good food, and the bone used for harpoons and spear-heads. In

the southern forests, along the border of the prairie, the more common black bear (Fig. 86) feeds upon the wild fruits, buds, and leaves. While the black bear is not to be trifled with, he is, as a rule, timid, prefer-



FIG. 81.—The musk-ox.

ring at any time to avoid rather than to meet a stranger.

In the "barren lands" between Hudson Bay and the Arctic, the musk-ox finds a home (Fig. 81). If you can imagine an animal about four feet in height, five or six feet in length, weighing, when full grown, between four hundred and six hundred pounds,

The
musk-ox

and with characteristics very much like those observed among sheep, you will have a fair idea of the musk-ox. The head of the musk-ox is large and is adorned by beautiful black-pointed horns. The body is covered with a thick coat of long brownish hair, and this is so matted and curled on the shoulders as to give the appearance of a hump. The legs are short and thick, but they can bring their little owner to the tops of the roughest hills in a very short time when danger is near.



FIG. 82. — A herd of caribou in the barren lands.

The musk-ox has chosen a cold, dreary, and barren home, but perhaps this home has its advantages. Can you mention any?

There are several species of deer said to inhabit the country between Hudson Bay and the Rockies, but the best known of these are the caribou and the moose.

In June and July the caribou are lean and their coats ragged. By August they have thrown away their tattered garments and donned glossy brown coats. From this time they go on adding flesh and becoming more handsome, until their winter coats of gray and white are

put on, when they become one of the noblest animals of the northern wilds. The caribou are of two kinds, namely, the "barren lands" caribou (Fig. 82) and the wood caribou; both of these names tell you plainly where these animals are to be found.

The caribou

Backwards and forwards over the wide stretches of this northern land the caribou range in their annual journeys, as if driven

by some power over which they have no control.

They are almost as much at home

in the water as on the land, and

the lake must be wide, or the river

rapid that proves too much for

their strength. As these animals

roam about in great herds in a

country where no game-laws

can protect them, and where hunger is often known, thousands are slain by the Indians and the Eskimo, who take advantage of their curiosity and want of suspicion.

While the moose and the wood caribou range over a great portion of the same country, the moose

The moose

(Fig. 83) prefers the more southern part of the forest region. This is a noble animal, and any form

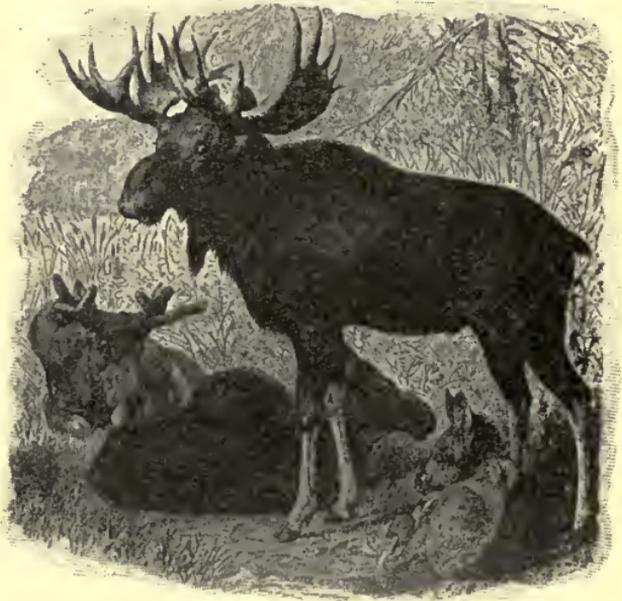


FIG. 83. — A moose family.

of honest hunting for him is full of the keenest interest. We would advise the boys and girls to make a study of



FIG. 84. — The wapiti.

any mounted moose-head that may happen to adorn the walls of any house in the district. Take a good look at the horns and try to explain how it is possible for this animal, with such a head-gear, to go crashing through the forest-tangle at a gallop.

Besides the deer already mentioned we have the wapiti, or as he is frequently called, the American stag (Fig. 84), an animal fond of the open woods and the forest borders. None of our deer bear more magnificent antlers than the wapiti, and many a stag has fallen a prey to the rifle only for the sake of the head that afterwards adorned the home of the sportsman.

Our wolves are of two classes, the smaller coyote (Fig. 85) and the larger and fiercer timber wolf which loves to hunt in packs and which has also no scruples about attacking animals smaller than himself.

The wapiti

The wolves

As the governments of Manitoba and the Territories have set prices on the heads of wolves, it would be an interest-



FIG. 85. — The coyote.

ing matter to make a study of one or both of these animals to find out why this has been done.

With the exception of the jumping deer and the gray lynx (Fig. 87), which hunt where rocks are most numerous, in the wooded country, and Smaller animals even on the open prairie, these are our largest wild animals. The smaller ones, including the badger (Fig. 87), skunk, foxes of many kinds, the smaller rabbit or American hare, jack-rabbit (Fig. 87), mink, muskrat (Fig. 87), squirrel, gopher (Fig. 86), and marten, should also be



FIG. 86. — The gopher.

known; so also should the porcupine, and the bat, toad, and frog. As the majority of these have found the prairies



FIG. 87.

and the smaller groves desirable homes, they are situated where you may learn to know them by a personal study, for it is only by making such a study that one learns how to place a proper value on the lives of all our animals.

QUESTIONS. — What are the common animals in your district? On what do they feed? Are they beneficial or injurious to the people? If so, how? What animals roam about in the winter as well as in the summer? What animals hibernate, and why? What animals remain in their dens in the winter, and how do they live? When are these animals first seen in the spring? Why are there both flesh-eating and herb-eating animals? What would happen were these to become out of proportion? What do you think of setting apart several thousand acres of wooded land as a preserve for our wild animals? Can you think of a better way to preserve them? What domestic animals are found on the farms about your home? How does the country seem to suit these animals? What is the wolf-bounty in your district? Do many hunters take advantage of it? How is the bounty paid? *Read Appendix C.* What do you mean by the "close season"? Which of the animals mentioned in this chapter is considered dangerous to human life? What reason have you for believing that this is a correct opinion? Have you ever known a clear case where a human life was taken by one of our wild animals, without that animal being first molested? Have you ever found or do you know of any person who has found any poisonous snakes in the country? If you were told that muskrats swarmed about the mouth of the Saskatchewan, could you infer what kind of surface this district has? If you knew the wild animals of a certain district, would you be able to tell whether that district would or would not make good farming-land? Are any wild animals protected by the government?

CHAPTER XIII

BIRD LIFE

FEW people are familiar with our birds. Indeed, it would seem that our knowledge of bears, wolves, and deer, scanty as it may be, is yet much wider than our knowledge



FIG. 88.—The eagle.

of the robin, the meadow-lark, and the wren.

Why is this? We believe it is because the lives of the wild animals are more easily understood than the lives of our

feathered friends. An animal will wait for you to study him, but one must learn how to go among the birds and thus find out their secrets.

Perhaps, too, we have seen food and clothing procured from our wild animals, but what is the value of our bird-life? There is only one way to answer this question and that is by learning to be so patient that we can sit still long enough to make the birds stop noticing us. We must learn to watch the birds if we would know them better.

We shall now mention a few of our common birds, those with which all boys and girls should be familiar, but before doing this we may say that the royal eagle (Fig. 88), the raven, that bird of deepest solitude, and the trumpeter swan (Fig. 89) are not total strangers to the country. Among our game birds we have the wild goose, duck, prairie-chicken,

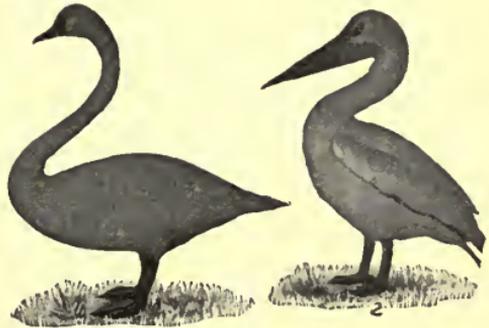


FIG. 89.

1. The swan.

2. The pelican.

sand-hill crane (Fig. 90), and Wilson's snipe (Fig. 91), all well known to the ordinary sportsman. The wild

geese (Fig. 92) are sure to be noticed as

Wild geese

they go "honking" northwards in the early days of April in their wishbone-shaped flocks to the marshes of the "barren lands" and the lower Mackenzie, where they build their nests and rear their broods. On returning in the fall these birds

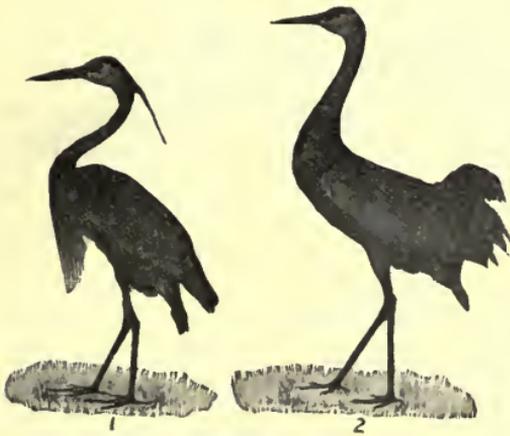


FIG. 90.

1. The great blue heron.

2. The sand-hill crane.

spend a few weeks among the wheat stubble before taking their longer flight to the south. Here many are shot as they pass to and fro from the smaller lakes to the wheat

fields, but a successful goose-shot is a rare person even in the West, where so many are skilful with the rifle. The hunters of the wild goose must first study the habits of the birds, not an easy matter by any means.

Ducks The wild duck, of which there are several varieties, raises its little family in the quieter sloughs and swamps of the prairie country. It is

a bird much sought after in the open season, and while true sport is always fair, there are doubtless many so-called sportsmen who have yet to learn that justice which man, the lord of creation, should show towards the lower animals. An hour or two spent in watching the wild duck and its family will be an hour or two well employed.

This is the only

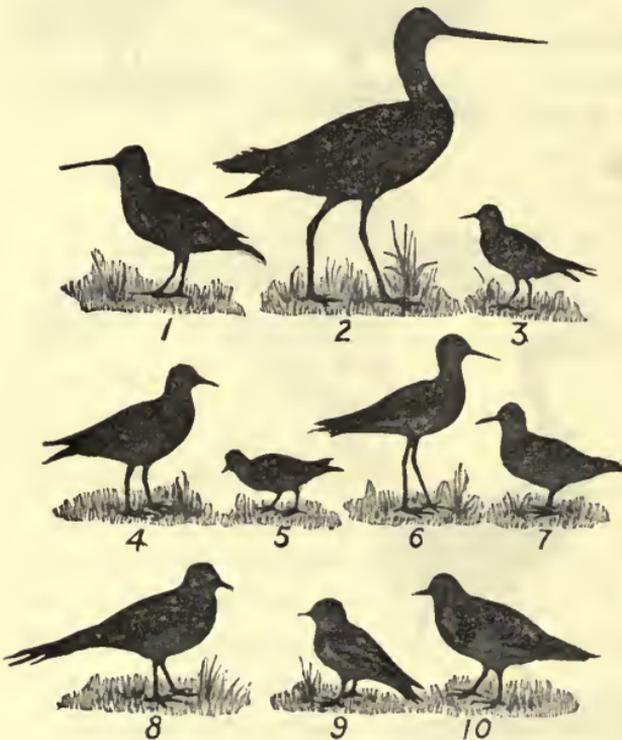


FIG. 91. — The waders.

1. Wilson's snipe. 2. The marbled godwit. 3. Baird's sandpiper. 4. Pectoral sandpiper. 5. Semi-palmated sandpiper. 6. Lesser yellowlegs. 7. Sanderling. 8. Killdeer. 9. Ringed plover. 10. Turnstone.

way in which we shall learn to know and appreciate the feathered creatures of the country.

The prairie-chickens are really the game birds of the Canadian West. They are found all the way across the country, and during the shooting season call out the best skill of the local sportsmen. The ^{Prairie-}chickens remain all the year with us. They can, therefore, be studied by the boys and girls, who may, in this way, learn to distinguish the various kinds. Figure 94 may help you.

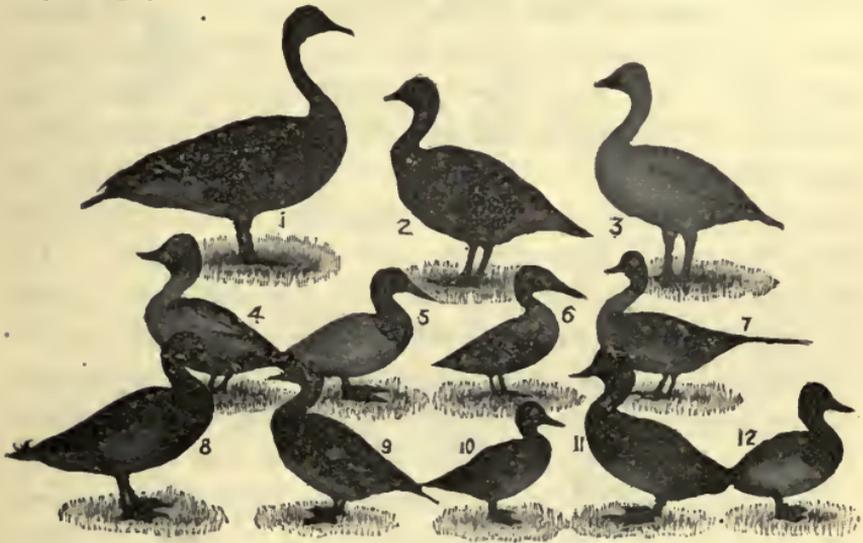


FIG. 92. — Geese and ducks.

1. Canada goose. 2. White-front goose. 3. Lesser snow-goose. 4. Whistler duck.
5. Canvas duck. 6. Shoveller. 7. Pin-tail. 8. Mallard. 9. Widgeon. 10. Gray-winged teal. 11. Red-head. 12. Lesser scaup duck.

Our common birds of prey are owls and hawks (Fig. 95), both of which are well enough known for purposes of recognition, but we all should study these birds a good deal, for they are often persecuted when they do not deserve to be. It is true that both may be guilty of paying a visit to the poultry yard. At the same time this may be but a trifling

Owls and
hawks

toll when we consider all the mice, gophers, and insects destroyed by these birds in the course of a season. Some owls and some hawks are without doubt worse than others, and because of the bad things done by these the whole family has been persecuted. This is not fair to the birds.

This brings us to a class of birds we are all trying to become more familiar with, namely, our song-birds (Fig. 93). How lonely this western country would be, in spite of its bustle, were it not enlivened by its thousands upon thousands of beautiful singing birds! Do you know many of these? Have you learned to imitate their songs? Do you know where each species nests? Have you ever wondered why the birds go south, and why, after becoming acquainted with the south, they should ever wish to return? The settlers from the lands across the sea are never weary of speaking about the wonderful songs of the lark and the nightingale. These are sweet singers, but there are singers in our groves to-day that do not come far short of them. What are a few of these, and where are they found?

We may begin by mentioning a bird that children everywhere have learned to look for as soon as the spring gives signs of its approach. This bird is the robin. This bird chooses its nesting place near our gardens. Here it carries on a great war with the insects which, if left undisturbed, would only too soon leave no garden. To our ears the robin's song may not be perfect, but such as it is, it is given with so much earnestness that we welcome it for itself and also because it is among our first spring songs.

The meadow-lark is a bird of the plains. Its nest is placed on the ground, while its highest perch is often only

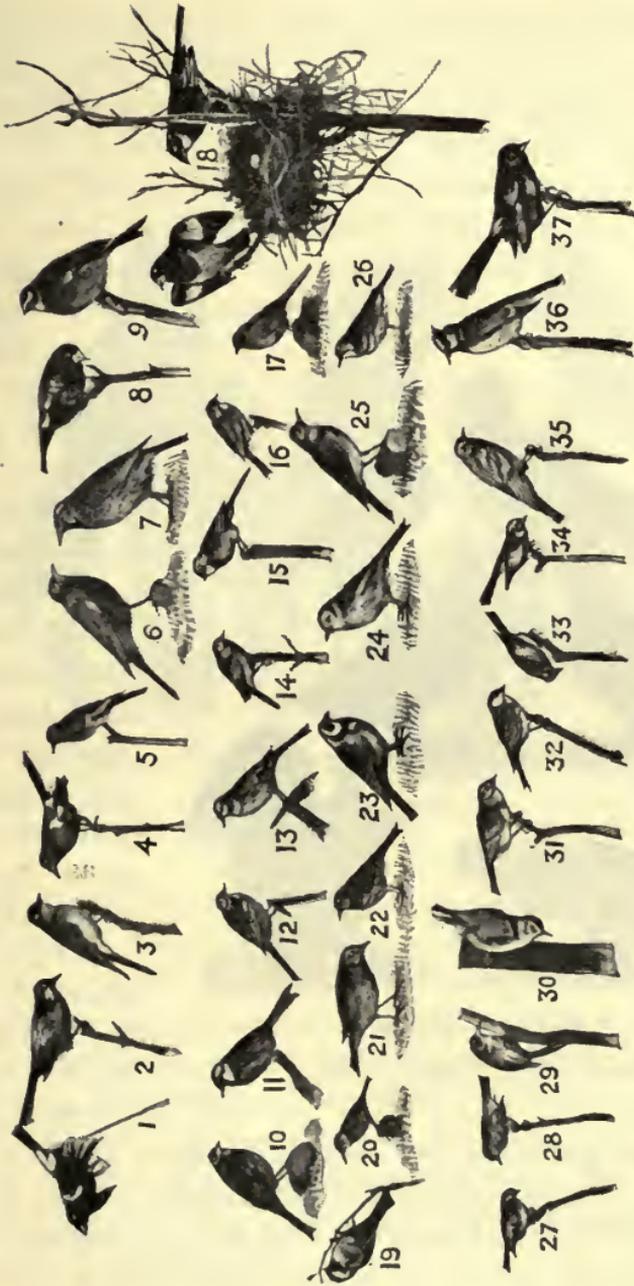


FIG. 93.—Song-birds. See page 238.

a fence post from which it pours out some of the sweetest bird music ever heard. Study this bird and you will learn to be its best protector, for it requires a protector.

Have you ever seen the busy, cheerful, and even pugnacious little house-wren about your house?

This little bird is fond of human society, and he will invite himself to your home if there is anything

in the shape of an old shoe, the skull of a cow, a box, or any other thing that will shelter him from that enemy of our birds, the domestic cat, and also from the English sparrow. Find what the wren does in return for your protection.

To the lover of nature, the beautiful color and cheery "clonk-ka-l-r-r-r-r" of

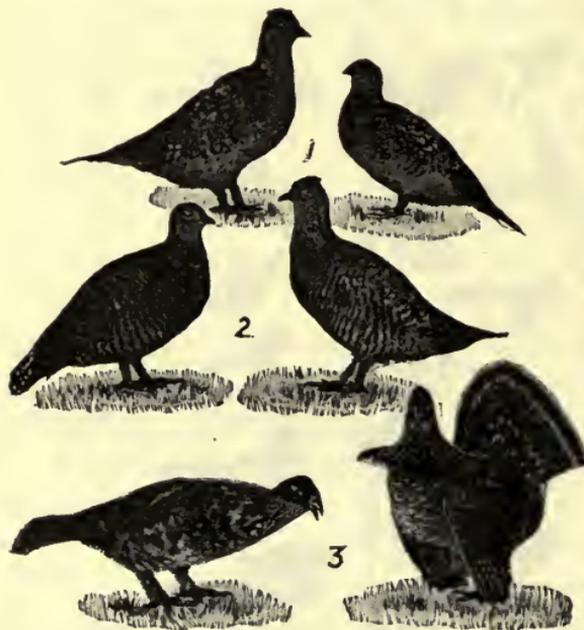


FIG. 94. — Grouse.

1. Sharp-tailed grouse. 2. Pinnated grouse. 3. Ruffed grouse or partridge.

the red-winged blackbird make it an object of the greatest interest. These birds appear in the early springtime and take up their quarters near the sloughs and marshes, where they build their nests, and chase dragon-flies and mosqui-

toes until the grain-fields invite them to a more solid food. In their scarlet and black velvet dresses these black birds are readily recognized wherever **Blackbird** seen, and distinguished from such other blackbirds as the yellow head and the rusty grackle.

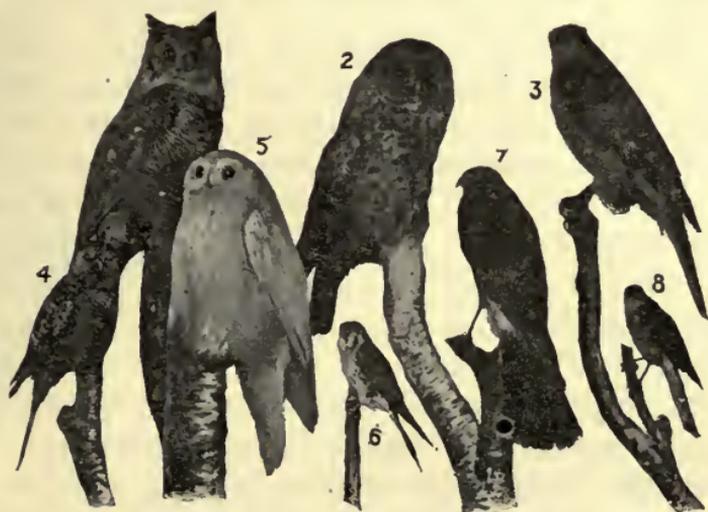


FIG. 95. — Owls and hawks.

1. Western horned owl. 2. Great gray owl. 3. Goshawk. 4. Hawk owl. 5. Snowy owl. 6. Sparrowhawk. 7. Marsh hawk. 8. Sharp-shinned hawk.

Brilliancy of plumage, sweetness of song, and food habits of the most valuable kind are some of the leading marks of the Baltimore oriole, a bird quite common wherever groves are found near the homes of men. **Oriole**

Its colors are black and orange-red, and its hanging nest and sweet song are known to every lover of this beautiful bird.

The rich song of the rose-breasted grosbeak **Grosbeak** may be heard in early summer rising from the centre of every grove. Here is a beautiful bird, one well worth our acquaintance.

Some of our commonest birds are the sparrows. We do not mean here the English sparrow, that nuisance of city and town life, but the native bird. Among these are the vesper sparrow, the white-throat, the white-crown, and the tree sparrow. The vesper sparrow sings in early morning and late evening. You may also know this bird by the white tailfeathers shown in flight. Listen for the bird that sings "Old Tom Peabody, Peabody," and you will be able to recognize our little white-throated sparrow. The tree sparrow arrives very early in the spring. You may wonder how it is that so small a creature is able to endure the rough weather, but watch him and you will learn the reason. You will find him hopping about the brush pile, and can make sure of him by the dull splash of red on his head. The white-crowned sparrow can be easily discovered by his mark after you have learned to know his other relatives. This bird and that sweet little songster, the song sparrow, will repay you well for any trouble you may take in making their acquaintance.

We have also the bobolink in the southern meadows, where the "spink, spank, spink," and the "chee, chee, chee" may be heard from this beautiful bird in black, white, and yellow attire.

We should like to mention also the graceful cat-bird, the happy chickadee, the fly-catcher, the warblers, and a host of other birds, but we can only refer you to Figure 93, with the hope that you will learn how to watch and to love the birds, for we have nothing in this great country half so interesting as our feathered friends, and none more beneficial. Try to do what you can to protect them from their many enemies.

QUESTIONS.—What birds stay all winter near your home? Why do these not go south? How are they able to get food and shelter during the coldest weather? What summer birds do you know? Have you the English sparrow in your town, village, or district? How does he behave towards the other birds? Have you seen him do any great service? Have you seen where he may do a good deal of harm? What birds have you found doing the greatest work among the insects? Have these birds any enemies? What are their enemies? Can you do anything towards protecting these birds? Have you done anything? Do you know whether the government has done anything in the way of protecting the birds? Why is this necessary? For what birds is there no open season? Can you name any birds that are not protected by law? Why is this? What birds are protected for stated periods each year? What is the penalty for killing a prairie-chicken during the close season? Are there any wild animals protected by law? Are the fish protected? What do you mean by the open season? Are you acquainted with the American coot or water-hen? Why has the pelican such a bill? Why has the killdeer long legs? What have you learned about the crow?

CHAPTER XIV

INDUSTRIES

Agriculture. — The work of tilling the soil and growing plants for the use of man and beast has always been looked upon as a noble occupation, and a source of much of the real wealth of the world. When man became a farmer of grains, he at that moment began to understand the meaning of “home”; for in the days when he followed his flocks and his herds from pasture to pasture, and from watering-place to watering-place, a tent and not a home could be his only shelter.

Grain farming has been for many years one of the chief Canadian industries, but it was not until the fertile fields of the great West were opened that the world learned to look towards Canada for a portion of its bread supply. We have here in the Canadian West one of the largest grain areas in the world. But the grain that has really made this land famous is the grain that the human family as a whole prizes most highly, namely, wheat. Now, before wheat or any other grain can be grown successfully, we must have certain conditions, namely, *a fertile soil, a favorable climate, a large area, good carrying facilities, and a good market.* Have we these? The general luxuriance of our vegetation, both on the second and third prairie levels, as well as in the

Conditions of
successful
grain-
growing

valley of the Red River, over many hundreds of miles, at heights varying from seven hundred to twenty-five hun-

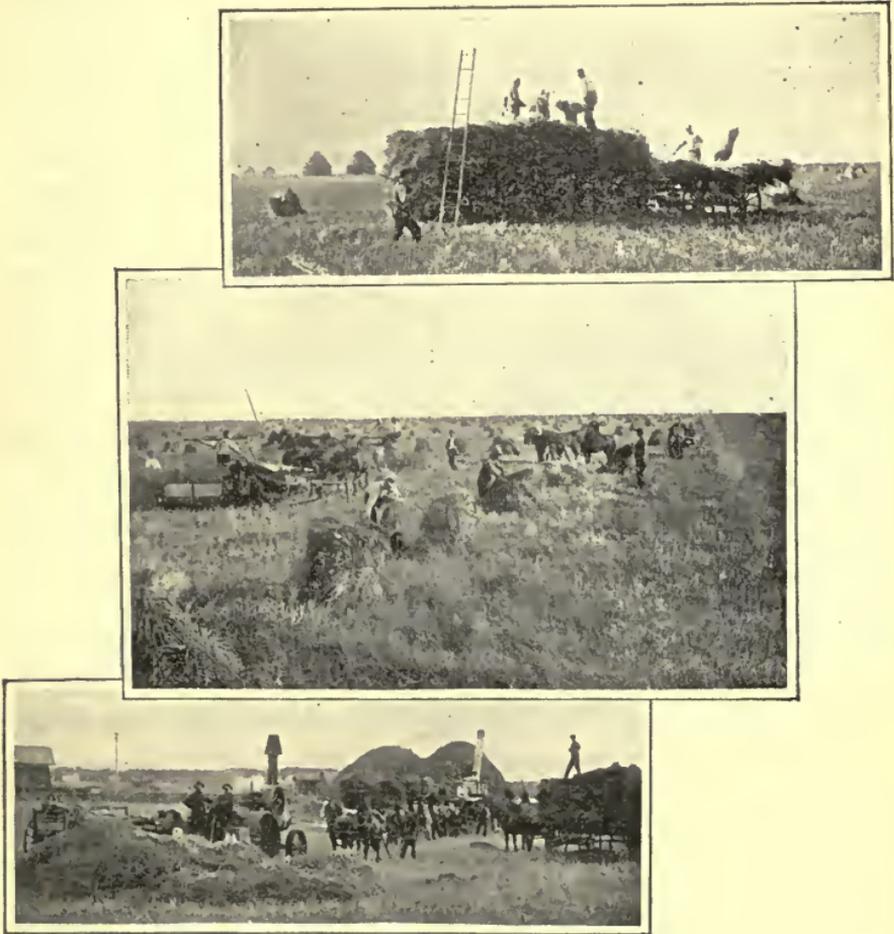


FIG. 96. — Harvest scenes in the West.

dred feet and higher, amply testify to the exceeding richness and fertility of the soil. Even on the hills and ridges, where for the most part lighter soils prevail, and which might not be suitable to cultivation,

Fertile soil

there is, with few exceptions, an abundant growth of the most nutritious grasses, on which all kinds of stock thrive admirably ; while in low-lying parts and swamp beds a supply of the finest hay can be readily secured for winter feeding in case of need. We surely then have a wonderfully rich soil. Have we a suitable climate ?

Our plant season is the season of abundant heat and sunlight. These, with a sufficient rainfall over the greater portion of the prairies, and a knowledge of the best time and manner of cultivating the fields, give us the very best conditions for the production of a wheat sample that, for color, hardness, and food qualities, has never been surpassed.

Have we a large area of wheat country ? No one can say at present just how many acres suitable to wheat-growing are to be found in the Canadian West, but this much may be said : we have probably the greatest belt of new wheat lands in the world, and this is being added to year by year by the discovery of large districts hitherto thought to be ill suited to grain-farming. We may safely conclude that the third condition of successful grain-growing is fulfilled. The question of transportation is considered in another chapter, but we can say that our great railway lines are adding miles of steel and dozens of new engines to their roads almost every year, that immense elevators (Fig. 97) are being built everywhere to store and ship the grain, and that a third railway line will, before many years, be using its engines and its cars to haul our grain to the market.

What becomes of the wheat after it leaves the farmers' hands ? It must first be graded before it leaves the West, and this grading is done at Winnipeg and at Fort William

Favorable
climates

Area and
transporta-
tion.

by government grain inspectors who sample each car lot and mark it according to its quality, as "Number One hard," "Number One Northern," etc. Several million bushels, of course, remain in the West to be ground into flour, and the remainder is shipped to Eastern Canada, or exported to Great Britain and to the United States. To-day our wheat is moving east-^{Market}wards; but who can say when a portion of it will also move towards the countries across the western ocean, to Japan and to China?

Before leaving this subject, let us ask why so many of our farmers grow wheat and only wheat? Is it



FIG. 97.—Grain elevators at Indian Head.

not because their lands are suited at present to this kind of farming? Could anything else pay them better, do you suppose? Are they not doing what has always been done in young countries, namely, making use of what nature has provided in greatest abundance? But will these farmers continue to grow the same thing year after year? The people who settled the Mississippi^{Mixed farming} valley grew at first nothing but wheat and corn, but, by and by, a farmer here and there added stock-raising, and now this region has built up the great city of Chicago, one of the largest stock markets in the world. In time,

what city or cities in the Canadian West will likely grow like Chicago?

The wheat belt commences a little east of the Red River, and stretches away westwards in an unbroken plain almost to the Rockies.

In the east this plain is narrow, but in the west it extends away to the north some two hundred or more miles

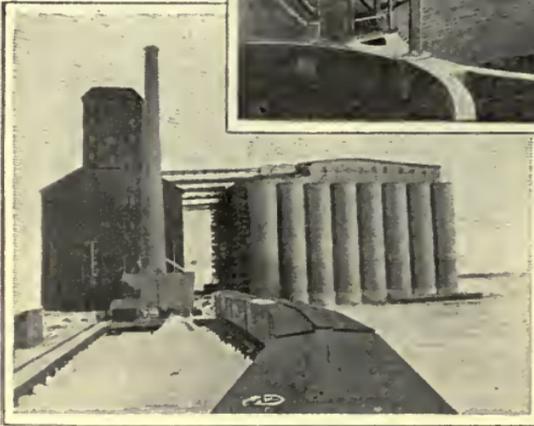
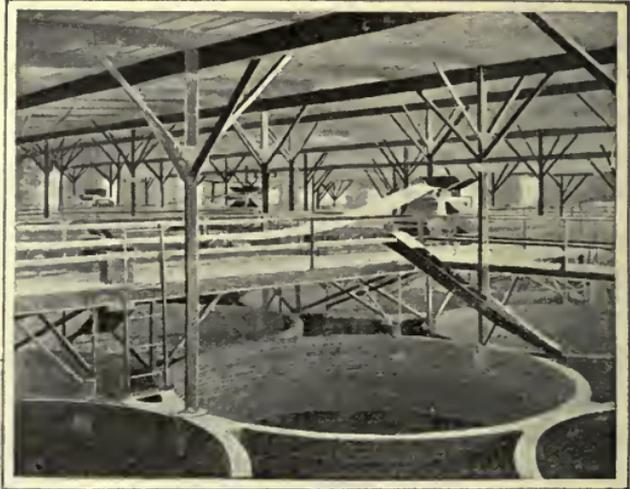


FIG. 98. — The Canadian Northern Railway Company tile elevator at Port Arthur on Lake Superior. The upper picture shows the immense tanks for holding the grain.

beyond Edmonton. Figures 42 and 50 will help you to understand this.

Wheat was grown to a small extent on the prairie soil long ago by those in the employ of the Hudson's

Bay Company. For the past thirty years it has been the main source of the country's progress. Year by year the number of acres given to wheat-growing has been rapidly increasing, and the yearly yield of wheat has risen from

a few hundred bushels to the enormous quantity of sixty-five million bushels. Have you any idea what this bulk of grain really means? How many cars would it require to carry it all away? How many freight boats on the Canadian Great Lakes would be needed? How many grains of wheat would there be in this quantity? Even if we were to find out the last of these, who could know the meaning of the number? Think of trying to sow so vast a field by hand! Think of trying to cut it with a sickle or to thresh it with a flail! Nothing but the widest of seeders, the largest of binders, and the biggest of threshing-machines are in keeping with the task. But can wheat be grown everywhere in the West; are all our lands wheat lands? What we have said regarding the surface, drainage, soil, and climate will help us here, for we have learned that great areas are unfit for farming operations of any kind, that many districts are too swampy, that others are covered with shifting sand-hills, or better adapted to the rearing of cattle, horses, and sheep. Taking away these districts, we have, suitable for agriculture, the greater part of the Red River valley, the Manitoban portion of the second level, eastern Assiniboia, parts of western Assiniboia, much of Saskatchewan, and great stretches of northern and southern Alberta (Fig. 99). In these districts can be seen extending for miles in every direction some of the finest wheat-fields of the world. In the month of July these fields are a sea of green; in the latter part of August, when harvesting is in full swing, they are a blaze of yellow; and throughout the fall months the smoke of the steam threshers may be seen on every hand.

Some districts better for stock than for grain

In the thirty or more years during which this country has

been open to settlement, only about seventy-five millions of acres of land have been taken up, and of this area only a very small fraction has been put into shape for wheat culture. Again, the acreage already taken is only about one-fourth of the arable land available for the settler. What will be the yield when the whole country is under cultivation? Canada then will be the "granary of the Empire." *See Appendix G.*

But wheat is not the only plant grown, although it may be the most valuable one. The soil and climate also suit the growing of oats, rye, peas, fodder corn, brome-grass on the drier highlands, timothy on the moister lowlands, and roots of all descriptions everywhere (Fig. 71). The grain lands of the Canadian West are indeed a rich heritage, a heritage that can never fail to prove a source of wealth and strength to the Dominion, and also to the mother country.

Ranching.—Have you ever tamed a bird, a gopher, or a squirrel? If so, you will know something of the joy of the man or the boy who first succeeded in conquering a wild horse. When this happened no one knows, but when it did take place, the tribe or race in possession of the secret of how to subdue the wild horse became stronger than its neighbors and was able to rise a step or two out of barbarism and towards civilization. It was the same, too, when the cow, the sheep, the dog, and the remainder of our domestic animals were taken from their native wild condition, and made to be the helpers and the companions of man.

We have removed far from those early times, but even to-day the work of raising horses, cattle, sheep, and hogs is closely connected with our farming industry. In

fact, it is considered a part of the farmer's business to increase the supply and make better the quality of these animals. When he is attending to this and is also a grower of grains, he is said to carry on what is called *mixed farming*. The majority of our western farmers



FIG. 100.—Horse ranges in Alberta.

farm after this fashion, but there are, in this young country, certain lands at too great a distance from the market town or village to permit of profitable mixed or grain farming. On these, cattle are raised instead of grain. There are other districts where the soil and climate are better suited to the rearing of cattle, horses, and sheep, than to the farming of grains, or to mixed farming

(Figs. 100 and 101). The districts particularly suited to stock-raising were at one time the favorite haunts of the buffalo. These lands extend from the foot-hills towards the Missouri Côteau, and from the boundary northwards, with Calgary, Lethbridge, Macleod, Medicine Hat, Maple Creek, and Battleford as ^{Great ranch-}ing centres



FIG. 101. — Cattle and sheep ranges.

centres, in other words, the country in which the great ranches of western Assiniboia and southern Alberta are situated.

The nearer the foot-hills, the warmer the wind. Hence, this territory possesses a much milder winter climate than the country east of the Missouri Côteau, so that cattle and horses can graze on the open plains all winter, — a feature of the greatest importance ^{Food and water}

to the rancher. Here, too, the prairies are covered in the early spring and summer by a short but thick growth of the sweet, juicy buffalo grass, which becomes withered later on, but being cured by nature, retains its nourishing qualities, — another fact of great value to the cattle men. Here also are many fine streams and springs where excellent water may be had without the trouble and expense of digging wells.

Now, the farmer of grains, or the man engaged in mixed farming, would find a section or so of land about as much as he could handle well, but the rancher can work with ease a whole township; in fact, he requires this area to give his cattle and his horses a wide enough range to make sure of a plentiful supply of grass and water.

A ranching country is, therefore, a sparsely settled country; but as the years go by and farms become more and more expensive, as they have always done in the past, it is altogether likely that the big ranching lands in many districts will be divided, and grain and mixed farming take their place. Ranching is an occupation that can be carried on only in a new country, and in the early days of that country.

But how can grain be grown with profit in a region where the rainfall is so slight? Irrigation ditches will be dug from the rivers and the lakes so as to bring any extra supply of water needed by the farms. To get this water on the land at the least expense the early settlers selected their farms near where the many streams of the country entered the valleys, and with ploughs and scrapers made little ditches to carry some of the water out upon the lands. In the irrigated country these channels are usually put in by large companies and the ditches are laid out

according to the slope of the land, so that a proper and not too great a fall for the water may be secured. There are now in southern Alberta ^{Irrigation} and in western Assiniboia, four hundred and seventy-five miles of such ditches, capable of supplying abundant moisture in the growing season and at the proper time to six hundred and twenty-two thousand five hundred and fifty acres of land, not otherwise well adapted to the growing of wheat, oats, barley, and roots, and this number will be increased rapidly as the country requires them.

If you have never visited a ranch, can you picture what it is like? Is it a farm beautifully kept, with fine buildings, lovely shade-trees, and the most complete of wire fences? Is it like the farm shown in Figure 76? It may be, but the chances are that all you would probably see on a well-managed ranch would be a small dwelling-house, a few rough stables, and a great prairie dotted with bunches of cattle, or cattle and horses, or horses, or sheep. Sometimes the owner of the ranch lives on and directs his farm. More often he places a trusty man in charge and visits his property occasionally to make certain that everything is satisfactory.

While the winters, as a rule, are favorable, yet severe storms rage over these treeless plains now and again. These are, indeed, trying times; for the cattle, drifting with the storm, may wander miles away, if they escape death by running against a barbed-wire fence or by trampling each other in some narrow valley where only a slight shelter is possible. These are the times when a wise and watchful cowboy can be of the greatest service. In what way?

In the springtime the general "round-up" takes place (Figs. 100 and 101), when all the cattle or horses wandering over the plains are gathered together in immense herds and sorted, so that each rancher may get his own. There is no more stirring scene than a cattle round-up, where half a dozen skilful cowboys ride among the bellowing and frightened animals to remove this, that, and the other beast.

How can the cowboys identify the cattle of several owners? Not by their color or the shapes of their horns. They know the cattle and horses by their mark or brand. In other words, the owner has placed his mark, written with a red-hot iron on the animal's flank (Fig. 102), and these marks are all carefully registered,



FIG. 102.—Branding cattle.

so that there is little chance for any counterfeiting. When the sorting has been completed, any mavericks, that is, unbranded animals, are

sometimes put up at auction and branded as soon as sold. This practice, however, is contrary to the laws of the North-West Territories, and is rapidly being given up.

What becomes of the stock raised on these immense pasture grounds? Before answering this, let us ask, How many head of cattle, horses, and sheep are cared for? Are you surprised to hear that the number is over a quarter of a million of cattle, twenty-five thousand horses, and about one hundred and twenty-five thousand sheep? Where are

these shipped to? A great many cattle and sheep are sent to the mining districts of British Columbia and the Yukon. Many more find their way to the western abattoirs or slaughter-houses, and the remainder are either supplied to farmers beginning stock-raising, or sent in long trains to the eastern and English ^{Markets} markets (Fig. 103), where they are in great demand. See *Appendix H*.



✓ FIG. 103. — The stock-yards at Dunmore.

Dairying. — In early times cows were milked only when out at pasture, and their owner made it usually a part of his business to bring them through the winter season on as little food as possible. These cows were also of no certain breed, and were therefore as highly valued for their flesh as for their milk. Now the dairy cow is as highly improved as the most perfect binder, violin, or steam-engine. In other words the present dairy cow is a milk machine (Fig. 104).

Not many years ago the old fashioned dasher-churn and

the wooden cheese-press were as common on the farm as the spinning-wheel and the weaving-loom of still earlier times. To-day nearly all the cheese is made in cheese-factories and much of the butter in the creameries, where improved processes and machinery, under expert supervision, produce butter and cheese of such high excellence as to command much higher prices in the open market than similar products gathered from the small farms. The improvements have not, however, all been made in the machinery.

The cheese
factory and
the creamery

vision, produce butter and cheese of such high excellence as to command much higher prices in the open market than similar products gathered from the small farms. The improvements have not, however, all been made in the machinery.



FIG. 104. — Milking-time on a dairy farm.

Cows have been imported from parts of Europe where they have long been carefully bred, and the breeding of stock has been continued in this country so as to

secure animals that should be able to turn their food into a larger and larger yield of rich milk, instead of placing it as flesh and fat upon their bodies. Among such animals are our Jerseys, Ayrshires, and Holsteins. If you do not know these, we would advise you to become acquainted with them as soon as you can, for much of the milk and the butter for the town and city boy and girl comes from one or other of these wonderful milk-makers.

Many farmers near the larger towns make a business of selling milk to town customers. When at a distance from such a market, the most of this milk is manufactured into cheese and butter, both of which may be sent long dis-

tances with profit. Creameries and cheese factories are therefore more or less numerous throughout the country, and will, as the population increases, become even more common.

Some districts are more favorably situated than others with respect to these industries (Fig. 99), but any settle-

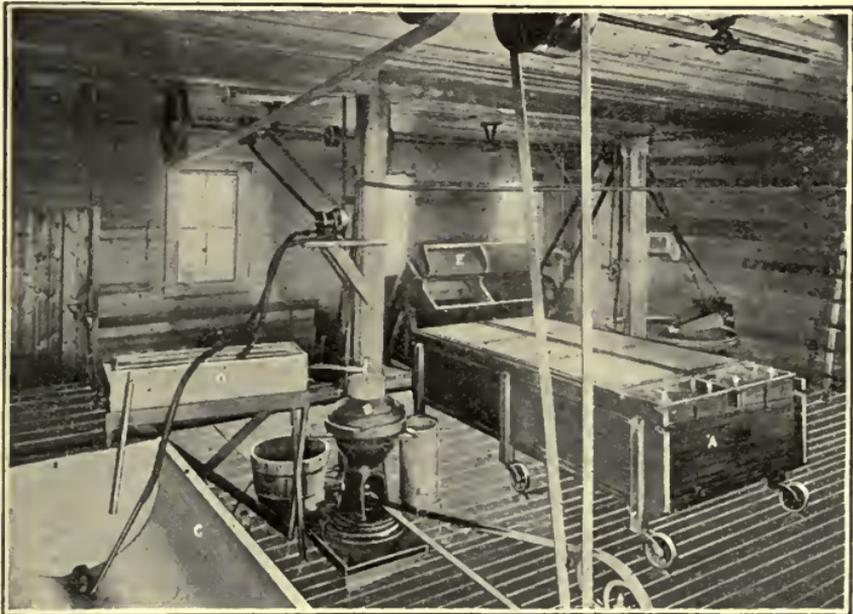


FIG. 105. — Interior of the government creamery at Wetaskiwin.

A. Milk tank. B. Cream separator. C. Skim-milk tank. D. Heater. E. Churn.

ment where good grass and a plentiful supply of pure water are found should make a successful dairying country.

In Manitoba, the government has established a Dairy School in the city of Winnipeg, and this has already proved of great benefit to the province, where about sixty creameries and cheese-factories are in operation. In the Territories the government has been equally active in pro-

moting these industries (Fig. 105), and both eastern and western Assiniboia, Saskatchewan, and northern Alberta have proved especially suitable to dairying. A large proportion of our western butter is sent to British Columbia and the Yukon, while some of it has even found a market across the western ocean. *See Appendix I.*

Pork-packing and Sheep-raising. — In the early days of the settlement, it was no unusual thing for dozens of thrifty wheat-growers to be entirely dependent for their supplies of bacon, and even of butter, upon the village grocery stores. But these days are only steps in the progress by which the original prairie soil is gradually converted into beautiful farms where domestic animals are raised, as well as crops of wheat, oats, and barley. As the country fills up and hired help is hard to get, the farmers will be drawn more and more to the raising of cattle, sheep, and hogs, and less and less to the work of growing hundreds of acres of wheat. Again, it is always possible that the grain will be frozen, or damp, or will be injured in some way that will reduce the price. What better way to change all this cheap material into an article that will always ship well and bring a good market price, than the raising of hogs?

As farmers are yearly paying greater attention to the raising of hogs, the natural result is the erection of pork-packing establishments in the cities and towns and a more general prosperity in the country. There is a considerable home market for dressed and cured pork, and also an excellent demand for it in the mining regions of British Columbia.

We have been told that the sheep of the ranches number about one hundred and twenty-five thousand, a very small

number when you consider the population of the country (Fig. 101). Does Western Canada care for mutton? Is wool-growing out of favor? The trouble is not in the country, for there is always an abundance of good pasture, and wholesome water in the summer, and plenty of cured grass for the winter season. Sheep-raising has not been encouraged, because grain, cattle, and hogs pay better. We believe that the near future will somewhat change this order of things; that sheep will be on almost every farm, and that factories devoted to the manufacture of cloth and other woollen goods will be more plentiful than they are at present. *See Appendix H.*

The Fur Trade. — The story of the Canadian West from the hour of its discovery until within a few years ago was largely the story of the fur trade, a story that is being continued to-day with great success on the more remote plains, woodlands, and unsettled regions of the north. While it is true that French and English traders sought for a portion of this wealth in the days preceding the coming of the "Great Company," still, it was the Hudson's Bay Company that actually placed the industry on a firm foundation. Shortly after obtaining the right to trade in Rupert's Land, in other words, the country drained by Hudson Bay and its tributaries, this company pushed its way into the wilderness. To-day the whole of the country is covered by scores of trading-posts, each of which is the natural centre of a fur-trading district, and all in touch with those points best located for receiving the raw furs for future shipment. Of the latter are Athabaska Landing and Edmonton, the great depots of the Mackenzie basin; Prince Albert and Battleford, the shipping points of the middle Saskatchewan and the country to the north;

of furs taken every year up the river to Fort Chipewyan (Fig. 18). Look at the dozens of Hudson's Bay Company posts dotting the map (Fig. 106), and you will then have some slight idea of the meaning of the fur industry. *See Appendix C.* In addition to the Hudson's Bay Company, there are many smaller companies and firms who are interested in the fur trade, and who carry on a very extensive business in the far north.

Lumbering. — A person living in Eastern Canada does not as a rule imagine the country west of the Great Lakes as one where lumbering may be carried on. The popular idea regarding this land is that it is a vast treeless prairie, covered, when cul-



FIG. 107. — Lumbering scenes.

1. Waiting for the break-up of the ice on the Little Saskatchewan.



2. Sawmill at Leduc.



3. A boom of logs on the Saskatchewan River.

tivated, with fields of waving grain. To the

north of the prairie belt, however, is an extensive forest country (Figs. 42 and 73) that has already contributed to the wants of the settler in fuel and lumber.

Sawmills employing a large number of men are situated in all the lumber districts communicating freely with the

leading centres by water or by rail. Some of these are found in eastern Manitoba, along the western side of Lake Winnipeg, in the Riding Mountains, along portions of the northern and middle Saskatchewan valley and elsewhere. Spruce is the timber used in all these mills, and in many towns planing factories complete what the sawmills have prepared (Fig. 197).

Besides lumbering, our timbered areas have to supply a great deal of our firewood, and it is quite a common thing for wood dealers to send whole armies of wood-cutters into the bush in early winter to get ready the annual supply of tamarack, jack-pine, poplar, oak, ash, and birch.

Quarrying. — The rock underlying the soil in the country north and north-east of the city of Winnipeg is lime-



FIG. 108. — A quarrying scene.

stone. This is worked extensively at Stonewall, Stony Mountain, and at Tyndall, and shipped east and west wherever it is needed (Fig. 108). As limestone occurs in layers, all that is necessary in quarrying is to pry these layers apart. This is done by drilling a hole

or several holes into the rock, and blowing it up by means of blasting powder. There are also valuable quarries of a gray sandstone, much prized as a building stone, near Calgary, Edmonton, and Macleod, in Alberta. This stone, when freshly quarried, is easily cut. On exposure to the air for some time it becomes as hard as flint. Besides

these building materials, there are, as you are no doubt already aware, a great abundance of granite boulders found almost everywhere. These are of great use in the foundations of barns, and the walls of private residences and business blocks. Indeed, in many towns and villages this building material takes the lead and adds much to the beauty of the buildings. From certain kinds of limestone we get our quicklime, from which mortar for plastering and for brick and stonework is made.



FIG. 109. — A lime kiln.

Broken limestone is dumped into the mouths of large stone furnaces (Fig. 109) and heated red hot, when it slowly changes into quicklime.

Brickmaking. — The first building material used in any new country is obtained from timber. When, in time, something more lasting is needed, bricks, instead of boards, are used. As towns grow, the making of bricks becomes more and more of an industry (Fig. 110). Bricks are made out of a special kind of clay, and this clay is found in great abundance from Ontario to the mountains. In certain places, too, pottery clay of an excellent quality is found, and the results have thus far been so gratifying that, before long, this industry will also be added.

Ice Harvesting. — Think of the long, hot summer season and its effect upon perishable fish, fruit, and meats. Think, too, of the carloads of these materials that have to cross the country, and you will be in a position to understand why it is necessary to have a supply of ice ready for summer use.



FIG. 110. — Brick yard at St. Boniface.

Ice is nature's gift to all who live in northern countries. There is no property in it, no ownership of it by any one until it has been marked off for cutting. Any one may do this

and own the ice, if he is only able to cut it. As soon, then, as the ice has reached a suitable thickness, preparations are at once made for its harvesting.

The field is carefully marked off, with a grooving machine drawn by a horse, into regular squares of a suitable size. Saws are then used, and as the blocks are separated they are seized by large pinchers, placed on sleighs and taken to the storehouses, where they are placed close together on their sides and left a few inches apart at their ends. In this way a crop costing nothing for the seed, and nothing for the ground, is harvested, and employment given to a large number of men during the year.

Coal Mining. — The country we have been picturing is well suited to the various kinds of farming. It can support great numbers of fur-bearing animals. It has

also valuable mines of building stone, and splendid areas of brick-clay; but has it coal? We have, it is said, fully sixty-five thousand square miles of coal-bearing lands. Commencing with south-western Manitoba, where there is a considerable area of inferior coal country, covering



FIG. 111. — Coal mine at Lethbridge.

south-eastern Assiniboia and extending to the Rockies, and northwards in a broad belt from the southern boundary of Alberta to the Peace River and even beyond, there are stretches of coal-bearing land of wonderful value (Fig. 111). Indeed, coal is procured so readily that in certain places in Alberta the rivers, by wearing their banks, have uncovered the seams (Fig. 112), and the residents of the neighborhood have only to drive to the

place, and load up all the coal they may need. Whenever coal is mined in great quantities, advantage is taken of all such cuttings, and the coal seams, if thick enough, are dug into from the valley or hillside. If this is not possible, shafts have to be sunk into the ground, until the seam is reached, when the coal is raised to the surface and loaded on the cars.

There are several varieties of coal found in the country, and these grade all the way from the lignite, or very soft

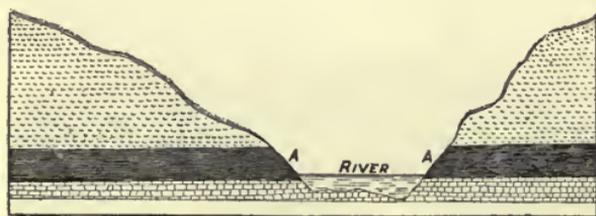


FIG. 112.

coal to the bituminous or harder coal, and even to the anthracite of the hardest variety. The first named is mined at Es-

tevan, Medicine Hat, and at Lethbridge; the second among the foot-hills nearest the Rockies; and the third at Anthracite, near Banff, and at Canmore in the same district. At Blairmore, in south-western Alberta, coke is being manufactured for the first time in the North-West Territories. *See Appendix J.*

Coal-oil and Salt. — These industries are only in their infancy, but there are abundant signs of a bountiful supply of coal-oil all the way along the foot-hills of the Rocky Mountains, from the boundary to the far north. Indeed, so vast are the oil-bearing lands believed to be, that many people think the day will yet come when this country will be able to supply the greater part of the continent with petroleum. Salt also has been discovered in several places, very promising springs being about

lakes Winnipegosis and Manitoba, and in the neighborhood of Fort Smith on the Slave River. At the latter place, several briny streamlets flow from the base of a ridge over a clay flat heavily sprinkled with an excellent sample of table salt.

Gold and Other Minerals.—Considerable quantities of gold are found in the sands and gravels of the northern Saskatchewan (Fig. 113) and Peace rivers and their tributaries, but as these waters cannot be worked in the winter season nor during high water, the returns have not been as large as we should expect. *See Appendix K.* Gypsum, the stone from which we procure plaster of Paris, is found in the neighborhood of Lake Manitoba, and on the north shore of Lake Athabaska, while iron has been discovered on Black Island, Lake Winnipeg, and in a few places in the North-West Territories.



FIG. 113.—Dredging for gold in the sands of the Saskatchewan River.

The Fisheries.—In the lakes and rivers of the Canadian West an abundance of fish is to be had. In fact the only waters in which fish are not found are some of the lakes without an outlet. These are of too alkaline a character to serve as a desirable home for our fish.

The most valuable fisheries are located in the lakes

forming the Manitoba system (Fig. 114), but there is every reason to believe that the waters of the Mackenzie and its group of large lakes will be able, at some later date, to add abundantly to the annual catch.

The principal fish caught in Manitoba and the North-West are the whitefish, trout, pickerel, pike or jack-fish, sturgeon, catfish, tullibee, perch, and certain coarser fish. In all about thirty million pounds of fish are caught



FIG. 114. — Fishing scenes on Lake Winnipeg.

1. The day's catch.

annually. Of this amount our most important fish, namely, whitefish, stands

first, forming one-third of the total weight caught. Only a small portion of this remains for home consumption, the balance being sent chiefly to the United States. See *Appendix L*. To secure this catch, over a score of large fishing-tugs, about one thousand boats, and over ten thousand nets and lines are employed, and about one hundred



2. A fishing village.

and fifty freezers and ice-houses are required to preserve the fish until shipment can be made.

How long can the fisheries stand this heavy fishing? Not long, if every person were allowed to fish in any way and at any time he pleased. Severe rules are imposed, and fishing inspectors make every effort to carry out these rules. Again, the government fish hatchery at West Selkirk tries to prevent the supply from giving out, by placing millions of young fry in the best fish waters every year.

Market Gardening. — This is an industry peculiar to the conditions found in towns and cities where the land is usually so valuable that the ordinary householder cannot afford to devote much of his small lot to the garden where the vegetables for the family table may be grown. Again, many people do not own land and many more have not the time to devote to this industry even had they the land. How are all these people, then, to be provided with their daily allowance of potatoes, cabbage, beets, onions, corn, parsnips, pease, celery, radishes, carrots, cauliflowers, etc. (Fig. 71)? This is the business of the market-gardener who looks after his customers as attentively as the baker or the milkman attends to his. The gardens are located near the town or city in order that a convenient market may be found, and also to furnish an article as nearly like the home-grown product as it is possible to be. The planting, cultivating, watering, weeding, gathering, and distributing, accompanying this industry, give employment to many persons during the entire summer season.

Manufacturing. — While this is mainly an agricultural country, there are evidences on every side showing that manufacturing may yet be carried on to a considerable extent. There are numerous fields of coal between Mani-

toba and the Rocky Mountains (Fig. 99). This coal may be carried to any part of the country by water or by rail. There are numerous streams also, with rapids sufficient to

drive all the machinery needed. All these are at hand waiting for the day when the country will require them. As yet there are no districts like the great manufacturing centres of Great Britain and the United States, devoted entirely to the making of special



FIG. 115. — Flour mill at Portage la Prairie.

lines, as for example, woollens, cottons, cloths, boots, and shoes. Our manufacturing, so far, has arisen simply from the needs of the farm and the city. We have flour mills in every large village and town (Fig. 115). These not only supply the local need, but ship flour to Eastern Canada, the United States, Great Britain, and to South Africa.

In a few places, for example at Winnipeg and Brandon, shops where threshing-machines, engines, and farming implements are manufactured,



FIG. 116.—Binder-twine factory at Brandon.

are doing an increasing business. At Brandon there is also a large factory where binder-twine is made (Fig. 116),

and at Raymond, in southern Alberta, a beet-sugar factory (Fig. 117), capable of working over four hundred tons of roots each day, is now in operation.

Look about your village, town, city, or district and note the various building materials used. Among these you may find Portland cement. Where does this come from and what is its value? For a long time we had to go abroad for this cement, but now we have works at Miami,



FIG. 117. — Beet-sugar factory at Raymond.

Manitoba, engaged in manufacturing an excellent sample, and lately a magnificent deposit of marl was discovered in the Pembina Mountains, about twelve miles south of Morden. Since this discovery, the hill (Fig. 118) has been carefully examined, and the marl severely tested by experts, and both the examination and the test have proved so highly satisfactory that a company has been formed to manufacture cement. Immense buildings provided with the best machinery will be built at Morden, and a spur of the Pembina Mountain branch will be laid so as

to connect the works with the mountain. At the mountain steam-shovels will load the cars, which will then convey the material to the manufactory, where it will be changed into the Portland cement of trade at the rate of one



FIG. 118. — Marl deposit in Pembina Mountains near Morden.

thousand barrels a day. This product will then be shipped by rail to all parts of the country, to be built into the walls of houses, floors of cellars, culverts, etc.

These are only a few signs of the times, but they show what may be attempted as

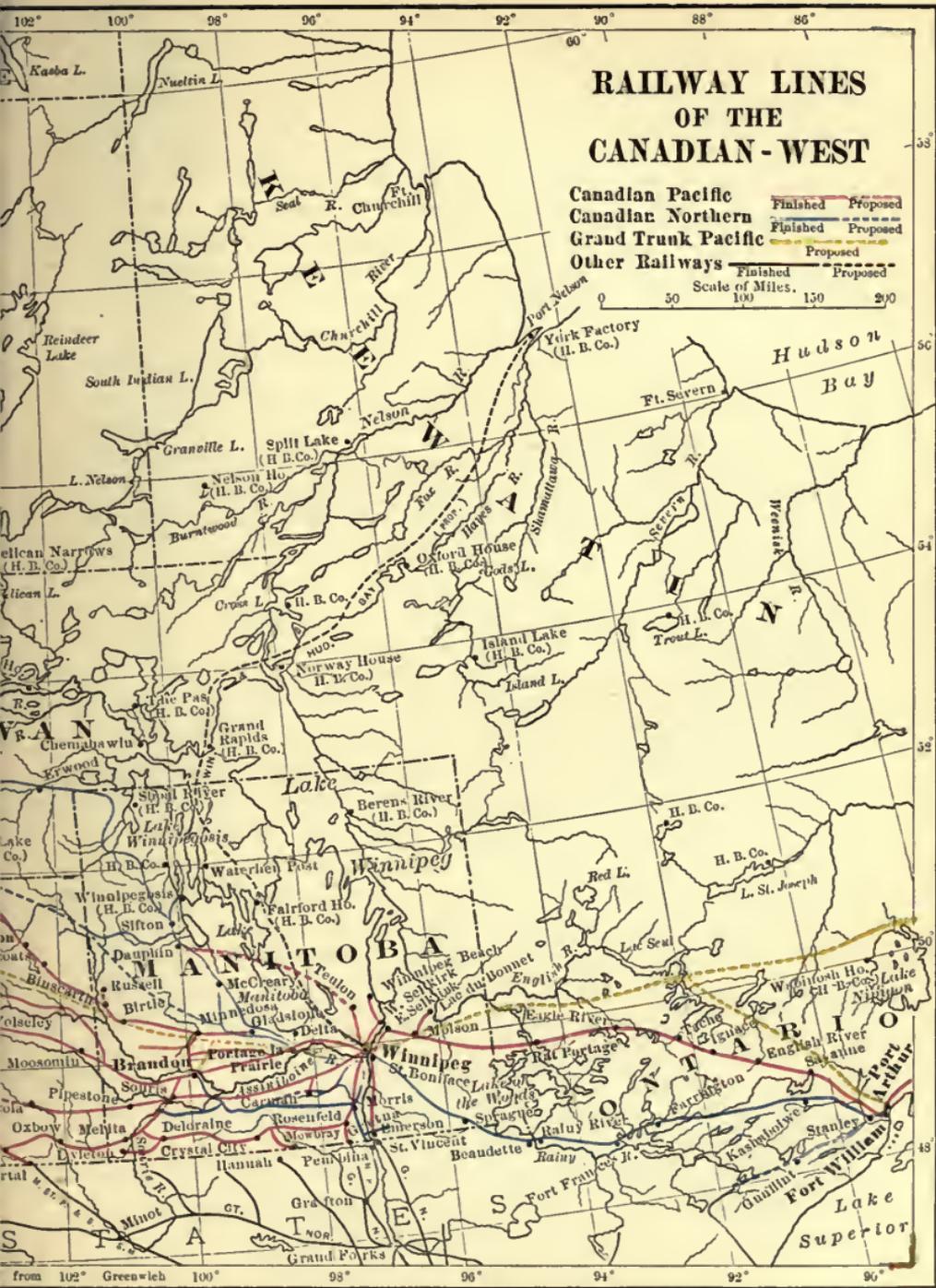
the country increases in population and in wealth, and as our coal mines and water-power are brought into more general use.

QUESTIONS. — Why is grain farming more common in the eastern part of the Canadian West than in the western part? Show where the drill is better than hand sowing, the binder better than the cradle, and the threshing-machine better than the flail. Compare farming on the lowlands with farming on the highlands. Show in what way a farming life is better than a city life. When does the wheat-harvest open? What have the elevators at Fort William and Port Arthur to do with our wheat? What kinds of wheat are grown? Where is fall wheat grown? Why can fall wheat not be successfully grown in Manitoba? When is the grain sown? When cut? When threshed? Find out the wheat-yield of Manitoba and the Territories during this



WORKS, BUFFALO.

Longitude



RAILWAY LINES OF THE CANADIAN - WEST

Canadian Pacific		Finished		Proposed
Canadian Northern		Finished		Proposed
Grand Trunk Pacific		Finished		Proposed
Other Railways		Finished		Proposed

Scale of Miles. 0 50 100 150 200

year. Where is our wheat sent to? Is it sent as grain or as flour? What is a ranch? Do you live on or near such a farm? What will become of the ranches as the country becomes more settled? What people living in Manitoba may carry on a ranching occupation? Why is ranching followed so much in southern Alberta? Where are the cattle of the ranches sent? Is the country where you live adapted to sheep? What are some of the drawbacks in raising sheep? Are hogs raised? Poultry? What are your nearest markets for these? What do you mean by irrigation? When is irrigation used? Make a map showing how a southern Alberta farm may be supplied with water from a stream. Are there any cheese factories or creameries near your home? Make a map showing the locations of these. Are these under the government or are they private concerns? Have you ever visited any of them? What did you see? What is done with the products? Where are the milk and cream procured? How are these taken to the factory or creamery? If you live in the country, do your parents make butter? Have they any to sell? To whom is it sold? What kind of cows do you keep? Where do they pasture? What water do they drink? Will Alberta be a good dairying district? Why? Will Saskatchewan? Why? Locate any brickyard near you. Give any reason for the selection of this yard. What is mortar? From what you know of our industries, what can you tell of our imports? What is the leading industry of the country? Why is this the leading industry? Make a map of the Canadian West and insert the various products of each great region. Are iron, gold, and natural gas found? Where? How is the gold obtained? Make a map showing the coal fields, oil regions, and quarries. What hard work can coal do for us? What kind of coal burns with a good deal of smoke and flame? What kind gives out great heat and little blaze? Where are the best lands for cattle farming? For grain farming? Why are these the best? Would it be wise to place whitefish spawn in a lake where pike were common? Give reasons. Locate the Pembina Mountains. What is the value of Portland cement? How is it to be manufactured? How will this help the town of Morden? Why were not the works placed at the mountain? What foundries are near your home? What are made in them? What other manufactories is the country ready or about ready to support?

CHAPTER XV

HOW OUR PRODUCTS ARE CARRIED

HOWEVER desirable the conditions of climate, these are of no value for agricultural purposes unless the soil is fertile, and unless, too, there is a large area of fertility; for



FIG. 120. — York boat used by the early fur traders and explorers.

productiveness is of little account if the product cannot be marketed, and it is only when there is a bountiful product that facilities for marketing can be provided.

All our boys and girls should know by this time what the resources of the Canadian West are; all should under-

stand that grain and cattle will always form our heaviest and most valuable shipments. Still we must remember

Exports and imports

that we have other things: lumber, fish, coal, cordwood, building-stone, lime, dairy products, and many other materials that must be moved from their several localities to other places. Again, we must take into consideration that the country, kind as it is, cannot supply all our wants, and that many things must be im-

ported, that is, brought into the country, to help us to live more comfortably. In other words we must bear in mind that while train loads of cattle, grain, fish, etc., are moving eastwards and westwards, carrying our produce to market, other loads of furniture, groceries, dry goods, boots and shoes, hardware, machinery, etc., are coming into the country. *See Appendix M.*

Next in importance to having a thing to sell is to have the means of getting that thing to the buyer. This demands that we must have a rapid, easy, and cheap method for the carriage of our goods backwards and forwards. What means of transportation have we? Can these be improved?

In the early days advantage was taken of the natural ways, namely, the rivers and the lakes.

Canoes and boats on the rivers (Figs. 120 and 121), dog-sleighs and wagons (Fig. 122) on the land, and a few British ships once a year in Hudson Bay, were all that were needed to carry a product that could never bulk much, nor weigh much, however successful the year's hunting and trapping might have been. Why are not our rivers used more than they are for the carriage of our forest and our farm products? The answer is found in the nature of the rivers them-



FIG. 121. — Sailing barge and birch-bark canoe on the Lesser Slave Lake.

Early transportation

selves, and also in the fact that the country has not yet grown large enough to make the placing of many boats on its streams a pressing necessity.

The Mackenzie, though navigable for the greater part of its length, is free from ice but a few months each year. Besides, it flows northwards into a sea that has never been

Navigable
rivers

counted safe enough for our shipping. Still,

the Mackenzie has been used as a waterway for many years (Fig. 123), and will be more used as the country develops and the value of this basin becomes

better known.

There are only two dangerous places in the whole river, and both may be overcome by short lines of railway built



FIG. 122. — Freighters leaving Prince Albert.

along the Grand Rapids of the Athabaska, and the Slave River Rapids. The Saskatchewan, too, is already navigable in long stretches, and it can be made more so, should the country demand it. The main difficulties lie in the rapids near its mouth, in the character of its outlet, the Nelson River, and in the length of time Hudson Bay, and more particularly, Hudson Strait, are open to navigation each year. The rapids are at present overcome by a tramway (Fig. 36); the Nelson is navigable in stretches, and the bay and strait have been used for upwards of two hundred years by the vessels of the Hudson's Bay Company. This matter of a railway from Winnipeg to Hudson Bay is much talked of to-day, and

indeed surveyors, sent out by the Canadian Northern Railway Company are already at work on the line; but the future will have to prove whether it is workable or not. There is no doubt, however, that the rivers capable of carrying boats will be used more and more as the



1. The steamer "Grahame" on the Athabaska River.



2. Carts on portage around the rapids of the Slave River.



3. Scow running the rapids on Slave River.

business of creases. This seen in the to bring the peg shipping Winnipeg by in the Red rapids of St.

FIG. 123.—Transportation in the far North.

the West in- is already effort made Lake Winni- to the city of puttinglocks River at the Andrews, —

a work that will be completed in a few years.

Except in the northern country where the dog-sleighs (Fig. 124) are still a necessity, railways are our chief mode of transportation; and when we remember how young this part of the country really is, we cannot help coming to the conclusion that our railways, over- worked as they no doubt are at certain seasons of the

The railways

year, have yet been built as rapidly as the country needed them. Place the old conditions with the horse, ox, Red



FIG. 124. — Coming in from the North.

River cart (Fig. 125), the river freighter (Fig. 126), and the home-made ferry (Fig. 127), beside our modern rapid travelling, with its

comfortable cars (Fig. 128), firm roadbed, and steel bridges, and you will see just how fast we have been going ahead.

While railways are very valuable for all long-distance carriage, we must not forget that good country roads are also a necessity. In what way? Bad roads are among the greatest drawbacks to country life;

by the want of good roads the farmer suffers more than any other person. Districts where good highways have been built are richer, more prosperous, more thickly settled; while those not possessing these

advantages are still at a standstill or are growing poorer and poorer. Good roads, like good streets, make living

Good roads



FIG. 125. — Red River cart.

along them more desirable; they save time in the transportation of goods, they lessen the wear and tear of horses, harness, and wagons, and increase the value of the land. These are some of the values of good roads; perhaps you can mention others.

Now, our great market lies to the east; and we are placed in touch with it by means of the Canadian Pacific, the Canadian Northern, the Great Lakes, and the lines of railway entering from the United States. All boys and girls should know something of our main lines and their largest branches. This much is expected of every intelligent person to-day.

In our description of the railways we expect

Figure 119 and *Appendix N* to be consulted at every stage. Let us begin with the Canadian Pacific Railway, or, as we know it best, the C. P. R. This road enters Manitoba from Ontario and runs a little north-westwards towards the Red River. At East Selkirk it turns sharply southwards to Winnipeg. Leaving the "Gateway of the West," the Canadian Pacific keeps to the north of the Assiniboine, passing through Portage la Prairie, Macgregor, Carberry, and crosses to the south



FIG. 126. — A Red River freighter.

The Canadian
Pacific
Railway

side of the river at Brandon. It then continues westwards through Virden, enters the North-West Territories, and passing through Moosomin, Broadview, Indian Head, Regina, Moose Jaw, Swift Current, Maple Creek, Medicine Hat, Calgary, and Banff, enters the Rockies through the Kicking Horse Pass.



FIG. 127. — A home-made ferry.

No sooner was the main line open to traffic than little villages and towns sprang up like magic, and settlements were formed farther and farther away from the railway. This increase of population demanded extra additions to the means of carriage. Branch lines were therefore built north and south

from Winnipeg, Portage la Prairie, Macgregor, Brandon, Kirkella, Regina, Medicine Hat, and Calgary, to keep pace with the development of the country. These branches are being extended from year to year, and new branches added to meet the country's needs.

The other great railway system is the Canadian Northern, or C. N. R. The eastern end, or terminus of this road is at Port Arthur on Lake Superior (Fig. 98).

The Canadian
Northern
Railway

This line passes through Winnipeg, Portage la Prairie, Gladstone, and Dauphin. At the Gilbert Plains junction, a few miles north of Dauphin, the main road turns westwards, and after passing through the

main road turns westwards, and after passing through the

Gilbert Plains country and by the town of Grand View, enters the Saskatchewan valley through the gap between the Riding and the Duck Mountains. It is the intention to continue the Canadian Northern in the direction of Saskatoon, Battleford, and Edmonton, and finally through the Rockies to a point on the Pacific far north of Vancouver, the western end of the Canadian Pacific Railway. From the Gilbert Plains station an important branch, with a spur to Winnipegosis, on Lake Winnipegosis (Fig. 129),



FIG. 128. — A modern railway train.

follows the eastern side of the Duck Mountains and the Porcupine Hills to the northern boundary of the province, where it turns sharply to the west with a view to reaching Prince Albert.

The main feeder of the Canadian Northern Railway to the south is what was at one time called the Brandon-Morris branch of the Northern Pacific Railway. This branch runs to Winnipeg, Brandon, and Hartney, and, like the Canadian Pacific Railway, connects with the lines from the United States.

Have we in these lines sufficient means of carriage? This is the very question which Canada as a whole is

thinking about to-day, and some persons have even gone so far as to say that by 1911, when the next census will be taken, there will be in the Canadian West over a million people, over one hundred and fifty million bushels of wheat grown, and over two million head of cattle on the farms and ranches. To meet, therefore, present difficulties and also to provide for the future, our railways are

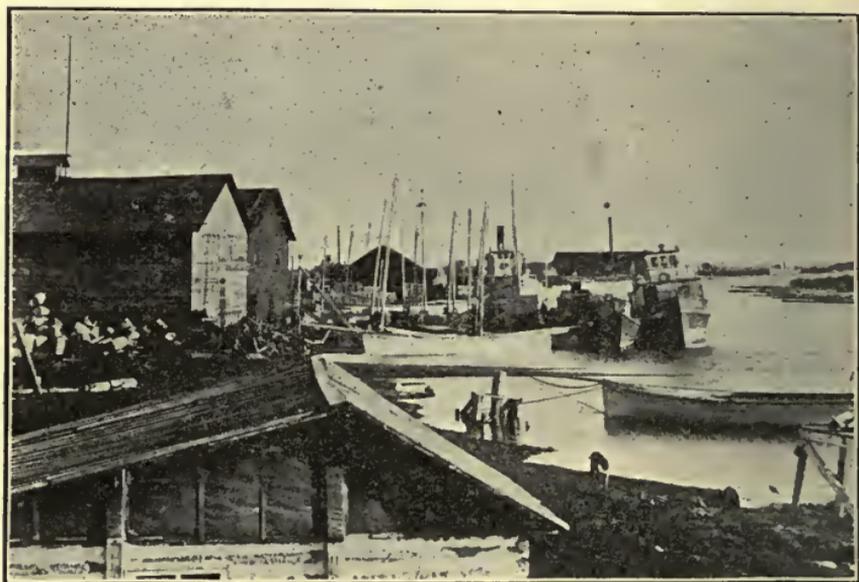


FIG. 129. — Winnipegosis harbor.

being pushed out into regions unsettled a few years ago, and in addition to the trunk lines already mentioned there is another likely to be laid down before many years have passed. This is the Grand Trunk Pacific, and it is purposed to build this line, for the greater part, north of the existing Canadian railways, but connecting the Atlantic and Pacific oceans and passing through Winnipeg, Prince Albert, and Edmonton.

The Grand
Trunk
Pacific

It will, therefore, be wise for us to follow the building of this new Canadian transcontinental road, that we may observe how closely the welfare of the country is wrapped up in its means of transportation.

QUESTIONS. — Make a map of Manitoba and the Territories and show the main lines of the two great railway systems. Place on each the principal centres. Give reasons why each centre has been so located. Do the settlements follow the railways, or the railways follow the settlements? Show in what ways both are benefited. Had the Canadian Pacific crossed the Red River at Selkirk, would this have affected Winnipeg? In what way is Winnipeg naturally situated? Why has the Canadian Pacific in Manitoba followed the direction of the Assiniboine? Why was the first great railway placed so near the south of the Canadian West? What materials will be shipped at the greater centres marked on your railway map? What goods will be imported at these points? What means of transportation are there in your part of the country? What is the condition of the country roads? Whose business is it to take care of them? Locate where your building material and fuel are procured. Describe the first wagon roads used. Why were these abandoned? What use is made of the river nearest to your home? Why do so many railways run from Portage la Prairie? Why does a line run from Molson to Lac du Bonnet? From Regina to Prince Albert? From Calgary to Edmonton? From Dunmore to the Crow's Nest? What is the largest town near your home? How do you reach it? How long will it take you to journey from your home to Winnipeg, Edmonton, Macleod? How would you reach these places by rail? Are our railways in connection with the roads from the United States? Where? What advantage is this? How does the slope of the Canadian West assist the transportation of produce to the east? Can you tell why the Canadian Pacific was built in the first place? Have you heard of the Grand Trunk Pacific Railway? Where is it to be placed? What will be its value to the country? Show that this road will be superior to more southern lines as a short route between Europe and Japan; as a military road. *See Appendix N.* Why should the Grand Trunk Pacific be built to the north of the two other

trunk lines? Why is it better to ship grain by the lakes rather than by rail? Where do we get our binder-twine, binders, boots and shoes, harness, wagons, sleighs, spades, rakes, hoes, lumber, gloves, cottons, woollens, sewing-machines, chairs, tables, steam threshing-machines, wash-tubs, stoves, lawn-mowers, wire fencing, apples, pears, oatmeal, flour, silverware? Make a list of twelve things needed at home and made in the country. Make another list of twelve things used in connection with city, town, or country life not produced in the country.

MANITOBA AND NORTH-WEST TERRITORIES



118° 116° 114° 112° 110° Longitude 108° West

101° 102° 100° 98° 96° 94° 92°

Cities with over 25,000: **Winnipeg**

Cities with 5,000 to 25,000: **Brandon**

Cities and towns with 2,000 to 5,000: **Regina**

Towns with 1,000 to 2,000: **Neepawa**

Smaller Places: **Dunmore**

IES.

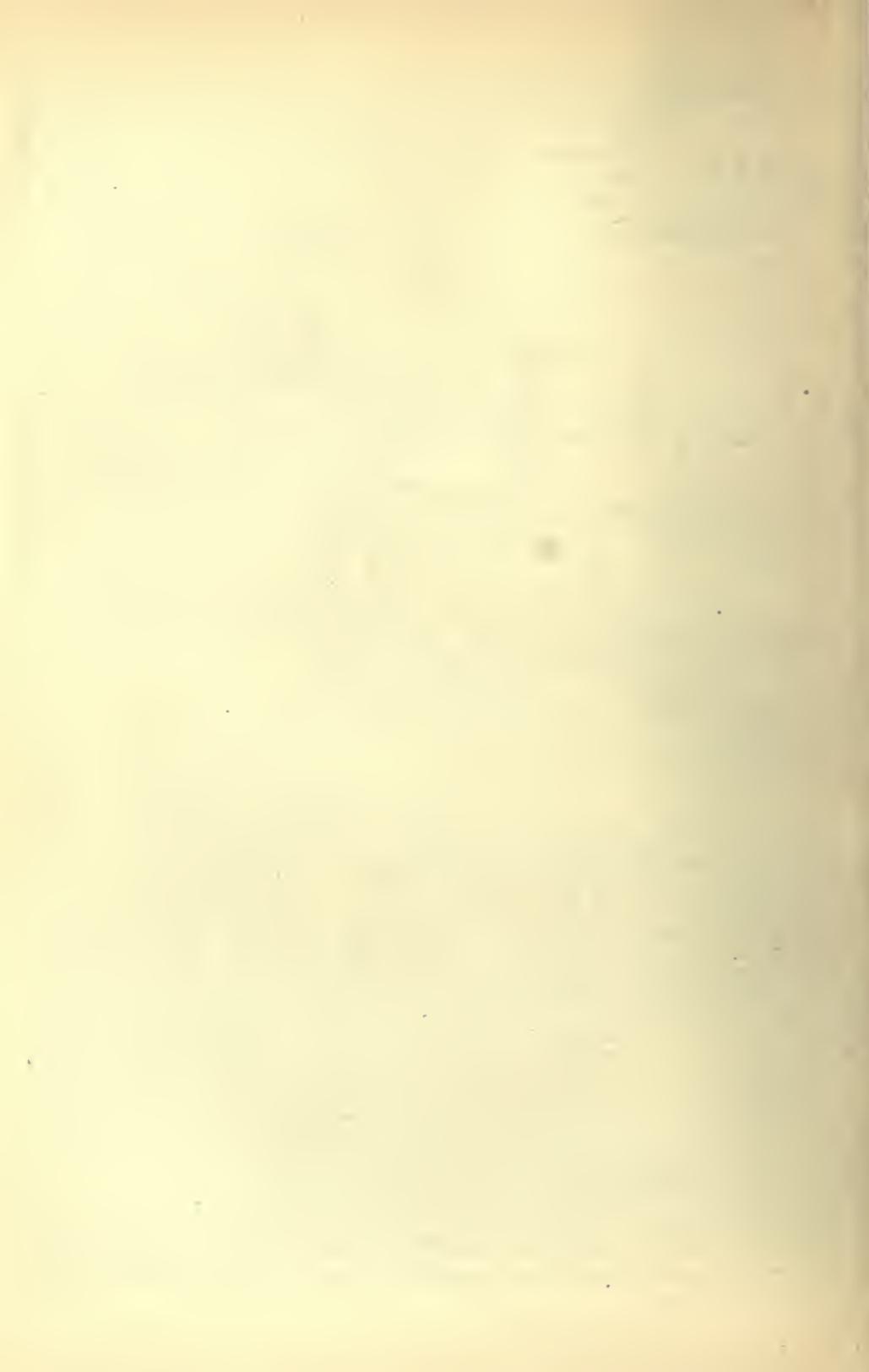
us: ☉ Other Places: •

ays: 100 150 200

Scale of Miles.



106° Greenwich 104° 102° 100° 98° 97 27 84° 96°



CHAPTER XVI

CITIES AND TOWNS OF MANITOBA

GREAT cities have not been placed where they are found simply by accident. Cities, as well as people, have to be fed to make them grow. They are therefore placed so as to command some natural advantage over their sur-



FIG. 131.— Winnipeg about 1875. Notice the river steamer, the ferry, and the Red River cart.

roundings. Let us try to remember this when thinking about the cities, towns, and villages which we are about to mention.

Winnipeg is situated at the junction of the Assiniboine and the Red rivers. These rivers were the highways leading into the country to the south, west, and north.

It was natural, then, that this point should be fixed upon as an important one by the Indians and afterwards occupied and built up by the white traders. Sixty miles to the south is the international boundary; forty miles in the opposite direction is Lake Winnipeg; equally distant, east and west, are the two great oceans (Figs. 2 and 50). The location is almost at the very eastern entrance of

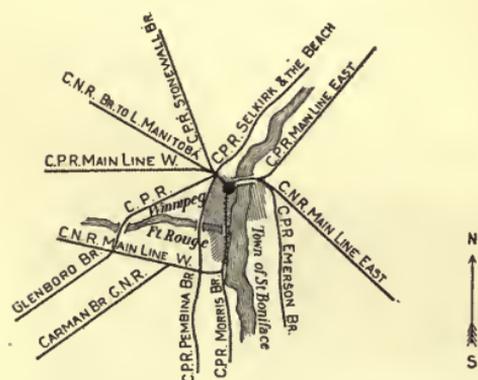


FIG. 132.—Radial map of Winnipeg.

the prairie country. It is, therefore, the natural route of the great lines of railway running east and west. The cities of Eastern Canada are too far away to serve as collecting and distributing centres for the West. Some site farther west had to be chosen. Could there be a better site

than Winnipeg for these purposes? From it railways extend in all directions (Fig. 132), like the spokes of a wheel, and these will be added to as the years come and go. In the Lake of the Woods district are great lumbering and milling industries. To the north are the limestone quarries of Stonewall and Tyndall, and the fish, wood, and lumber of the Manitoba lake country. To the west, and the far west, are the immense grain farms and cattle ranches, whose products must pass towards Winnipeg.

In Winnipeg are situated the big wholesale and banking concerns. Here every branch of business is represented.—flour-milling, soap works, biscuit works, foundries, planing-

mills, pork-packing houses, abattoirs, etc. This, also, is the political and educational centre of a great province, and the public buildings are all in keeping with the spirit of the country. Among the many are the University of Manitoba (Fig. 134), St. John's, Wesley, and Manitoba Colleges, Manitoba Medical College, Business Colleges, the Parliament Buildings (Fig. 153), Post-office, Court-house, Public Schools, Deaf and Dumb Institute (Fig. 134), Normal School, General Hospital, City Hall, Public Library, etc. The Crown Timber Office, the Dominion Land Office, and the Dominion Immigration Offices for the West are also situated in Winnipeg, as are also the

Land Offices of the Canadian Pacific
and Canadian Northern
Railways and the
general offices of
the Hudson's Bay
Company.

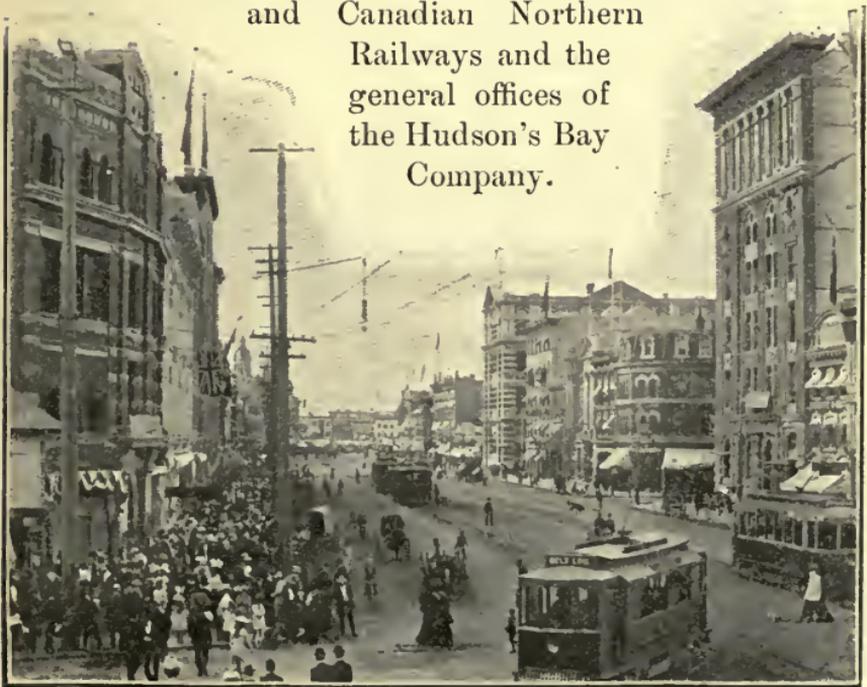


FIG. 133.—Main Street, Winnipeg, looking north. Notice the very wide street.

Although the surroundings are flat, there is an excellent sewerage system. The best of water is procured from a large artesian well in the north-west quarter of the city. The streets are wide, and all modern conveniences in the way of telephones, electric cars, and electric lights are provided (Fig. 133). Winnipeg has grown from a population of two hundred and fifteen in 1870 to a population of nearly seventy thousand at the present time.

St. Boniface,



FIG. 134.

1. Deaf and Dumb Institute, Winnipeg. 2. University of Manitoba, Winnipeg.

and fifteen in 1870
nearly seventy
present time.
the historic
French town,
and one of the
oldest in the West,
is situated across
the Red River from
the city of Winni-
peg, with which it
is connected by sev-
eral bridges and an
electric street rail-
way. It possesses an
important woollen
manufactory, and
on its outskirts are

several valuable brickyards where twenty-seven million bricks were manufactured in 1903. The town is the residence of the archbishop of St. Boniface, and the seat of the French college of the same name. Here is also a very fine general hospital, and the French Normal School for the province. Here, in the earlier days, from the cathedral, since burned down, rang out:—

“The bells of the Roman Mission
That call from their turrets twain;
To the boatman on the river,
To the hunter on the plain.”

Portage la Prairie is situated near the Assiniboine River, on the main lines of the Canadian Pacific and Canadian

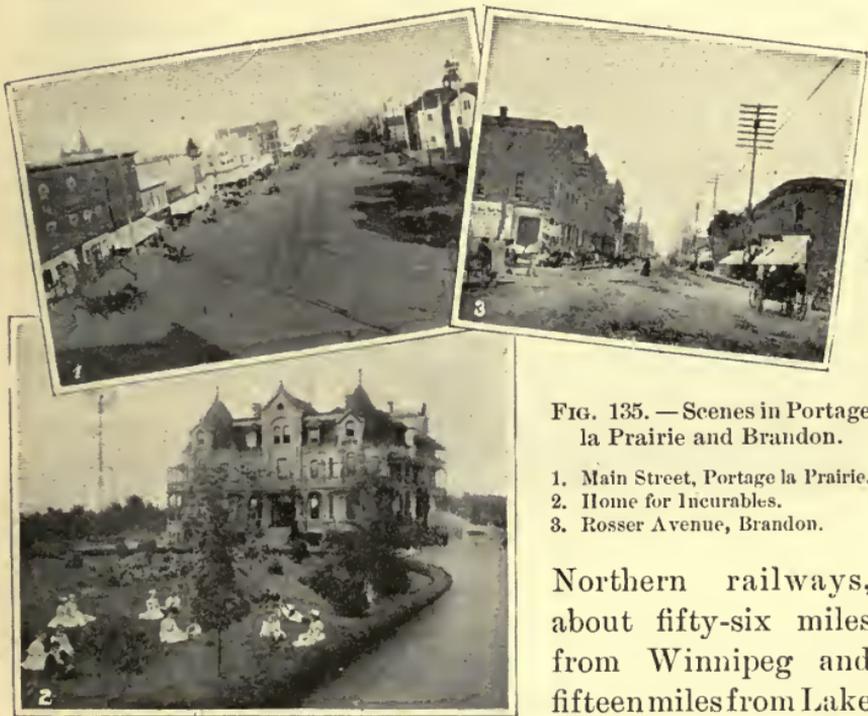


FIG. 135. — Scenes in Portage la Prairie and Brandon.

1. Main Street, Portage la Prairie.
2. Home for Incurables.
3. Rosser Avenue, Brandon.

Northern railways, about fifty-six miles from Winnipeg and fifteen miles from Lake Manitoba. It thus

occupies an important position between the country to the west and the north-west, and the east,—a fact readily seen by an examination of Figure 130. In the earlier days, even, Portage la Prairie was looked upon as a valuable point in connection with the fur supplies of the upper Assiniboine and the north-western country. To-day the

“Portage,” as it is commonly called, is a railway centre and also the local market of the rich agricultural district of the “Portage plains.” Here are found many fine stores (Fig. 135), a large flour-mill (Fig. 115) and elevators, Indian Industrial School, and the Provincial Home for Incurables (Fig. 135).

Brandon, the second city in size in Manitoba, is beautifully situated on the gravelly slopes of the south bank



FIG. 136. — Brandon College, Brandon.

of the Assiniboine and within sight of the blue hills of Brandon. Around it is a fertile farming country, of which it is the centre, and with which it is connected by numerous lines of railway. Brandon has an excellent system of water supply and sewerage. Its main street has numerous fine

business blocks (Fig. 135), and its residential portion contains many beautiful homes. In the city itself are such buildings as Brandon College (Fig. 136), Central School, Post-office, General Hospital, binder-twine factory (Fig. 116), Brandon machine works, and woollen, flour, and sawmills. Across the valley is the Experimental Farm for Manitoba, consisting of about six hundred and seventy acres of land, lying partly in the valley of the Assiniboine and partly on the bluffs. Here valuable experiments have been made in grain-growing, flower, tree, and root culture, feeding and caring for stock, etc., with the result that

the province everywhere has been benefited. On the same side of the valley are the Indian Industrial School and one of the Provincial Asylums for the Insane.

West Selkirk is located on the Red River, about twenty-four miles from Winnipeg, with which it is connected by a branch of the Canadian Pacific Railway. It is the most southern port for the boats running on Lake Winnipeg. Here are situated one of the largest fish-freezers in Canada, the Dominion Fish Hatchery, planing-mills, and one of the Provincial Asylums for the Insane.



FIG. 137. — Morden.

Morden lies in the centre of a rich farming district to the east of the Pembina Mountains and on the Pembina Mountain branch of the Canadian Pacific Railway (Fig. 137). The town is well built, and possesses all the facilities for handling the various farm products of the broad country surrounding it. Morden has also a large woollen-mill, a pump factory, a cannery, flour-mills, and a tannery. In addition it is the headquarters of a company engaged in the manufacture of cement from the rich marl deposits a short distance from the town (Fig. 118). The chief public buildings are the Land Titles Office and the Masonic Hospital.

Carberry is a thriving town on the main line of the Canadian Pacific Railway, about twenty-five miles east of

Brandon. It is the natural centre of a large agricultural country, and has all the elevator and other conveniences for handling the grain and stock about it. The buildings of the business portion of the town are for the most part of brick, the principal street presenting a fine, compact appearance.

Neepawa, so named from an Indian word meaning "plenty," is situated on the Portage la Prairie-Yorkton branch of the Canadian Pacific and on a branch of the Canadian Northern, in the midst of the magnificent wheat-growing lands of the "Beautiful Plains." This is one of the largest wheat-markets of the Canadian West, the yield for 1902 being placed at about a million and a quarter bushels. From the town can be seen the spurs of the Riding Mountains, rising in a north-westerly direction. The southern slopes of these hills are cultivated to the very summit.

Dauphin is situated on the main line of the Canadian Northern between the Riding and Duck Mountains and Lake Dauphin. It is therefore the natural market-centre of the great country to the north-west. The land about Dauphin is finely adapted to mixed farming.

Minnedosa, one of the most beautifully situated towns in the province, is on the Little Saskatchewan, a tributary of the Assiniboine. It lies in the midst of a lovely valley and is surrounded by a varied agricultural country. It is also a divisional point on the Yorkton branch of the Canadian Pacific Railway and the Rapid City line to Brandon.

Carman has the advantage of being located on both the Canadian Pacific and the Canadian Northern railways by means of the Glenboro branch of the former and the Carman branch of the latter. Around Carman is an extensive

farming country. The town is well laid out, and is considered one of the most beautiful in the province.

On account of agriculture being the leading industry of Manitoba and the West generally, it naturally follows that there will be considerable sameness in any description of villages and towns. Each centre has its series of elevators, and many centres have each their flour mill. The remain-

ing centres are the following: Stonewall, St. Norbert, St. Anne, Gladstone, Shoal Lake, Birtle, Winnipegosis, Russell, Macgregor, Elkhorn, Virden, Oak Lake, Alexander, Griswold, Treherne, Cypress River, Holland, Glenboro, Souris, Hartney, Wa-



FIG. 138. — A scene on Lake Killarney in south-western Manitoba.

wanessa, Melita, Napinka, Deloraine, Boissevain, Killarney (Fig. 138), Cartwright, Clearwater, Pilot Mound, Manitou, Gretna, Emerson, St. Jean Baptiste, Gimli, Altona, Winkler, Baldur, and Miami, — all important points likely to grow some day into busy towns and great cities.

NOTE. — Teachers are asked to make a selection of such towns in the foregoing as are of greatest interest to the students of their respective districts.

QUESTIONS. — On an outline map of Manitoba place all the centres mentioned in the chapter. Account for the location of West Selkirk, Souris, Birtle, Emerson, and Gretna. Show how railways increase the value and the productiveness of farms. Name the centres along southern Manitoba. What divides the province into a northern and southern Manitoba? Name the larger towns and villages twenty

miles north of the Assiniboine. Make a map of your own municipality and place on it its railways and elevator points. Account for such town sites as Winnipegosis, Lac du Bonnet, Deloraine, Portage la Prairie, Gimli, Selkirk, and Virden. Answer each of the following questions for Brandon, Minnedosa, Rapid City, and Macgregor, namely: (a) On or near what river? (b) Causes of location and growth? (c) For what noted? Why are there not more villages and towns in eastern Manitoba and in the Dauphin country? Is the country south of the Canadian Pacific a better farming country than that to the north? Give reasons. Where are York Factory and Fort Churchill situated? *See Appendix O, 4.*

CHAPTER XVII

CITIES AND TOWNS OF THE NORTH-WEST TERRITORIES

DESCRIPTIONS of the cities of older lands, made, perhaps, ten or more years ago, are often, in the main, true pictures of those cities to-day. This is not possible, however, in the case of the cities and towns of young countries, where the growth is often so rapid that the picture of to-day is in no way a true description of the young giant of a few years hence. Indeed, we feel that not even the smallest village should be omitted, for who can tell where it may stand in the course of a few years? In trying, therefore, to picture the following centres, ask of each: Why was it placed there? What kind of country surrounds and nourishes it? Is the situation the very best in the district for mining, farming, manufacturing, etc.? To what extent is it a distributing point? Is it likely to be a great centre?

Regina, the principal city in the district of Assiniboia, the seat of the Territorial Legislature, and the headquarters of the mounted police, is situated on the Canadian Pacific Railway three hundred and fifty-seven miles from Winnipeg and four hundred and eighty-three miles from Calgary, in a district admirably suited to successful grain and mixed farming. Branch lines connect with Saskatoon and Prince Albert on the north, and with Arcola on the

south-east. The city is therefore finely located as the market and wholesale centre of the surrounding country. A good system of water supply and sewerage is being added, and every effort put forth to make Regina worthy



FIG. 139. — Court-house, Regina.

of its name, and worthy, too, of its place as the capital of the North-West Territories. The principal buildings are the Government Buildings, Land Titles Office, Dominion Land Office, Court-house (Fig. 139), and the Public Schools.

Regina is also the educational centre of the country, the Territorial Normal School being situated here.

Indian Head. — Wheat is the main product of the district around Indian Head (Fig. 97), and the neighboring towns of Qu'Appelle and Sintaluta. About a mile to the north of Indian Head is the government Experimental Farm (Fig. 140), where various experiments are carefully conducted on new varieties of grain, grasses, flowers, and trees for the benefit of the whole western country. The town has a large flour mill, planing-mills, sash and door factory, and the elevator accommodation necessary for the district.

Yorkton is situated on the Yorkton branch of the Canadian Pacific Railway, three hundred miles north-west of Winnipeg and forty miles west of the Manitoba boundary, and is in the midst of a fine rolling country well wooded in parts. Here the government has established a

creamery and a patrol station of the mounted police. Yorkton is also an important cattle-shipping centre.

The other important centres of eastern Assiniboia are Moosomin, Estevan, Carlyle, Arcola, Wapella, Wolseley, Saltcoats, Oxbow, Carnduff, Whitewood, and Grenfell.

Moose Jaw, on the main line of the Canadian Pacific Railway, is a railway centre, being a divisional point on the main line of the railway, and also a terminal point of the Pasqua or Soo branch, which runs south-east from Pasqua, eight miles east



FIG. 140. — Indian Head from the Experimental Farm.

of Moose Jaw, through Estevan to the boundary line at Portal, where connection is made with the Soo line for St. Paul. From an agricultural point of view, as well, Moose Jaw is one of the most flourishing cities in the western country.

Medicine Hat, the most westerly town of Assiniboia, is the centre of a great ranching district (Fig. 141). Near it are extensive coal-fields. In this modern town are to be found a complete sewer system, water works, natural gas, fine business blocks, and beautiful residences. The climate is very healthful. Medicine Hat is situated on the south branch of the Saskatchewan, on the main line of the Canadian Pacific Railway. It is also connected, by Dunmore Junction, with the country of southern Alberta.

Maple Creek. — The ranching district of Maple Creek is the largest in Assiniboia, covering, as it does, a block

of land one hundred and forty miles from east to west and two hundred miles from north to south. Through the southern part of this district, the Cypress Hills extend in a long chain about one hundred and fifty miles in length, an ideal formation for a ranching country. The town of



FIG. 141.—Medicine Hat.

Maple Creek is the natural shipping-point of the horses, cattle, and sheep of the ranches.

Calgary is a very progressive city, situated in western Alberta at the junction of the Bow and

Elbow rivers, eight hundred and forty miles from Winnipeg, six hundred and forty miles from Vancouver, and on the border-line between the great farming and ranching country of Assiniboia and Alberta, and the mining and lumbering regions of British Columbia. It is, therefore, naturally a distributing centre or wholesale depot for the greater part of the territory mentioned. It is also the market town of the surrounding ranching country, is a divisional point on the Canadian Pacific Railway, has branches running to Edmonton and Macleod, is a station for a section of the mounted police, and is the seat of the Western Canada College. Calgary has water works, a large flour mill, abattoir, and cold storage, a fine creamery, and several other conveniences and manufactories (Fig. 142).

Lethbridge, on the Crow's Nest Railway, is situated in the centre of large coal-fields (Fig. 111), farming and ranching lands. The mines here give employment to several hundred persons, and supply soft coal to the larger portion of southern Alberta and western Assiniboia. Lethbridge is the terminus of the Alberta Railway and Coal



FIG. 142.—Stephen Avenue, Calgary.

Company's line, a road independent of both the Canadian Pacific and the Canadian Northern railways, running southwards to the boundary line. From Lethbridge a magnificent view of the Rocky Mountains can be had. To see this mighty chain, eighty miles to the west, stretching far to the north and to the south against the blue sky, is a sight never to be forgotten.

Macleod, on the Crow's Nest Pass Railway, lies a short distance to the west of Lethbridge, at the southern terminus of the Calgary and Edmonton branch of the Canadian Pacific Railway. It is the business centre and principal market of the great ranching interests to the south.

Edmonton is situated on the north bank of the North Saskatchewan River, and overlooks the valley from a



FIG. 143.—Edmonton.

height of about two hundred feet (Fig. 143). Its command of the upper Mackenzie and Saskatchewan valleys will, there is no doubt, raise it before many years into a great railway, wholesale, and manu-

facturing centre. Here about a hundred years ago the Hudson's Bay Company erected one of its principal western posts, and here at the present time is one of the largest fur-collecting depots of the West (Fig. 106). The country round about is rich in coal, in wood, and in all the products of the farm, and these find their home market in the town. The principal buildings are built of brick manufactured in the neighborhood. Besides its brickyards, Edmonton has the following important industries: pork-packing houses, foundry and machine shops, flour and sawmills. Here also has been chosen the site for Alberta College, where

an education for a business profession and in the higher arts is provided. Edmonton is at present connected with Calgary by a branch of the Canadian Pacific Railway, but before long it will also be an important point on both the Canadian Northern and Grand Trunk Pacific lines.

Strathcona is the northern terminus of the Calgary and Edmonton branch of the Canadian Pacific Railway. The site of the town is admirably chosen on the high south bank of the North Saskatchewan almost across the river from Edmonton, with which it is connected by a steel bridge. The country in the neighborhood is well adapted to grain-growing, stock-raising, mixed farming, and other industries exactly similar to those mentioned in connection with Edmonton. What products will be shipped from the place? To what market?

In northern Alberta south of Strathcona are Wetaskiwin, Lacombe, Red Deer, Innisfail, and other towns on the Calgary-Edmonton branch of the Canadian Pacific Railway. All are the centres of large farming interests. In the southern part of Alberta, bounded by the international boundary line, the Rocky Mountains, the Crow's Nest Pass Railway, and the Alberta Coal Company's line are Stirling, Cardston, Magrath, and Raymond, in a district made more valuable for grain, cattle, and vegetables by an elaborate system of irrigation ditches. Stirling lies six miles east of Raymond, at the junction of the Alberta Coal Company's line and the St. Mary's River Railway. Cardston was an unknown town a few years ago; now it has a population of about fifteen hundred. Raymond has had a similar history, a history that will in the future be more or less connected with an immense sugar-beet factory (Fig. 117), capable of converting yearly the root



FIG. 144. — Scenes in the National Park, Banff.

crop of three thousand five hundred acres into sugar. Nearer the mountains, south-west of Macleod, are the famous ranches of Pincher Creek, now growing smaller as the settlements devoted to mixed farming are extending.

Banff. — Away up in the Rocky Mountains, in western Alberta, on the main line of the Canadian Pacific, is Banff, the centre of a large tract of country full of magnificent mountains, lovely lakes, and shady trees. This has been set apart by the Dominion Government as a great national park, to be used for purposes of pleasure and recreation only.



FIG. 145. — A beautiful scene at Banff.

Since this district was set aside for the purposes of a park, many improvements have been undertaken, with the result that roads have been made, bridges built, brushwood removed, a museum opened, and buildings erected at the Hot Springs and other places for the pleasure and convenience of visitors (Figs. 144 and 145).

Prince Albert, the chief town of the district of Saskatchewan, is beautifully situated on the North Saskatchewan (Fig. 146), a short distance above the junction of this river with the south branch. Around it is an extensive agricultural country that of late has been rapidly developing.

It is connected with Regina by rail. It is also going to be an important point on the Portage la Prairie-Yorkton extension of the Canadian Pacific and also of the Canadian Northern Railway. This town is a divisional point for the mounted police. It is well supplied with saw-mills, flour mills, grain elevators, and brick yards. Prince Albert is certain to be one of the most important points in the Territories.

Battleford, at the junction of the Battle and North Saskatchewan rivers is in the centre of a country well suited to mixed farming and ranching. It is also a



FIG. 146. — A street in Prince Albert on the Saskatchewan River.

mounted police post. At one time Battleford was the seat of government of the Territories. It is in the midst of a country that is being rapidly settled, and is likely to be an important point on the Canadian Northern and Grand Trunk Pacific lines. North-west from Battleford, in the country bordering on the Saskatchewan River, the "All-British Colony" or Britannia, is situated.

Saskatoon, an important distributing point on the Prince Albert branch, is the centre of the large farming country of south-central Saskatchewan. It is expected that both the Canadian Northern and the Grand Trunk Pacific will pass through or near Saskatoon.

NOTE. — Teachers are asked to make a selection of such towns in the foregoing as are of greatest consequence to the students of their respective districts.

QUESTIONS. — Make a map of the North-West Territories, insert the railways, and the important centres. In what respects are smaller centres like larger centres? In what way are they different? What causes have led to the selection of such centres as Edmonton, Regina, and Calgary? What materials are shipped from Medicine Hat, Lethbridge, Prince Albert, and Estevan? Why was the Indian Head Experimental Farm located where it is? How do the farming conditions here differ from those at Brandon? Compare the farming of eastern Assiniboia with that of western Assiniboia. What makes the difference? Contrast farming about Cardston with farming at Edmonton. Do you think the people of these two districts will differ much? Give reasons. What do you know of agriculture in Saskatchewan? What centres are connected with the coal and stone industries? Where are the leading banking centres? Why do you think so? What are likely to be the manufacturing centres of this part of Canada? Why do you think so? What railways are found in the valley of the Red River? In the valley of the North Saskatchewan? South Saskatchewan? Why is there no town at the junction of the two branches of the Saskatchewan? Is there any village or town near your home that has reached its full growth and is now slowly going behind? Have you tried to find why? See *Appendix O, 4*.

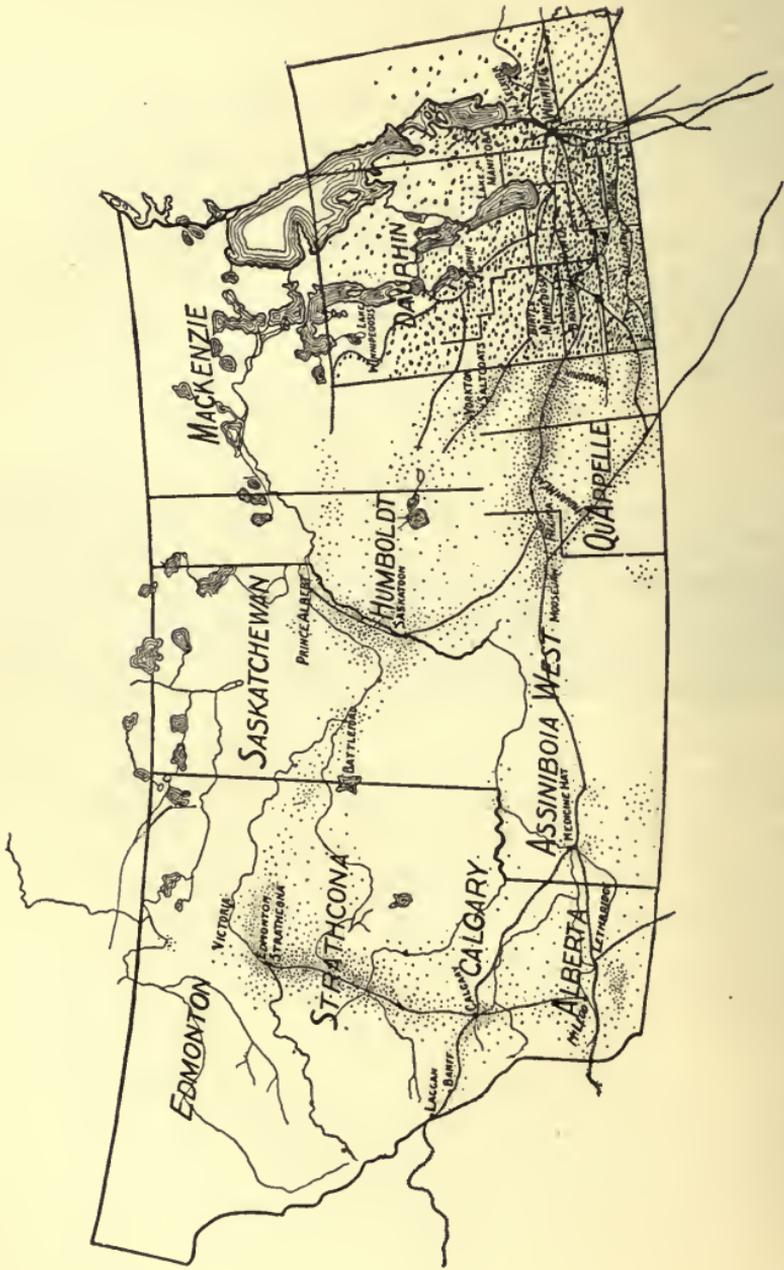


FIG. 147. — Map showing distribution of population.

CHAPTER XVIII

THE PEOPLE

IN order the better to understand the social life and the progress of the Canadian West, it is necessary to become acquainted with the various peoples who have made it their home. These are Indian, Eskimo, natives or mixed races, Canadians from the eastern provinces, and settlers from the United States and from almost every country in Europe.

We have already mentioned the Indian and the Eskimo. We have also had a glimpse of the fur trader, who saw in these broad acres of prairie and woodland a great game preserve. Many of these traders settled in the country and married dusky maidens of the ^{The natives} Indian race. The descendants of these unions form a considerable part of our population in the older settled districts of the West. These people have been called *half-breeds*, a name that should be set aside for a better one. We would suggest *natives* as the most suitable name.

We have also had something to say about the "Selkirk Settlement," when a real farming class was placed on the soil. So stout-hearted were these strangers that, in spite of many hardships and dangers, this little colony remained on, to prove that a successful living could be made on the Canadian prairies.

The plains of the North-West, which for countless ages have been roamed over by numerous herds of buffalo or by the scarcely less wild tribes of Indians, are now being invaded by the white races. From the south and the east thousands of new settlers are entering the country with the intention of making it their home. But why have the prairies of the Canadian West been so slow in filling up in comparison with the lands of the south? There are several reasons. New countries depend much upon easy communication with the outside world. This was impossible until a few years ago, when the eastern and southern railways reached the country. Again, people were strongly of the opinion that a land so far to the north could never prove a pleasant place to live in. In the last place, it takes a great deal to convince people as a body. They have to be shown over and over again that a particular portion of a country is really good, before they will muster enough courage to break up their old home surroundings.

The western and northern portions of the United States, being farther to the south, were first invaded by people from Britain, Germany, Europe generally, and even Eastern Canada. Now the "free lands" of the United States are all taken up, and improved lands have become too valuable for home-seekers to think of buying. The tide of emigration has gradually shifted to the Canadian plains, and for over thirty years this tide has been growing, so that to-day people from all the northern countries of the world are entering the West with the intention of making it their home. Who are some of these people and where have they settled?

Why the
West was not
settled
earlier

Settlers
flowing in

We are all well enough acquainted with our own people from Eastern Canada, both English and French; and we are also familiar with the English, Scotch, and Irish people. Some of us know the energetic and progressive settlers from the country to the south, who have been lately pouring into the country in such large numbers.

Among these in the country about Cardston and Raymond of southern Alberta are a large number of Mormon settlers. The plan of settlement followed by these people is modelled on that of their native state, Utah. A town site is selected and marked off into plots of an acre and a quarter each. On each of these a house is built and a large vegetable and fruit garden worked. Besides this lot, each family of the town has taken up a homestead, where cattle, grain, and roots are successfully grown in spite of the scanty rainfall of the country, for the Mormons are skilful in the working of irrigation ditches, by means of which the water of the neighboring lakes, ponds, and rivers, is made to assist the ordinary rains. As a people, the Mormons are progressive farmers. They are also interested in the manufacture of beet-sugar, — an industry likely to be of great value to the country. We have also met the industrious and frugal-living German. We are not, however, so well acquainted with the Icelfander, Mennonite, Crofter, Galician, and Doukhobor. All these we shall describe so far as we have seen them in business, in the field, and at home.

The Icelfandic people have now been residents of the West for over a quarter of a century. They have, therefore, been among us long enough to permit of our forming a fair estimate of their worth. It is admitted by every one that they are worthy of their

Settlers from
the United
States

The
Icelanders

adopted Canada, and Canada is all the better for the industry, sober living, and downright worth of the Icelandic people. They are also an education-loving class and have already measured themselves in many ways with their other Canadian neighbors. This is shown in the success that has followed them in farming (Fig. 148),



FIG. 148. — A typical Icelandic homestead.

in business, and in professional life. The Icelandic population is over ten thousand, distributed largely in the country between lakes Manitoba and Winnipeg, in West Selkirk and Winnipeg, in the district lying between Baldur and Glen-

boro, near Yorkton in Assiniboia and near Red Deer in northern Alberta.

The Mennonites of southern Russia were among the pioneer settlers of Manitoba; and their thrift and industry have made the settlements about Steinbach (Fig. 149), Gretna, Rosenfeld, and Winkler, among the most prosperous in the country. These people, being somewhat like the Quakers in belief, had to leave their native land, Germany, and settle in Russia to escape a forced military service. In turn they were obliged to seek a new home in the Canadian West, where their peculiar ideas have never been interfered with. At first the Mennonites settled in villages, where their houses, built of mud and sticks, and thatched with straw, stood with ends facing the one main street or roadway. The land belonging to each village was divided into arable,

pasture, and hay land, and was allotted to each head of a family in strips, great or small, according to what each person was able or willing to cultivate. For some years past many of these villages have been broken up, and their residents have gone to the original homesteads, but there are yet many villages following the old order of things. Though as a rule opposed to any state control, they are yearly growing more in sympathy with our educational system.



FIG. 149. — Steinbach, a typical Mennonite village.

Scotch "crofters," the former tenants of crofts or small farms in barren and beautiful Skye, have settled in the Territories and in certain districts in south-western Manitoba, not far from Pelican Lake, where they have made considerable progress, and have found on the prairies a kinder soil and climate than those of their home land.

The crofters

The Galician settlers have come from one of the Austrian provinces, and already over forty thousand have settled north of Teulon between Shoal Lake and Lake Winnipeg, about Stuartburn in south-eastern Manitoba, in north-western Manitoba, in south-central Saskatchewan, and on the Saskatchewan below Edmonton. These people (Fig. 150) may seem to the ordinary wide-awake Canadian a little slow of movement and a little

Galicians

over-cautious in matters of trade, but they have the excellent habit of never giving up until their end is gained. As a race they are careful and saving in all their domestic affairs, thinking that "a penny saved is a penny

gained." It is, perhaps, too early in the day to give a decided opinion as to what progress the Galicians will



FIG. 150.

1. A Galician flour mill.



2. The first Galician home in Western Canada.

make in trying to master a higher civilization than that in which they

were born. This much may be said: The Galicians are not indolent; they all seem anxious to learn the English language and to act like the people about them.

Of the same race, but speaking a different dialect, are the Doukhobors (Fig. 151), who have also come to us

from the land of the Czar to escape persecution, and to settle in the country between the western end of the Swan River valley and the town of Yorkton, and also within the southern bend of the North Saskatchewan, north-west of Saskatoon. Thriftiness and carefulness are also characteristics of these people. Their whole lives

The
Doukhobors

are modelled in accordance with their religious ideas, and a Doukhobor will sacrifice everything he owns to what he thinks is right. For a long time the Doukhobors refused to take out homesteads, but of late this matter is being attended to rapidly,—a movement towards the higher Canadian civilization that is likely to be followed by



FIG. 151. — A group of Doukhobors.

others. These settlers, who now number eight thousand three hundred persons, have many peculiarities, the removal of which will likely take some time, on account of their being allowed to settle in distinct colonies (Fig. 152); but when these peculiarities are abandoned, the Doukhobor, with his truthfulness, industry, and thriftiness, should become a worthy citizen of our great North-West land.

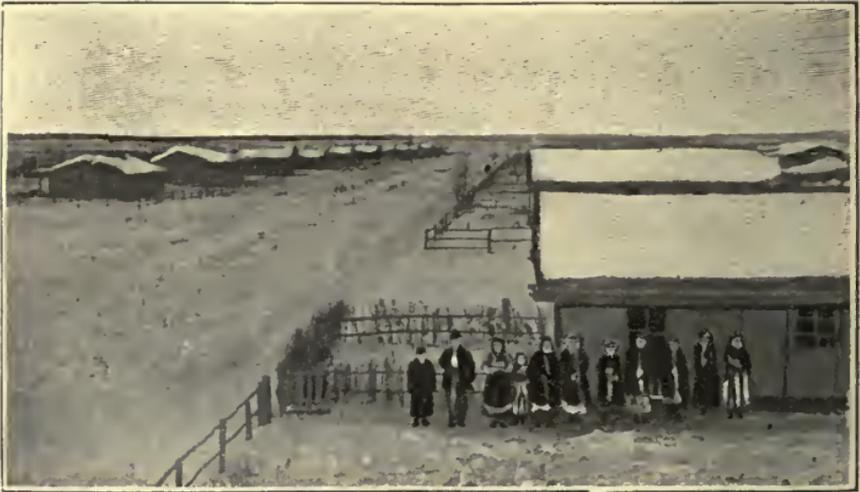


FIG. 152. — A model Doukhobor village.

QUESTIONS. — What do you know about the settlers of the Canadian West? In your answer say something about their native country, why they left it, where they are now settled, what they do, and what their home life is like. What are these settlers doing for education? What for agriculture? What for manufacturing? How were farms taken up by them? How are these settlements connected with the largest centres? Answer this for the Mormon, Icelandic, and Doukhobor settlements. Why have some of the Icelandic people settled about Lake Winnipeg? Why have the Mormons not chosen northern, instead of southern Alberta for their settlements? Show why it is better for the Dominion to have all the people Canadian, than to have an Iceland, a Russia, and a Germany, within its boundaries.

CHAPTER XIX

GOVERNMENT

WE have seen how the whole of this great land came to belong to the Dominion of Canada. We are now to see how it has been parcelled out for the purposes of easier management; for without laws and the means of putting laws into force, a people, and particularly a mixed people, would soon become a mob: every man would be a law unto himself and justice would be an impossibility.

The country, as you may see from the map (Fig. 2),

has been plotted out into nine great districts; but as time goes on and progress is made, these districts will again have to be changed. The names of these blocks of land are Manitoba, Assiniboia, Sas-



FIG. 153.— Government buildings, Winnipeg.

katchewan, Alberta, Athabaska, Mackenzie, Franklin, Ungava, and Keewatin. Of these Manitoba is the only one that has been given the rank of province, the name

by which the greatest divisions of the Dominion are known. The district of Keewatin, a region of harsh climate and barren soil, but rich in fur-bearing animals and minerals, is under the care of the lieutenant-governor of Manitoba. The remaining divisions, the districts of Assiniboia, Saskatchewan, Alberta, Athabaska, Mackenzie, Franklin, and Ungava are grouped together under the name of the North-West Territories, but only the first three of these districts are as yet organized.



FIG. 154. — Government buildings, Regina.

Both Manitoba and the North-West Territories have their own local Parliament, which meets at Winnipeg (Fig. 153) and Regina (Fig. 154), respectively, to make laws and ordinances for the country, and discuss such improvements as are needed. For the purpose of electing representatives to this Parliament or *Legislative Assembly*, Manitoba is divided into forty, and the Territories into thirty-five divisions, from each one of which a member is elected.

Both Manitoba and the Territories also elect men to represent them in the Dominion Parliament which meets

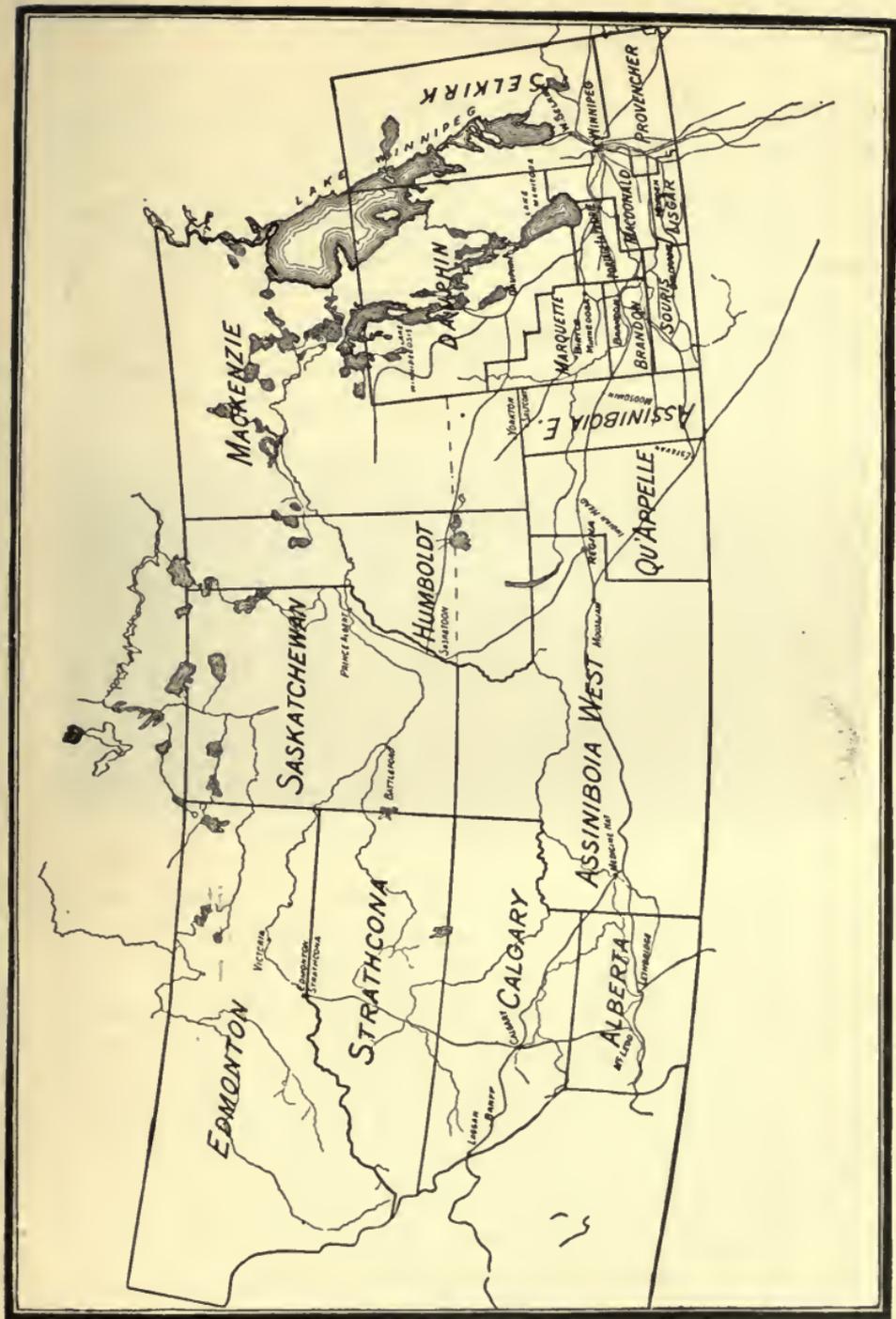


Fig. 155. — Map showing Dominion electoral divisions of the Canadian West, 1904.

at Ottawa. Manitoba has ten members in the *House of Commons* and four members in the *Senate*. The members of the House of Commons are elected in the same way as members of the Legislative Assembly, the province being divided into ten divisions for the purpose. The Territories have a similar representation in both the House of Commons and the Senate (Fig. 155).

In the earlier days of a country the government provides for the roads, bridges, etc., but with the growth of the

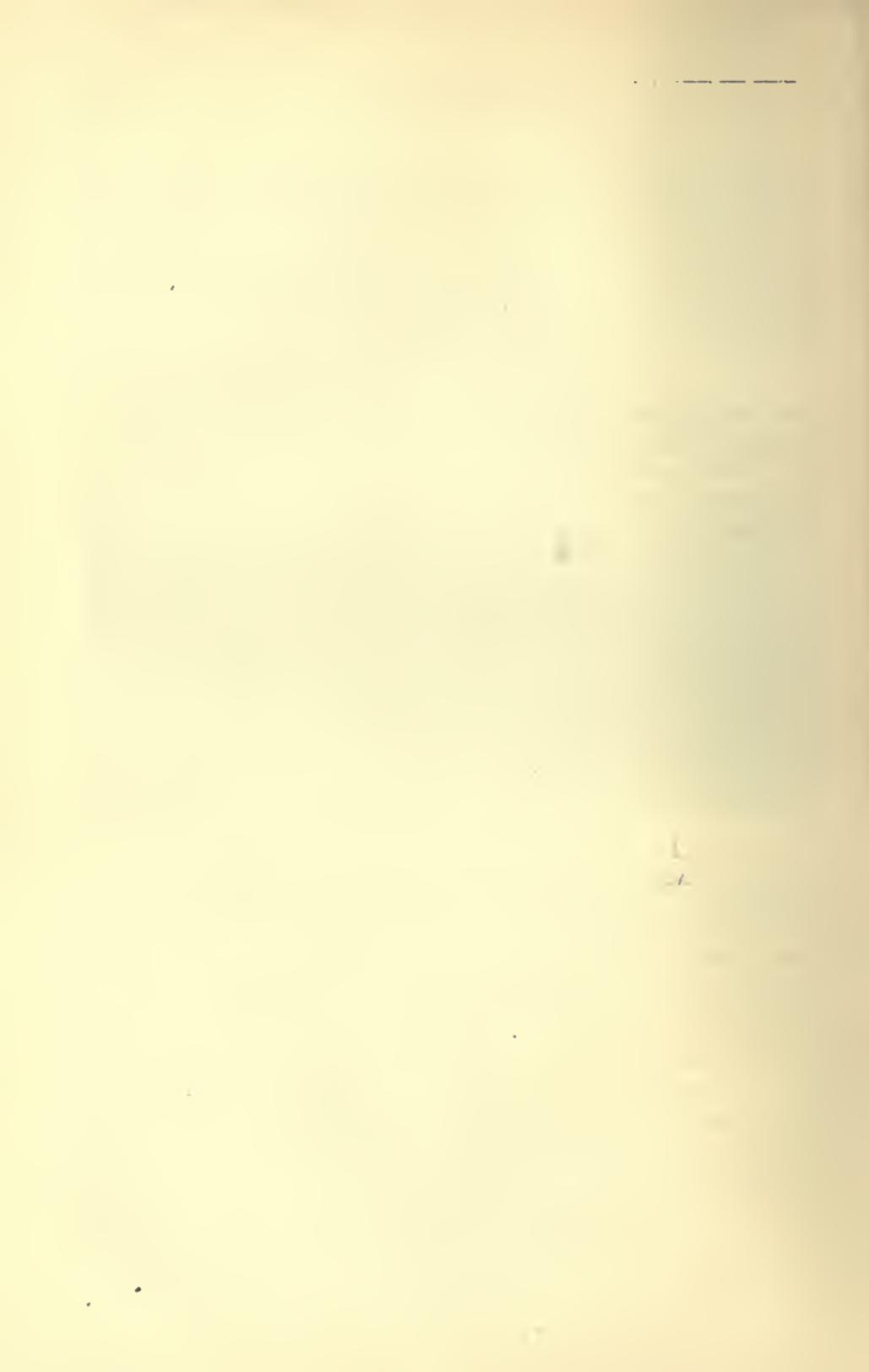


FIG. 156. — Mounted Police at Regina.

country this work is handed over to what are called *municipalities*, in other words, to groups of townships joined for the purpose of attending more particularly to certain local matters — matters of common interest to the townships comprising the municipality. This division of the country into municipalities has been followed in Manitoba, but in the Territories little more than a beginning has as yet been made. The officers of a municipality are chosen by the vote of the people, and consist of a *reeve* and his *councillors*, or in cities and towns, the *mayor* and his *aldermen*. These officers form the *council*.

While Manitoba has its own special service for carrying out the laws, the Dominion government has placed in the Territories a fine body of men known as the Mounted Police (Fig. 156), whose duties are to see that the laws are obeyed, to check smuggling, to guard settlers, and to see that the Indian behaves himself.

QUESTIONS. — What is the name of your province or district? In what municipality do you live? In what provincial electoral division? In what Dominion electoral division? What is the name of the lieutenant-governor of your province or district? Where does he live? Who is the premier of Manitoba? Of the Territories? Can you name the members of the government of Manitoba? Of the Territories? What is the name of the reeve of your municipality? Who represents your district at Ottawa? At Winnipeg or Regina? Who built your great bridges and roads? How does the municipality raise money for local improvements? What cases of direct taxation are there in your locality? Mention some of the officers of a city which a small village would not need. Mention other officials of the council and state the duties of each.



APPENDIX

A. COMPARATIVE LAND AREAS

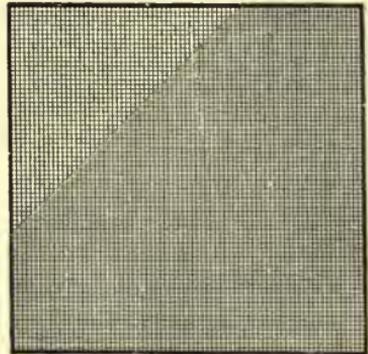
A represents the area of Great Britain, and *B* that of Western Canada. Compare.

B represents the area of Western Canada, and *C* that of the North-West Territories. Compare.

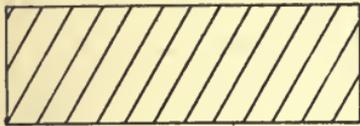
ABCD represents



A



B

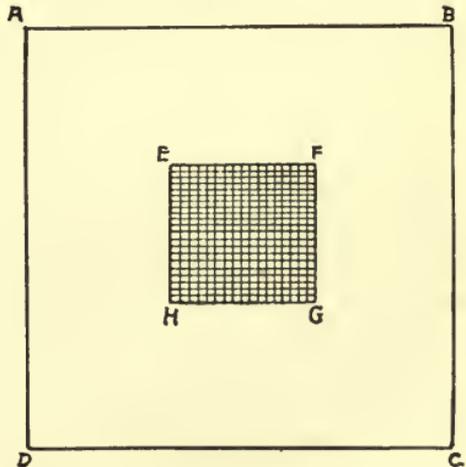


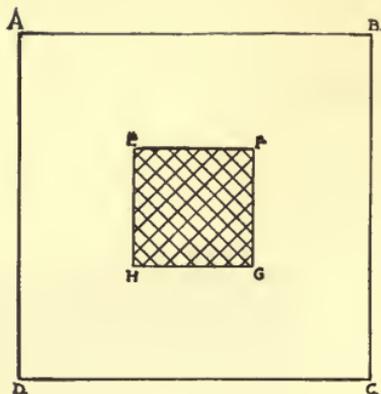
C

the area of the North-West Territories and Manitoba, *EFGH* represents the area of Manitoba. Compare.

AREAS OF DISTRICTS IN THE CANADIAN WEST

	Square Miles
Manitoba . . .	73,732
Assiniboia . . .	88,879
Saskatchewan . . .	107,618
Alberta	101,883
Athabaska	251,965
Mackenzie	562,182
Keewatin	470,416
Ungava	346,280
Franklin	500,000





$ABCD$ represents the lands in Manitoba and the North-West Territories capable of cultivation, and $EFGH$ shows what portion is now being cultivated.

If $ABCD$ represents 150,000,000 acres of land, find the area of $EFGH$.

B. THE INDIANS

According to the report of the Superintendent-General of Indian Affairs there were, in 1902, in Manitoba and the North-West Territories 24,676 Indians who are included in the treaties with the Dominion government, and about 22,084 Indians who have not yet entered into any treaty. In 1902, also, 1718 pupils attended the Indian schools in Manitoba, and 2596 the schools in the North-West Territories. During the same year the Indians in Manitoba cultivated 1635 acres, and in the North-West Territories, 29,328 acres.

C. THE FUR TRADE

The following quantities of furs were offered for sale at London, England, by the Hudson's Bay Company and by Lampson & Co. in 1887. Most of the fur-bearing animals are distributed over the whole northern part of the continent, from Labrador to the Pacific; a very large proportion of these furs must then, of necessity, have come from the Canadian West, and particularly from the district of Mackenzie. What use is made of all these skins?

Otter	14,439	Muskrat	2,485,368
Sea otter	3,868	Extra black muskrat	13,944
Fisher	7,192	Wolf	7,156
Silver fox	1,967	Wolverine	1,581
Cross fox	6,785	Bear (all kinds)	15,942
Red fox	85,022	Musk-ox	198
White fox	10,257	Badger	3,739
Kitt fox	290	Ermine	4,116
Lynx	14,520	Swan	57
Skunk	632,794	American rabbit	114,824
Marten	98,342	Hair seal (dry)	13,478
Mink	376,223	Sable	3,517
Beaver	104,279	Gray fox	31,597

Find the total number of furs in the foregoing.

D. AREA OF LAKES, HUDSON BAY, AND SPRUCE WOODS

(1) AREA OF LAKES IN MANITOBA AND NORTH-WEST TERRITORIES

Acres	Acres		
Athabaska	1,818,880	Lac la Biche	80,000
Beaver	57,000	Lac la Martre	784,000
Buffalo	35,000	Lesser Slave	307,000
Cedar	182,000	Mackay	627,000
Chaplin	42,000	Manitoba	1,163,000
Cree	260,000	Moose	353,000
Cumberland	106,000	Pelly	211,680
Dauphin	128,000	Reindeer	1,559,000
Dorè	155,000	Shoal	65,000
Great Bear	7,565,600	Sullivan	60,000
Great Slave	6,680,000	Swan	54,000
Ile à la Croix	120,000	Winnipeg	6,054,000
Johnston	84,000	Winnipegosis	1,335,000
Lac de Gras	431,200	Wollaston	580,000

How many square miles in each of these lakes?

(2) AREA OF HUDSON BAY

Hudson Bay has an area of 350,000 square miles. Including its two arms (what are they?) it is 1000 miles from north to south, and about 600 miles across its widest part. Think of this when you are reading Chapter VII.

(3) AREA OF SPRUCE WOODS

The Canadian spruce woods extend through the eastern provinces, going as far north as Ungava Bay on the east side of Hudson Bay, and as far north and north-west on the west side of Hudson Bay as Coronation Gulf and the mouth of the Mackenzie. This is therefore one of the greatest pulp wood regions in the world. What does this mean?

E. TEMPERATURE, RAINFALL, AND SNOWFALL

(1) The average temperature of Manitoba is 60° in summer, and 8° in winter. For the same seasons, the temperature of British Columbia is 61° and 32°, and that of Nova Scotia 65° and 25°.

(2) RAINFALL AND SNOWFALL FOR THE YEARS 1897 TO 1903 INCLUSIVE

YEAR	MANITOBA		NORTH-WEST TERRITORIES	
	Rain	Snow	Rain	Snow
1897	9.6 in.	59.1 in.	11.8 in.	53.2 in.
1898	6.7	53.8	10.8	52.4
1899	12.3	44.4	18.0	56.9
1900	15.5	38.1	14.4	50.2
1901	16.8	40.3	15.9	58.9
1902	13.0	51.0	17.8	48.2
1903				

When snow falls in still weather it makes an even layer on the ground, and we can measure the depth of the layer in feet and inches. But as snow may be wet and heavy, or dry and light, such measurement does not tell how much water the snow represents; therefore, for exactness, the snow resting on a definite space is melted, and the resulting water measured. To find the amount of rain that falls, a vessel like a bucket, with straight sides, is placed out of doors, and after each rain the depth of the water caught is measured.

F. LAND REGULATIONS

(1) "All surveyed, even-numbered sections, excepting sections 8 and 26, which have not been homesteaded, reserved to provide wood-lots for settlers, or otherwise disposed of or reserved, are to be held exclusively for homesteads.

(2) "Homestead entries for one quarter-section (160 acres) may be obtained by any person who is the sole head of a family, or by any male who has attained the age of eighteen years, on application to the local agent of Dominion lands, and on payment of an office fee of ten dollars.

(3) "The homesteader must perfect his entry by beginning actual residence on his homestead and cultivating a reasonable portion of it within six months of the date of entry, unless such entry shall have been made on or after the 1st day of September, in which case residence need not commence until the following June."

In addition to the lands owned by the Dominion government, there are in Manitoba over one million acres of land in the possession of the provincial government, and for sale at reasonable prices. The greater part of the hundred and fifty thousand acres granted to the University of Manitoba is not for sale at present.

G. THE GRAIN CROP IN THE CANADIAN WEST AND OTHER COUNTRIES

(1) AREA AND YIELD OF THE PRINCIPAL CROPS DURING THE YEARS 1899 TO 1903 INCLUSIVE

WHEAT

YEAR	MANITOBA		NORTH-WEST TERRITORIES	
	Acres	Yield	Acres	Yield
1899	1,629,995	27,922,230	363,523	6,915,623
1900	1,457,396	13,025,252	412,864	4,028,294
1901	2,011,835	50,502,085	504,697	12,808,447
1902	2,039,940	53,077,267	625,758	13,956,850
1903	2,442,873	40,116,878	727,998	15,042,000

OATS

YEAR	MANITOBA		NORTH-WEST TERRITORIES	
	Acres	Yield	Acres	Yield
1899	575,136	22,318,378	134,938	4,686,036
1900	429,108	8,814,312	175,439	4,226,152
1901	689,501	27,796,588	229,439	11,113,066
1902	725,060	34,478,160	310,367	10,661,295
1903	855,431	33,035,774	365,719	11,803,000

[In 1902 Manitoba raised 564,440 bushels of flax, 49,900 bushels of rye, 34,154 bushels of pease, 3,459,325 bushels of potatoes, and 3,230,995 bushels of roots.]

BARLEY

YEAR	MANITOBA		NORTH-WEST TERRITORIES	
	Acres	Yield	Acres	Yield
1899	182,912	5,379,156	14,276	337,521
1900	155,111	2,939,477	17,044	353,216
1901	191,009	6,536,155	24,702	795,100
1902	329,790	11,848,422	36,445	870,417
1903	326,537	8,707,252	42,445	1,116,300

(2) COMPARATIVE AREAS AND YIELDS OF GRAIN FOR 1902

1. NUMBER OF ACRES IN CROP

	WHEAT	BARLEY	OATS
Ontario	1,051,707	661,622	2,500,758
Great Britain . . .	1,726,356	1,909,433	3,057,040
United States . . .	46,202,414	4,661,063	28,653,144
Russia	41,925,649	18,130,162	38,003,980
Germany	5,061,425	4,124,982	10,183,369
France	16,954,253	1,870,267	9,735,307

2. YIELD OF GRAIN

	WHEAT	BARLEY	OATS
Ontario	26,465,108	21,890,602	106,431,439
Great Britain . . .	60,065,000	66,494,606	130,383,682
United States . . .	670,063,008	134,954,023	987,842,712
Russia	648,707,000	188,843,326	494,992,377
Germany	143,315,000	137,850,190	459,723,933
France	379,716,080	39,584,380	242,862,280

H. FARM STOCK

(1) MANITOBA

	HORSES	CATTLE	SHEEP	SWINE
1900	118,629	237,560	25,816	77,912
1901	141,080	263,168	22,960	94,680
1902	146,591	282,343	20,518	95,598
1903				

(2) NORTH-WEST TERRITORIES

	HORSES	CATTLE	SHEEP	SWINE
1900				
1901				
1902	276,462	591,739	154,152	73,926
1903				

I. DAIRY PRODUCTS

(1) MANITOBA

	CHEESE	CREAMERY BUTTER	DAIRY BUTTER
1900	1,021,258 lbs.	1,254,311 lbs.	2,083,920 lbs.
1901	2,748,090	2,460,650	2,748,090
1902	1,093,653	1,406,450	2,509,425
1903	1,382,304	1,532,835	2,738,868

(2) NORTH-WEST TERRITORIES

	CHEESE	CREAMERY BUTTER	DAIRY BUTTER
1900		637,052 lbs.	
1901		672,125	
1902		586,171	
1903			

J. PRODUCTION OF COAL IN MANITOBA AND THE NORTH-WEST TERRITORIES

	Tons
1886	43,220
1900	351,950
1901	391,139

K. YIELD OF GOLD IN SASKATCHEWAN SANDS

1895 \$50,000	1900 \$5,000
1896 55,000	1901 15,000

L. THE FISHERIES

(1) KINDS OF FISH CAUGHT IN 1901, AND AMOUNT OF EACH

	Pounds		Pounds
Whitefish	10,546,600	Catfish	550,000
Trout	101,700	Mixed and coarse	
Pickeral	5,270,900	fish	5,558,000
Pike	4,208,300	Caviare (the roe of	
Sturgeon	727,600	the sturgeon). . .	20,000
Perch	34,000	Gold-eyes	200,000
Tullibee	926,000	Home consumption	738,600

(2) VALUE OF CATCH OF FISH

In 1900 the value of the catch of fish was \$718,159; and in 1901, \$958,410.

(3) FISHING TUGS, BOATS, NETS, ETC., USED IN THE FISHERIES DURING 1901

Fishing tugs	24	Sound nets	2
Fishing boats	927	Night lines	1,000
Gill-nets	9,807	Freezers and ice-houses	148
Seines	15	Piers and wharfs	50

A gill-net is a flat net which hangs in the water so as to permit the meshes to allow the head of the fish to enter, but catches in the gills when the fish tries to remove its head.

A seine is a large net, one edge of which is provided with sinkers, and the other with floats. Can you tell how this net is used?

M. VALUE OF GOODS IMPORTED AND EXPORTED

(1) IMPORTS

	Manitoba	North-West Territories
1878	\$1,171,113	\$112,307
1888	1,750,048	56,164
1902	8,703,488	2,500,260
1903		

(2) EXPORTS

	Manitoba	North-West Territories
1900	\$612,124	\$4,174
1901	1,084,992	1,520,936
1902	4,896,149	1,183,648
1903		

N. RAILWAYS IN THE CANADIAN WEST

CANADIAN PACIFIC RAILWAY

	Miles
Main Line — East Winnipeg to Fort William .	426
Main Line — East Winnipeg to Montreal . .	1424
Main Line — West Winnipeg to Vancouver . .	1482
Main Line — West Winnipeg to Laggan . . .	957
North-western Branch . . Portage la Prairie to Yorkton	223
Rapid City Branch Minnedosa to Brandon . .	52
Sheho Branch Yorkton to Sheho	42
Winnipeg Beach Branch . . Winnipeg to Winnipeg Beach	52
Teulon Branch Winnipeg to Teulon	40
Brookdale Branch Macgregor to Brookdale . .	36
Pheasant Hills Branch . . Kirkella to Esterhazy . .	63
Lenore Branch Forrest to Lenore	41
Lyleton Branch Deloraine to Lyleton	37
Mowbray Branch La Rivière to Mowbray . .	26
Lac du Bonnet Branch . . Molson to Lac du Bonnet . .	22
Miniota Branch Chater to Miniota	71
Emerson Branch Winnipeg to Emerson	66
Carman Branch Elm Creek to Carman	12
Winnipeg & Souris Branch . Winnipeg to Souris	150
Brandon & Souris Branch . Brandon to Souris	24
Arcola Branch Souris to Arcola	102
Souris & Napinka Branch . Souris to Napinka	35
Winnipeg & Napinka Branch (South-w'rn via Rosenfeld) Winnipeg to Napinka	221
Napinka & Estevan Branch . Napinka to Estevan	105
Gretna Br. (via Rosenfeld) . Winnipeg to Gretna	69
Prince Albert Branch . . . Regina to Prince Albert . .	250
Portal Branch Portal to Pasqua	160
Calgary & Edmonton Branch Calgary to Strathcona . . .	192
Calgary & Macleod Branch . Calgary to Macleod	108
Kootenay Branch Dunmore to Cranbrook (B.C.)	311

(2) NATIONALITIES IN THE POPULATION OF THE CANADIAN WEST AS GIVEN BY THE CENSUS OF 1901

	MANITOBA	ALBERTA	ASSINIBOLA	SASKATCHEWAN	ATHABASKA AND MACKENZIE	TOTAL
British :						
English . . .	64,542	15,504	16,835	1,614	98	98,593
Irish . . .	47,418	7,595	10,150	1,052	22	66,237
Scotch . . .	51,356	9,178	10,803	1,520	44	72,901
Other . . .	914	362	226	31		1,533
French . . .	16,021	4,348	1,574	1,118	135	23,196
German . . .	27,265	7,694	7,546	4,332	8	46,845
Dutch . . .	925	361	332	21		1,639
Scandinavian . . .	11,924	3,904	1,411	75	4	17,318
Russian . . .	4,976	5,212	8,193	3,646		23,027
Austrian . . .	8,981	1,576	4,335	496		15,388
Italian . . .	217	109	2	1		329
Jews . . .	1,514	17	197	1		1,729
Swiss . . .	204	131	28	5		368
Belgians . . .	940	152	141	16	1	1,250
Natives . . .	10,371	3,686	2,115	5,834	2,542	24,548
Indians . . .	5,906	5,620	3,213	5,836	9,550	23,117
Chinese } . . .	210	224	62	4		500
Japanese }						
Negroes . . .	61	27	9	1		98
Various . . .	196	23	75	20		314
Unspecified . . .	1,261	153	138	56	3,190	4,798

From the date of the last census to the end of 1903, it is estimated that 190,008 settlers entered the Canadian West.

(3) POPULATION OF THE CITIES, TOWNS, VILLAGES, AND
OTHER CENTRES ACCORDING TO THE CENSUS OF 1901,
AND ESTIMATED POPULATION 1904

MANITOBA

<i>Incorporated Cities :</i>	Population 1901	Population 1904		Population 1901	Population 1904
Brandon . . .	5,620	6,200	Winnipeg . .	41,340	65,000
<i>Incorporated Towns :</i>					
Birtle	466	500	Neepawa . . .	1,418	1,900
Dauphin . . .	1,135	1,300	Portage la Prairie	3,901	4,200
Emerson . . .	840	863	Rapid City . .	566	600
Gladstone . .	731	850	St. Boniface .	2,019	2,300
Minnedosa . .	1,052	1,350	Selkirk East (Disorganized)		
Morden	1,522	1,550	Selkirk West	2,188	2,254
Morris	465	500			
<i>Incorporated Villages :</i>					
Boissevain . .	898	1,000	Manitou . . .	617	584
Carberry . . .	1,023	1,100	Melita	485	520
Carman	1,439	1,640	Plum Coulée	394	300
Deloraine . . .	678	850	Souris	839	1,100
Gretna	666	817	Virden	901	1,250
<i>Centres not Incorporated :</i>					
Alexander . . .	200	250	Glenboro . . .	450	500
Altona	356	315	Griswold . . .	257	257
Austin		203	Hamiota	375	
Baldur	299	325	Hartney	505	600
Belmont		300	Headingley . .		
Binscarth . . .		300	Holland	385	495
Cartwright . . .		400	Killarney . . .	585	900
Clearwater . . .	80	103	Macgregor . . .	441	500
Crystal City . .	300	375	Miami		351
Cypress River .	304	350	Napinka		300
Dominion City .		300	Oak Lake . . .	311	400
Elkhorn	389	600	Pilot Mound . .	446	485
Gimli	210	278	Roland	316	500

	Population 1901	Population 1904		Population 1901	Population 1904
Russell	427 . .		Stony Mountain	359 . .	
St. Anne . . .	380 . .		Stonewall . .	589 . .	700
Shoal Lake . .	380 . .	400	Swan River . .	254 . .	
Sidney . . . .	. .	300	Treherne . . .	438 . .	500
Steinbach . .	366 . .		Winkler . . .	391 . .	
			Winnipegosis	362 . .	

NORTH-WEST TERRITORIES

Incorporated Cities :

Calgary	4,152 . .	7,450	Regina	2,645 . .	4,000
Moose Jaw . .	2,042 . .	2,750			

Incorporated Towns :

Arcla . . . .	. .	476	Qu'Appelle		
Cardston . . .	601 . .	1,300	South . . . .	. .	942
Edmonton . .	2,626 . .	5,250	Raymond . .	7 . .	1,963
Indian Head .	768 . .	1,200	Red Deer . .	851 . .	1,000
Innisfail . . .	. .	429	Rosthern . . .	. .	842
Lacombe . . .	450 . .	750	Saskatoon . .	. .	1,000
Lethbridge . .	2,279 . .	2,500	Strathcona . .	1,550 . .	3,000
Macleod . . .	796 . .	1,300	Wapella . . .	. .	404
Maple Creek .	308 . .	600	Wetaskiwin . .	630 . .	2,000
Medicine Hat	1,975 . .	2,500	Wayburn . . .	. .
Moosomin . .	868 . .	1,400	Whitewood . .	359 . .	460
Prince Albert	2,193 . .	2,000	Wolseley . . .	459 . .	600
			Yorkton . . .	700 . .	1,000

Incorporated Villages :

Alameda . . .	. .	257	Churchbridge	. .	
Balgonie . . .	. .		Claresholm . .	. .
Battleford . .	513 . .		Cochrane . . .	. .
Blairmore . .	. .		Coleman . . .	. .
Broadview . .	217 . .		Craik . . . . .	. .
Carievale . . .	. .	130	Didsbury . . .	. .	400
Carlyle . . . .	. .	425	Duck Lake . .	. .
Carnduff . . .	. .	500	Esterhazy . .	. .
Carstairs . . .	. .		Estevan . . .	348 . .	275

	Population 1901	Population 1904		Population 1901	Population 1904
Fleming . . .	..	250	Morinville ..	396 ..	
Fort Saskatch- ewan . . . . .	..		Mountain View	532 ..	
Frank . . . . .	..	300	Nanton . . . . .	..
Gainsboro ..	..		North Portal ..	..
Gleichen . . .	..		Nutana . . . . .	..
Grenfell . . .	452 ..	750	Okotoks	250 ..	450
Hague . . . . .	..		Olds	207 ..	551
High River ..	..		Oxbow . . . . .	..	450
Irvine . . . . .	..		Pincher Creek	335 ..	
Langenburg .	..		Ponoka . . . . .	..
Leduc	200 ..	500	Qu'Appelle, Fort	..	
Lloydminster	..		Riverside ..	..
Lumsden . . .	331 ..		Rouleau . . . . .	..
Macoun . . . .	..		Rouleauville .	..	
Magrath . . .	423 ..		Saltcoats	145 ..	300
Manor . . . . .	..		Stafford . . . . .	..
Melfort . . . .	..		St. Albert. . . .	..
Milestone ..	..	150	Stirling	441 ..	
Millet . . . . .	..		Swift Current	..	
			Yellow Grass	..	

Undergoing Establishment:

Caron . . . . .	..	Davidson . . . . .	..
Sheho . . . . .	..	

P. KEY TO FIGURE 93

1. Bobolink. 2. Cat-bird. 3. King-bird. 4. Oriole. 5. Peewit.
6. Robin. 7. Meadow lark. 8. Evening grosbeak. 9. Pine grosbeak.
10. Fox sparrow. 11. Black-crowned sparrow. 12. Song sparrow.
13. White-crowned sparrow. 14. Swamp sparrow. 15. White-throated sparrow.
16. Savannah sparrow. 17. Junco. 18. Rose-breasted grosbeak, mate and nest.
19. Chickadee. 20. Wren.
21. Hermit thrush. 22. Water thrush. 23. Shore lark. 24. Snowbird.
25. Wilson's thrush. 26. Oven bird. 27. Golden-crowned kinglet.
28. Ruby-crowned kinglet. 29. Brown creeper. 30. White-breasted nuthatch.
31. Red-eyed vireo. 32. Black-poll warbler.
33. Black-and-white warbler. 34. Magnolia warbler. 35. Bluebird.
36. Cedar waxwing. 37. Towhee.

Q. NAMES AND THEIR HISTORIES

Names of rivers, lakes, villages, and towns are sometimes chosen at random ; sometimes they commemorate their discoverer, or are given to remind the settlers of the land of their birth ; sometimes fancy helps to make a choice, and in other cases an incident or natural feature is seized upon, and the name, often modified, becomes at last fixed. The following are but a few of the many names used in this text-book. Every settlement can supplement the list : —

Alameda. — The name of a Spanish town and district in California.

Alberta. — One of the names of H. R. H. the Princess Louise. The district was so named by order-in-council dated May 8, 1882, at which time the Marquis of Lorne was governor-general of Canada.

Anthracite. — The town was called by this name on account of hard coal being found in the neighboring coal mines.

Appalachians. — This name was applied to the mountains by the Spaniards, who learned it from the Indians. The Appalache, or “people on the other side,” dwelt in the South-Eastern States.

Arcola. — The name of a town in northern Italy.

Arctic. — From the Greek *arctos*, “a bear.” Hence applied to the ocean beneath the cluster of stars known as the “Great Bear,” “Dipper,” or “Charles’s Wain.”

Assiniboine. — From *assini*, the Cree word for “a stone,” and *bwan*, the native name of the Sioux or Dakotas. The name therefore means the “Stony Sioux.” Some say that *assini* was given to a tribe of Indians making use of heated stones in cooking their food, and that the name means “stone-roaster.”

Athabaska. — A Cree name given to the country about the Peace River delta, and afterwards applied to the lake and the river. Athabaska means the “place where there is an amount of high grass here and there.”

Back. — Named in honor of its discoverer, Sir George Back. The river was formerly called the Great Fish, having been so named by Back himself.

Battle River. — The banks of this river were formerly the scene of many fierce combats between the Blackfeet and the Crees, and received its name from this fact.

Battleford. — The ford or crossing-place of the Battle River. The town was formerly the seat of government of the North-West Territories.

- Belly River.** — Named from the Gros Ventre Indians who lived in that portion of the country.
- Binscarth.** — Named in compliment to Mr. W. B. Scarth, who was at the time manager of a land company that held land in the vicinity.
- Birtle.** — A shortened form of "Bird Tail," the little river on which the town is situated.
- Boissevain.** — So named from Count Boissevain, a German, one of the earliest settlers.
- Bow River.** — Named either from the fact that the wood which grew on its banks was suitable for the making of bows, or, more probably, from the shape of its course which resembles a bow.
- Brandon.** — Given in the first place in 1794 to Brandon House, a trading-post on the Assiniboine River, thirteen miles east of Brandon City, and given also to the range of hills to the south—the "blue hills of Brandon." May have had something to do with the town of Brandon, England.
- Calgary.** — Originally a post of the North-West Mounted Police, established on the site of the present city in 1875. It was named by Colonel Macleod, who was then commissioner, the name being taken from an estate in the Isle of Mull, Scotland, called "Calgarry," owned by one John Mackenzie, a brother-in-law of Colonel Macleod's.
- Canada.** — Either from the Indian *Kanata*, a "collection of wigwams," or from *Cantata*, "welcome."
- Canmore.** — A Scottish word meaning "big head" — probably given, like many other names, by accident, to this town.
- Carberry.** — Named by the officials of the Canadian Pacific Railway, in honor of Carberry Hall, the estate of Lord Elphinstone in Scotland.
- Cardston.** — The town is named in honor of its founder, Mr. Card.
- Carman.** — Named in honor of Dr. Carman, the general superintendent of the Methodist Church in Canada.
- Chicago.** — Indian *Ciskagong*, means "skunks"; the swamp upon which the city was built was subject in the early days to offensive odors arising from the presence of the above-mentioned animals, or from the prevalence of *garlic*.
- Chinooks.** — The name of a tribe of Indians living south of British Columbia — warm westerly and south-westerly winds from the country of the Chinooks.
- Chipewyan.** — The Athabaskan Indians are also called the Chipewyans. The name is derived from a contemptuous epithet given to the tribe by their enemies the southern Crees. The word means "you dead dog."

Churchill. — Bestowed on the river in honor of John Churchill, the great Duke of Marlborough, a former governor of the Hudson's Bay Company.

Coppermine. — So named by Hearne, its discoverer, on account of the fact that the mines from which the Indians obtained the specimens of copper which they brought to the Hudson's Bay Company trading-posts were supposed to be located somewhere in the vicinity.

Coronation. — Applied to the gulf by Sir John Franklin, its discoverer, he having entered it on the day when George the Fourth of Great Britain was crowned.

Cypress Hills. — Named from a species of jack-pine that grows on the hills, and somewhat resembles the cypress.

Dakotas. — An Indian word meaning "friends," "our friends or allies," or "confederate people," and used by the several Indian tribes forming the great nation of the North-Western States.

Dauphin. — Vérandrye, the French explorer, who discovered the lake, named it in honor of the Dauphin, the eldest son and heir of the King of France. The town and municipality took its name from the lake.

Deloraine. — So named by the first postmaster, whose early home was in Deloraine, a small village near Hawick, Scotland. In Scott's "Lady of the Lake" there is mention of "William of Deloraine."

Dunmore. — Named after Lord Dunmore, who was, in the early days of the country, connected with the Canadian Pacific Railway.

Edmonton. — The North-West Company originally had a post on the site of the present town which later passed into the hands of the Hudson's Bay Company. Its first known name was "The Fort of the Beaver Hills," and later the Canadian French called the place "Fort Augusta," and then "Fort la Prairie." The name "Edmonton" is supposed to have been given in honor of an official of the Hudson's Bay Company.

Elbow River. — So named from the shape of its course, which resembles an elbow.

Emerson. — Named in honor of Ralph Waldo Emerson, the Massachusetts philosopher and essayist.

Eskimo. — The "eater of raw flesh."

Estévan. — The name was made up from the names of Sir George Stephen, now Lord Mount-Stephen, and Sir William Van Horne, at that time the president and general manager of the Canadian Pacific Railway.

Franklin. — The name was given by the Dominion government in memory of Sir John Franklin, the explorer, who met his death in the northern seas.

- Gimli.** — Icelandic for the "haven of rest."
- Gladstone.** — Originally given the name of Palestine, but renamed in the early eighties in honor of William Ewart Gladstone.
- Glenboro.** — Named by Mr. James Duncan, the first postmaster of the town, in honor of the village in Fifeshire, Scotland, from which he came: The Borough of the Glen.
- Great Bear Lake.** — Given first to the largest river emptying into the lake and probably, as the name suggests, because of unusually large bears being seen or slain in the vicinity. It may also have been given for the same reasons as the ocean to the north was called the "Ocean of the Great Bear."
- Great Slave Lake.** — The Dog-rib Indians were driven this distance north by their enemies the Crees, who contemptuously nicknamed them *slaves*. The lake in turn was named after the Slave Indians.
- Gretna.** — Named from Gretna Green in Scotland, the settlement being situated on the border-line between Canada and the United States.
- Hartney.** — Named after Mr. James Hartney, ex-M.P.P. and now agent for the government of Manitoba at Toronto.
- Hudson Bay.** — Named in honor of Henry Hudson, its discoverer, who entered the bay in 1610.
- Keewatin.** — *Keewaytin*, an Indian word for the "homeland wind," or "the wind going back"; that is, the wind from the north-west.
- Kicking Horse Pass.** — So named from the river where the geologist Hector was severely kicked by a horse.
- Kildonan.** — Named by Lord Selkirk, in 1817, from the settlers' old home in Sutherlandshire, Scotland.
- Killarney.** — The town takes its name from the lake, which was named by Mr. John Sidney O'Brien, in honor of the lakes of the same name in Ireland.
- Lac Du Bonnet.** — "Bonnet or Hat Lake." Named either from the shape of the lake or from the custom of the Indians of crowning with flowers and leaves stones placed on the highest rocks of the portages.
- La Grande Prairie.** — "The Big Prairie."
- La Salle.** — So named after La Salle, the great French explorer.
- Lethbridge.** — Named after William Lethbridge, the first president of the North-West Coal and Navigation Company.
- Liard River.** — The name of the river in French is *Rivière des Liards*, or "River of Poplars."
- Macgregor.** — Named by the officials of the Canadian Pacific Railway in honor of the Rev. Dr. Macgregor of Edinburgh, Scotland.

- Mackenzie.**—Discovered by Alexander Mackenzie, and called by him the "Great River." Called the Mackenzie in 1825 by Sir John Franklin.
- Macleod.**—Named in honor of Colonel Macleod, commissioner of the North-West Mounted Police.
- Manitoba.**—Indian for "the spirit of the strait"; *manitou*, a spirit, and *waban*, a strait. The lake is so named on account of the strange sounds heard at the Narrows, supposed to be due to supernatural agency.
- Manitou.**—Indian for a "spirit."
- Marquette.**—Named after Father Marquette, the French missionary and explorer.
- Medicine Hat.**—Numerous stories are told about the origin of this name. One of these is that the hill east of the town resembles the hat of an Indian medicine-man, and was so called, the name being afterwards applied to the town.
- Melita.**—The ancient name of the island of Malta, Mediterranean Sea.
- Miami.**—Named by the Post-Office Department in 1877; probably suggested by the Miami Indians who lived to the south-west of Lake Erie, or by the Miami River in the same locality. The word means "mother."
- Minnedosa.**—Indian for "running water," the town being situated on the rapid flowing Little Saskatchewan.
- Mississippi.**—The "great river"; not, however, as many suppose, the "father of waters."
- Missouri.**—First applied to the river; afterwards to the Côteau. Missouri means "muddy river."
- Moose Jaw.**—The name commemorates an event very wonderful to the Indian, "The-place-where-the-white-man-mended-the-cart-with-the-jawbone-of-a-moose."
- Moosomin.**—An Indian word meaning "the crossing of the trails." The town is situated at the intersection of the north and south trails.
- Morden.**—Named after Mr. Alvey Morden, who, in 1878, homesteaded the section on which the town is built.
- Morris.**—Named after Sir Alexander Morris, one of the early lieutenant-governors of Manitoba.
- Napinka.**—The name was originally given by the Post-Office Department at Ottawa. It is an Indian word which signifies "mitts."
- Neepawa.**—An Indian word meaning "plenty," although some say that it means "wet place" or "marsh."
- Nelson.**—Named in memory of Nelson, an officer of the ship *Resolution*, sent into Hudson Bay in charge of Commander Bolton, in order to follow up the discoveries of Henry Hudson, in whose honor the bay was

named. The name "Nelson" was first applied to the post, and afterwards to the river.

Oak Lake. — The settlement takes its name from the lake, so called from the scrub-oak that grows in abundance along its shores.

Ohio. — The "beautiful."

Ontario. — Indian for the "beautiful lake."

Oxbow. — The Souris River takes the form of the bow used in yoking oxen, at the place where the settlement is situated.

Pasquia. — "Narrow ridges or bluffs."

Pembina. — From an Indian word *nipemina*, meaning "watery berries"; high-bush cranberries.

Pilot Mound. — The hill on which Pilot Mound is built, owing to its prominence in the landscape, served as a guide or pilot to the early settlers.

Plum Coulee. — Named from a ravine near the settlement, which contained an abundance of wild plum trees.

Portage la Prairie. — Fur traders from the Assiniboine and from Lake Manitoba crossed backwards and forwards across the "prairie portage" between the river and the lake. This name was afterwards applied to the post on the river, called at first Fort la Reine by V erandrye.

Prince Albert. — So named in honor of the Prince Consort, by the Rev. Mr. Nesbitt, the first missionary to the district, in 1866. The Indian name for the town is *Stubbannan*, which means "stopping-place."

Qu'Appelle. — A French translation of the Cree, *Katapaywie Sepe*,—*Katapaywie* meaning "who calls," and *Sepe*, meaning "river." Hence, Qu'Appelle means the "river that calls," the Indians believing it to be haunted by a spirit whose voice was often heard wailing in the night.

Rapid City. — Named from the rapid on the Little Saskatchewan River near the town.

Red River. — The river takes its rise in Red Lake, which owes its name either to the color of the sand at its bottom, or to the bloody battles which took place on its banks between the Chippeways and the Sioux. Some say that the river is so named from the color of its waters when agitated by the wind. The river is known in French as *Rivi re Rouge*.

Regina. — Latin for "queen." The city was so named when it was chosen as the seat of government for the North-West Territories.

St. Boniface. — The town was originally formed by the De Meurons regiment, made up largely of Germans and Swiss, who had been brought to the West by Lord Selkirk. The name was given in honor of Boniface, the patron saint of Germany.

- Saskatchewan.** — Indian, *Ki-sis-kah-che-wan*, meaning the “river which flows rapidly.”
- Saskatoon.** — The Indian name of a species of Juneberry found growing in abundance in the West.
- Selkirk.** — Named after Lord Selkirk, the founder of the first farming settlement in Manitoba.
- Souris.** — A French word meaning “mouse.” The portion of the river in the United States is generally called the Mouse River.
- Strathcona.** — Named in honor of Sir Donald A. Smith, Lord Strathcona and Mount Royal, governor of the Hudson’s Bay Company, and high commissioner for Canada in England.
- Ungava.** — An Eskimo word meaning “the place to the south.”
- Vancouver.** — Called after Captain George Vancouver, who, as midshipman in Cook’s last voyage, visited this coast in 1776, and later, as captain, surveyed it in 1792.
- Virden.** — Named after the country-seat of the Duke of Manchester, who was, at the time that the town was named, one of the shareholders of the Canadian Pacific Railway.
- Wawanesa.** — The “nest of the whip-poor-will.” The town lies on the Souris River, at the bottom of a beautiful valley. The whip-poor-will is a frequent visitor to this locality. These circumstances may have suggested the name to the Indians.
- Wetaskiwin.** — Indian ; meaning the “place where leggings can be had, or are made.”
- Winnipeg.** — Indian ; meaning the “muddy water,” or the “shadowed water.” *Wi* or *win* means “muddy,” and *nipi* means “water.” Applied by the Indians to the lake, the waters of which are clouded for various reasons. The lake is shallow, hence the bottom mud is often agitated in a storm. The Red and Saskatchewan rivers are loaded with sediment.
- Winnipegosis.** — “Little Winnipeg.”
- Yorkton.** — Named by the colony from York County, Ontario, which undertook in the early eighties to settle that part of the country.

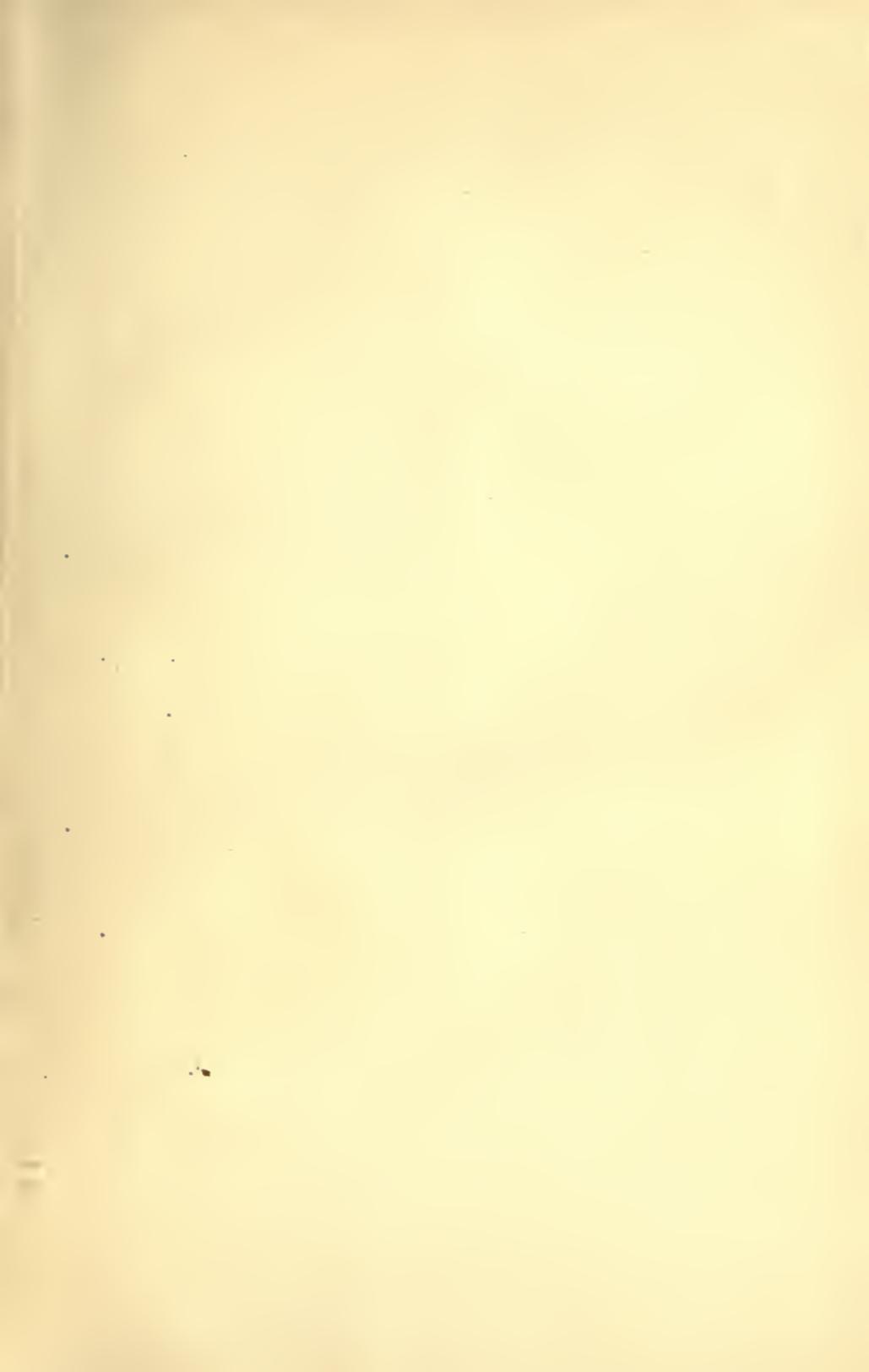
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