UNIVERSAL
LIBRARY

THE LADDER SERIES

The Ladder Series books are special editions of popular American books, prepared at easier-to-read vocabulary levels than the American editions for the enjoyment of readers for whom English is a second language.

The "Ladder" is made up of vocabularies of 1,000 words and up, with a number of books at each level, thus forming a ladder to English understanding while making available the same good books Americans are reading.

This book has been prepared on the 1,000-word level. But because the subject of the book needs certain special words, some words in the book are beyond this level. The reader will find such words printed in *italics* and explained in the back of the book.

This is a shorter edition than the complete book, which the publisher hopes the reader will want to read and enjoy as his English ability increases through the Ladder Series.

ST. LAWRENCE SEAWAY

Clara Ingram Judson

A Ladder Edition at the 1,000-word Level
adapted by Judith Kaye Reed

PYRAMID BOOKS NEW YORK

ST. LAWRENCE SEAWAY

LADDER EDITION
published February 1963

This LADDER EDITION
has been especially prepared for the beginning reader.
It is printed from brand-new plates
made from newly set, clear, easy-to-read type.

Printed in the United States of America

CONTENTS

CHAPTER I

THE BEGINNING

Ice began the making of the Great Lakes-St. Lawrence waterway. Great *glaciers* formed the five large lakes. Together, these five lakes hold a larger amount of *fresh* water than is found anywhere else on the earth. Think about trying to make such big holes in the earth, even with the machines of today! A machine would not be able to take out enough earth to make the hole for Lake Superior, which is 400 miles long and 1300 feet deep. And there are four more lakes. All except Lake Erie, are very deep.

The glaciers slowly spread the earth and stone over half of America. As the weather became warmer, the ice changed to water. The water filled the holes that are now the Great Lakes and covered much of the country around them. Then it ran off to the south supplying water to the Mississippi River. Hundreds of years later, some of the water rolled back, and the Mississippi no longer received water from the Great Lakes. Now the water runs northeast to the Atlantic Ocean. On its 2,342-mile journey

to the sea it falls 600 feet. In some places, the fall is not great. But in one place, at Niagara, it goes down 165 feet in one great fall. There the water makes a sound so loud that it can be heard miles away.

The land around the lakes contains iron, gold, silver and other materials. Forests grew after the ice was gone. Animals covered with soft *fur* lived in the wild country along the lakes and rivers. Water on which to carry these riches to market was near. But business and trading are the work of men, and there were yet no men by the lakes. Men were coming, however. They were coming from the north, the south and the east.

The first men to arrive at the Great Lakes came from the north. They had started from Asia in one of the greatest migrations in history. But little is known of their journey. Perhaps they came through the Aleution Islands. Slowly they traveled south and east. Sometimes they stopped for a year, sometimes for many years. Some of these men, named Algonquins, settled along the lakes and the great river. From the outer parts of trees they made the first boats used on the lakes. These boats, named canoes, were used for fishing and for travel.

A second large migration brought people from the south.

While they traveled, the old women told

stories to the children. The stories always ended in this manner:

"Remember that you come from a land that is always warm. Remember that the trees are different there."

Perhaps the people from the South were Aztecs. No one knows. We do know that they were interested in government. In each of their villages they built a large "Long House," which was used as a meeting place for their soldiers and leaders. Their homes were very small and simple. These people did not work well with their hands. Their boats did not ride well on the lakes.

The people from the south wanted the fast boats and thick, warm furs of the Algonquins. And what they wanted they took by force. The two groups of people did not meet often because the lakes were wide and the boats small. But when both groups came to the river they fought like wild animals. The men from the south were known as Iroquois, the Enemy. Iroquois, the Destroyers. The name Iroquois became a word of fear.

Much later, the third migration began, the movement from Europe to North America. The first men to cross the Atlantic Ocean from Europe were probably Norse travelers. They sailed in very small boats to Greenland and then down to North America.

A book written in Italy seven hundred years

ago caused other men to come to America many years later. "The Book of Marco Polo" told of the writer's travels in the Far East. It made daring men wish to travel and hunger to find riches for themselves and for their kings. But the book also told of the problems of traveling through very hot and dry lands.

Almost two centuries later, "The Book of Marco Polo" became even better known when a method was found to make many books at one time. Again men who read it dreamed of discovering riches. Wars had cut off most of the old roads to the Far East, but people believed that there must be another way to reach the riches of China, which they called Cathay.

For many years, men from Portugal had sailed near Africa, looking for a sea way to the Indies. In Italy Christopher Columbus had a new idea: if the earth was round man could sail west and come to the East?

Columbus' success was greater than he ever dreamed; but he did not find a water way to the Far East. Nor did any of the travelers who followed him. Not until the 1530's did one of the travelers come to the wide river that carried water from the five Great Lakes into the sea.

During this time the men of Europe who lived near the Atlantic Ocean sailed farther west, to catch fish. They seem to have traded in furs with American Indians, for the poorer people in Europe used fur from North America

long before the rich people did. But these men did not have any idea of the great waterway that led into the center of North America.

Then a Frechman, Jacques Cartier, told his king, Francis I, that he could find a northwest way through the land. He promised to bring the riches of the East to France. Soon Cartier was sailing west with two ships and 60 men, to look for a northwest way to China. He discovered nothing important on the first journey, but he did return to France with good furs and two American *Indians.* The king liked the furs and was interested in the Indians, who helped Cartier learn Indian words and understand Indian ideas.

The next year, Cartier sailed west again. During this second journey, on August 10, 1535, he discovered the hundred-mile wide *gulf* that he named St. Lawrence because the day was St. Lawrence's Day. Cartier sailed on up the river, which he also named St. Lawrence, until he came to a part where the river was not wide and had a great rock on its north shore. Cartier called this place Kebec, an Algonquin word meaning a *narrow* part of a river. Later he changed the name to Quebec.

At this time he first heard the word Kanata —or was it Canada? He was not certain. The Indians seemed to use the word to mean a village.

Cartier had planned to have the two young

Indians guide him up the river, to look for the northwest way through North America. However the Indians would not go beyond Quebec. They seemed to be afraid of another group of Indians. In this manner Cartier first learned of the wars along the river. The leader and a few of his men continued the journey in a small boat, without guides. They found the island with a mountain which the Indians had told them to expect. They went ashore and found a crowd of interested people, who seemed to be members of another Indian group.

"What name have you given this place?" Cartier asked them.

"Hochelaga," one answered. They all seemed surprised to hear the sound of Indian words.

"Hochelaga!" Cartier spoke the word without pleasure. "That is not a good name for this beautiful place. I shall name it Mount Royal (King's Mountain) in honor of my king." And he did, in his report to the king.

While Cartier talked to the Indians, he heard the sound of rushing water. He and his men returned to the boat and moved south, toward the sound. Soon they came to the bottom of a *rapids,* where water moved quickly and the *current* turned it in circles.

"La Sault!" Cartier shouted, surprised by the sight. He used the French word for falling water or rapids. The sound of the rushing water was so loud that one could not hear anything else.

The men tried to move the boat against the strong current.

"If this is the way to China, the journey will not be easy," Cartier told the men. He named the place Sault La Chine—the rapids of China —and then returned to the island.

The Indians were on the shore. They guided the travelers up the mountain to see their village —a Long House in the center of some very small houses. Then Cartier returned to Quebec.

The Frenchmen lived in Quebec during the long, cold winter but they did little traveling because of cold weather and sickness. And the winter changed Cartier. To be famous and rich no longer seemed very important to him. He wished to go to France for more supplies and then to return to teach *Christian* ideas to these strange, wild Indians.

But in France, the next summer people laughed at Cartier's report. Francis I was not interested in teaching the Indians. Cartier's journey was not thought to be a success. Cartier had discovered a great waterway as far west as the first rapids, but no one thought that was important.

In his own time people did not honor Cartier, but centuries later his name was given to a beautiful bridge built across the St. Lawrence River at the city of Montreal. The bridge begins, on the north side of the river, near the place where Cartier came ashore in 1535. To-

day the bridge marks the east end of the St. Lawrence Seaway, and its name tells everyone that Jacques Cartier is remembered.

• • • •

By the beginning of the 1600's, the long wars in France had ended. Henry of Navarre was king and a new time in history was beginning. Men turned their thoughts from war to other things, and then to the New World. The discoverer of the northwest road would become famous. But even without that discovery a journey to the New World was thought to be a good thing. There were souls to save and furs to bring to France.

"Furs might pay for saving souls," someone said. The words were told to Francis Pontgravé, a businessman of St. Malo. Pontgravé had traded in furs from America; he knew they might make one rich.

We could bring people to the New World, too, he thought. *"That would please the king."* This plan required ships and a leader. In 1603, 69 years after Cartier's first journey, a new group sailed across to the place they hopefully named New France. Samuel de Champlain was their leader.

Pontgravé remained at Quebec to start a trading business. Champlain continued up the river. He found the beautiful island and the mountain which Cartier had reported, but no village. He found the Sault La Chine and tried

to go up the rapids. As the men on the boat worked against the current, Champlain noticed two Indians standing near the river, watching. He stepped ashore and, in the few Indian words he knew, asked them to tell him what they knew of the river.

"They seem to tell of small lakes above, and more rapids," he told his men. "A long rapids, more river, and a big lake with Niagara above it—what could that mean?" The Indians, knowing that he did not understand, made loud, fearful noises and then added the Indian words for "and more lakes."

"Probably they are laughing at me," Champlain decided. "Pontgravé says that some Indians like to fool people. Surely no place in the world has so many lakes and rivers joined together!"

Champlain decided to forget the words of the Indians. He went up the Sault La Chine, across two pretty lakes, and to the bottom of a long rapids. From the boat he looked at the rapids.

"A long sault," he thought sadly. Champlain had no time for a longer journey, so he turned back and went down the river. He found the lake that is now named for him and made reports on what he had seen.

During this time Pontgravé had built several fur-trading places. In the next few years he and Champlain returned often to the New World. Champlain is called "The Father of Canada"

because of his long service to the people who lived along the St. Lawrence River.

At the time of Champlain's death in 1635, the New World was changing quickly. People from England had settled on land in what are now the states of Virginia, Maryland and Massachusetts in the United States. The Dutch people had come to live on Manhattan Island and along the Hudson River in New York state. The purpose of these people in coming to America was different from that of the French. The English and Dutch wished to change the wild land to farm land; the French needed wild land and wild animals so they could continue their rich fur trade.

The English and Dutch wished to have furs too, but the furs from the south which the Iroquois offered them were not as thick and beautiful as those found in the north. So the Iroquois began to take the furs from the Indians in the north. In this way the English and the Dutch, without knowing it, increased the number of Indian wars across the rivers and lakes.

None of the new North Americans seem to have thought of the waterway as one complete road. The idea of a joined, usable waterway was first considered by two men who came to the New World from France, many years after Champlain.

CHAPTER II

MEN AND A DREAM

In 1666 two men with widely different characters and purposes arrived in New France. Both were to discover that the large lakes and rivers were joined and to realize what this could mean to North America. These men were Father Marquette, a man of the church, and Robert Cavelier, a businessman later known as La Salle.

Father Marquette had been sent from France by the Roman Catholic Church. After Champlain had come to America, men of the church had gone far into the wild country, building churches and teaching Indians.

But beginning in 1640, the Iroquois Indians had made wars in the land between Lake Huron and Lake Erie. They were fighting to get the furs of the north. By 1650, the Iroquois had destroyed many churches. When Father Marquette came he built one church at a rapids, which he named Sault Ste. Marie, and another at the head of Lake Michigan, which he named St. Ignace.

A trader named Pierre Radisson had gone to the Hudson Bay country and found beautiful furs which he tried to sell to the king of France. But neither the king nor his friends were interested. So Radisson went to England, where the Hudson's Bay Company was formed to trade in furs.

The news angered the French king. He sent *Governor* Talon to America with the command that all of North America must belong to France.

The first job was to stop the warring of the Iroquois Indians. Soldiers were sent from France; they were successful in finding the Indians and burning their villages. Later, the French had a meeting with the Indians. They explained to the Indians that they should take their furs to the French on the St. Lawrence River, and not to the English at Hudson's Bay.

Hundreds of Indians from many different villages came to this meeting. At the meeting, a French leader, sent by the king, told them that North America belonged to France. Now the news would spread through the wild country and furs would be brought to the French river villages.

These happenings made people in Europe and America think about the lake country and the great waterway in the north. As a result, on a cold winter day in 1672, a small boat arrived near the church at St. Ignace, where Father

Marquette lived. A man stepped out of the boat and walked to the small house.

"I am Louis Joliet," he told Father Marquette, who came to meet him. "Perhaps you remember me. I saw you at Sault Ste. Marie."

Father Marquette was happy to see this man, who had been born in Canada and traveled much there. Joliet told Father Marquette that the church leaders wished Marquette to go with him, to find the Mississippi River, then known as the "great river of the West."

The winter passed quickly while the two men made plans and learned about the country in talks with the Indians. In the spring they started out, with five other men, in two boats.

They traveled along many rivers. They followed the Wisconsin River and were pleased to find that its waters went into a large river—surely the "River of the West." But as they traveled downstream, Joliet began to be fearful.

"We seem to go south," he thought, "not to a west sea but to the Spanish people."

Marquette agreed that they should not continue. So, after passing the mouth of the Missouri River, they turned back and went up the Illinois River. Father Marquette built a small church along the way and remained to work there with the friendly Indians. Joliet continued the journey. He found a short, easy *portage* to the Chicago River through the low land be-

tween the Great Lakes and the Mississippi River.

Joliet wrote careful reports. It was decided that he should go to Quebec with his news of the great river and of the easy joining of the lakes. Father Marquette was to return to St. Ignace later. They were very pleased with their findings and they expected people in Quebec to be pleased, too.

But on the journey to Quebec Joliet's boat turned over and his reports were lost. He almost died trying to save them. He made new reports but the men in Quebec would not believe him. Nor was he believed in Paris, where his new reports were sent.

Marquette died, alone, two years later. The idea he shared with Joliet—of a simple joining between two large water systems—was no longer remembered.

The second traveler who came to New France in that important year of 1666 was La Salle, a young man of three and twenty years. When this son of a businessman was asked why he came, he answered: "To be with my brother and to work for riches." He had been given good land on the north shore of the St. Lawrence River, across from the Lachine Rapids. La Salle built a home near Champlain's trading store and he farmed his land. His position near the river made it easy for fur traders to reach. The Iroquois had been quiet for a time and

people thought that they had gone from their village across the river.

La Salle learned to understand the Indians near him. Some of them visited in his home and told him of a great river to the west, which ran into the sea. La Salle's mind became filled with new ideas for greater fur trading and for traveling through the distant country to the west.

The sound of the beautiful Lachine Rapids also interested La Salle. From where did all that rushing water come? He knew where it went—down to the sea. But in the west some strong force must send it over those great rocks. La Salle began to travel in the wild country. Traveling became more important to him than becoming rich through trading.

Then Louis Joliet arrived with his reports; La Salle was perhaps the only person who believed them. A new ruler, Count Frontenac was sent from France. His command from the king was to find more riches for his nation. Frontenac had heard about La Salle and his travels and asked him to join him in his journeys to the west.

In 1673 Frontenac planned a journey up the St. Lawrence River. This first government journey up the river from Montreal was a large one. Four hundred men and more than 150 boats started out together.

At the rapids the men had to fight against the current. They successfully went up the

rapids, and then continued on, crossed two peaceful lakes, and came to the Long Sault. There they had to fight again against strong currents for 30 miles.

As the boats passed the Thousand Islands the men saw Indians on shore watching them. Frontenac stopped the boats and sent men to tell all the Indians, to come to a big meeting. La Salle was given the job of building a *fort* on shore.

La Salle and his men worked quickly. The fort was ready when the Indians arrived for the meeting. After the Indians saw the fort and met the governor they agreed to peace.

Now Frontenac believed that success was certain. He commanded La Salle to build two boats to carry supplies between the mouth of the Niagara River and the new fort. These were the first sailing ships on any of the five lakes. They were useful but they could not *climb* Niagara Falls nor go through the St. Lawrence Rapids.

Frontenac returned to his work at Quebec. He left La Salle, who agreed to travel past Lake Ontario. Beyond it he found Niagara Falls, saw the great *escarpment* and Lake Erie.

"I can build a boat on this lake," he decided. "Men could carry material up that escarpment to a river I saw."

The ship, named the "Griffin," was built on the Niagara River, not far from Lake Erie. It

had five guns and was to be used to carry furs and supplies between Niagara and a trading place on Lake Michigan. Frontenac gave La Salle the job of building more trading places.

La Salle planned with care. First he sent two boats, one to St. Ignace and one to a place now named Washington Island. In the summer of 1679, the "Griffin" started its journey. In twenty days it traveled from Lake Erie through the St. Clair River and up Lake Huron to St. Ignace. But at St. Ignace the men from the "Griffin," including La Salle, learned that the first boat had never arrived. La Salle continued down Lake Michigan to Washington Island. There his men had good furs awaiting the ship. The furs were put on the "Griffin" and the ship went back to the Niagara River, while La Salle and some of his men traveled down Lake Michigan to the mouth of the St. Joseph River.

The "Griffin" did not return. La Salle never saw that ship again. It was the first of many ships that have been lost on the Great Lakes.

La Salle had told his men to build a fort at St. Joseph, the first fort on Lake Michigan. When the St. Ignace men came at last, La Salle decided to look for the places which Joliet had reported. Because of lake storms he traveled a new way and saw strange animals called buffaloes. He and his men stopped during the cold weather at one of Father Marquette's churches. Later they went to Lake Peoria, where La Salle

hoped to build a boat to carry supplies down the Mississippi River.

However, strange things seemed to happen to La Salle after the "Griffin" was lost. His shipbuilders left him, taking much of his material with them. His men built a fort, the first in the Mississippi valley, but they could not build a boat without the materials the other men had taken. There was only one place to get new materials and only one man who could ask the government for them—La Salle. And there was only one way to travel in the winter. La Salle walked to Montreal.

He walked around the end of Lake Michigan and discovered the second *sag* in the water*shed,* which is now known as Calumet Sag. He found the easy portage between the Mississippi River and the Great Lakes.

La Salle left no long report of that trip, but we know that he arrived in Montreal about two months after he started. In Montreal he had trouble getting his materials and it was almost two years before he could return and build his boat. Then his *voyage* down the Mississippi River began.

La Salle and his men were very pleased by the size of the river, the number of animals living near it and by the good land all around it. They met Indians but had no great trouble with them. They arrived at the Gulf of Mexico on April 9, 1682. There they put in the ground

a cross and the sign of France. For their king, that declared that France was the owner "of that river, of all rivers that enter it and of all the country watered by them."

La Salle returned to Canada and then to France. In France he received many honors. He was asked to return to the Gulf of Mexico to build a French *colony* and forts, so that this part of the country would be kept for France.

La Salle was killed during his journey, so the plan was not successful. But he had proved that men could go by water through the center of America, almost all the way from the St. Lawrence River to the Gulf of Mexico.

CHAPTER III

THE FIRST *CANAL*

In the last years of the 1600s, trouble came to the land along the St. Lawrence River. La Salle and Marquette were dead and Joliet's reports were thought to be of little value. There were too many troubles at home for anyone to think of travel in the west.

Governor Frontenac received a command to return to France. This was not good for New France, because Frontenac knew how to control the Iroquois. The new governor who came from France did not understand Indians and would not listen to the men who did understand them. All three nations—the Dutch, the English and the French—gave the Indians guns and strong drink. These things made the Indians act more wild than they had before. They crossed the river and killed the traders; they made war against peaceful people. For 3 years not a single boat brought fur to towns on the ocean.

Farmers suffered too. For many years people had lived near the river, which was their road. Now men were afraid to plant their fields. Too

often, the ringing of the church bells would mean: "Be careful. The Iroquois are coming!" Men, women and children would stop work and run to find a safe place. Often they were too late to save their lives.

Once the farmers heard that the Iroquois were near the Ottawa River and were coming to take the town of Montreal. People were very fearful. Then 16 men offered to go up to a place along the Ottawa River and fight the Indians there. People were surprised. How could 16 men save a city?

"We can do our best," the young men declared. They went up the Ottawa River and waited. Early in the morning of the third day the Indians came. The young men were killed, but they had taken the lives of more than 500 Iroquois. The Indians turned back and Montreal was saved.

Later the Iroquois did come across the river. They destroyed the village of Lachine. Letters were sent to the king, saying, "Send us Frontenac!"

Frontenac was 70 years old when he arrived, but he was still a strong man. He began to make plans for a great meeting to end the Indian wars.

People became more hopeful. Fields were planted; trade began again. But some people could not forget the war against Lachine. They talked about making the waterway safe. The

little St. Pierre River was near the north side of the rapids. Now, they thought, if that river could be made longer and joined with other waters. . . .

Some men of the church had built a canal to join the little river with a part of the Ottawa River, near Montreal. Fur traders had made the canal longer; now the waterway was eight or ten miles long, 18 inches deep and five feet wide. There were small wooden gates at both ends.

This waterway was simple, but the Indians could not see the boats on it. Because of this canal, boats were able to travel on the St. Lawrence River without going through the rapids.

Frontenac did not live to see this canal, which was completed in 1700. Nor did he meet with the Indians, as he had planned. He died in 1698. Today a traveler in Canada often sees the name "Frontenac." That wise governor is greatly honored for his work in the New World.

The next governor wisely followed Frontenac's plan and met with the Indians. The meeting was in Montreal in the summer of 1701. More than 1,500 Indians came.

One can not think of a more beautiful place for a meeting. It was where Cartier had once visited the Indian "Long House" and village. Above the meeting place the mountain was dark with big trees. In the west was the Ottawa River. In the east, the great St. Lawrence River

moved quietly. Far to the south were the rapids. Just below, along the river, hundreds of small boats moved in the water, guarded by Indians.

The Indians sat in two groups. The Iroquois were on one side of the governor, the Algonquins on the other. The governor and his men sat in a circle. The Indians were wearing their best clothes. On their own heads were the head bones of animals. Their faces were covered with bright-colored paint. Chains of bones hung from their necks. And human *scalps* of many colors hung from their belts.

After everyone was seated, the governor stood up and stepped forward. The sun was shining on his rich clothes.

He began to speak, asking for peace. The Indians listened. When he stopped talking there was quiet until he asked some one to tell the Indians, in their own words, what he had said. The governor sat still while the Indians listened. The Indians were pleased, because the Frenchman seemed to think that they were important people.

Then many men spoke. All asked for peace. The sun was going down over the Ottawa River when the last man finished. The governor's words had ended with the hope that "Never again would Frenchmen and Indians war with each other!" And the Indians had shouted their agreement with this idea. Frontenac would have been proud and happy.

For many years there was peace with the Indians. The English Hudson's Bay Company grew on the north and the English people in the south moved west toward the mountains. Both the English and the French wanted furs to trade in Europe.

But few people in the New World thought about this. Life along the river was more pleasant each year. New families came from France, and each wished to have a place on the river. Many of the farms on the river were not wide, but they often reached back four or five miles toward the forests. Ships brought news and some supplies.

Fur trading began again. Travelers returned each spring with furs. They talked of distant lakes, beyond Sault Ste. Marie, but nothing was done to make more canals to join the parts of the great waterway.

During this time a village named New Orleans was settled on the Mississippi River. La Salle would have been pleased because he had wanted to build a village there. Frenchmen also built a few forts further up the Mississippi, but the English did not seem to notice. The governor of the English colony of Virginia heard that the French helped by the Indians, had moved up the St. Lawrence River and up the lakes until they arrived at the south shores of Lake Erie. The French declared that land as far south as the Ohio River belonged to them.

Lake Erie! Ohio River! These were new words in Virginia. The governor must send someone to tell the French to move back. This was English land.

CHAPTER IV

TWO NATIONS

George Washington told the governor of Virginia that he would make the long journey to Fort Le Boeuf, near Lake Erie. He was 21 years old. He had learned much about wild country in his job as a land measurer, but he did not know that Fort Le Boeuf was 560 miles away. He knew the journey would not be easy, but he was a man who enjoyed new experiences.

The leader at the Fort read the letter Washington had brought and then told him that all this Ohio land belonged to France. The Fort leader gave Washington a report to take back to the governor of Virginia.

After Washington's visit to Fort Le Bouef the French forts at Niagara and Duquesne were made stronger, and the fight for power continued. Both nations, the French and the English wished to have the rich fur trade. Later, England sent soldiers to destroy the French forts near the English colonies, but the soldiers were killed and the forts remained. Three years later, the French decided that it was not

possible to hold their position in Ohio. They burned their fort and left. Young Washington and his soldiers built it again and named it Fort Pitt.

The fight between the English and the French was not decided south of the lakes, as Washington had hoped, but on the St. Lawrence River. In the summer of 1759 English ships, led by Wolfe, an army leader, moved up the river to take the city of Quebec. Wolfe studied the great rock at Quebec. How could he take such a place? The rock seemed to make the city safe.

But Wolfe looked again. He noticed women washing clothes in the river. He looked around. Then he stood up straight. What were those white things on the ground along the top of the rock? Clean clothes? How did the women carry the clothes up the rock? There must be a road. He studied the rock again and saw a moving person. It was a woman, dressed in black, carrying something white under her arm.

Wolfe sent men to learn more about the road. From their reports he became certain that the French took food supplies up that same turning road. If he sent his men up the rock, the French would think that they were carrying food, too.

Wolfe did just that the next morning. Many men, including Wolfe and a French Army

leader, were killed, but the battle *won* New France for England.

A peace agreement was made in 1763. All the upper part of North America—named Canada—was given to the English. But along the river the French people remained French. They continued to do things as they always had, speaking French and following their own laws and church. The English were wise and did not stop them.

Far south from the St. Lawrence River, trouble grew between England and her colonies. Benjamin Franklin was sent to England to try to stop the trouble between the mother country and the Americans. While he was in Europe he visited France and became a friend of many famous people whose ideas were like his own. Could the French people in Canada be happy under English government, he wondered?

When he returned to the city of Philadelphia in 1775, the American war against the English had already started. Franklin was sent to Canada to ask the French Canadians to help in the war against England and then form a state in the new nation.

The French in Canada did not agree. They thought that they were living well in Canada. Would they be certain to live better in a new nation? Franklin returned home.

The war lasted eight years. At the end of the

war the United States of America was a free nation. According to the peace agreement, the upper part of North America was given to Canada. Lake Michigan was the only one of the Great Lakes given completely to one nation, the United States. All the rest of the great waterway is shared by Canada and the United States.

After the war, a large group of people moved from the United States to Canada. The movement began even before peace was made and did not end for many years. These people wished to live under English law. They were known as "Loyalists" or "Tories."

Many men and their families who were *loyal* to the English king did not fight in the war. Others joined English soldiers to fight for their mother country. By the end of the war these Loyalists had lost their houses, lands, businesses, friends and sometimes members of their own families, who had joined the fight for a new free nation.

The Loyalists who lived near the sea went to England or to Nova Scotia. Those who lived further west crossed the St. Lawrence to settle in Canada along the Thousand Islands and in other places. Many of them were now very poor; they walked on their journey. Those who lived through the troubles of moving and starting new houses helped to build a nation in Canada.

Two Nations

In 1791 the government of Canada changed. The French part of Canada in the east, became Lower Canada, meaning lower down the St. Lawrence River. The English part, named Upper Canada, was southwest of the French part, or further up the river.

At this time the government of Canada, understanding the value of the new settlers and knowing that many of them were very poor, decided to help them. To each family the new government gave a large amount of land, some farm animals, and food and clothing.

Upper Canada grew quickly. Before the end of the 18th century more settlers came from Europe, especially from Scotland. Some families also came from parts of the United States in which Indians continued to be a problem to farmers.

After a big battle in 1793 the Indians in the United States were forced to move west. Never again were they a great problem to people living along the Great Lakes-St. Lawrence Waterway.

For almost a hundred years after the first small canal near Montreal was built, nothing was done to make better water roads. But in 1780 a few small canals were built, so boats did not have to go through the bad places on the St. Lawrence River. These small canals were used in fur trading, but they were too small for larger boats.

In 1797 the North West Fur Company built a canal and *locks* on the north shore at Sault Ste. Marie. Large *cow*-like animals named oxen pulled the boats through the water leading to the canal. Men opened and closed the wooden canal gates with a simple lifting device. The locks lifted the boats less than half of the height of the rapids, which was 21 feet. But journeys on the river were a little easier because of them. A lock like this one has been built today to show people what the first locks looked like. But it is so small that many people, who visit it near the place where the real, first locks were, think it is a little fishing lake.

These canals were far from one another and not very important. Yet they did keep the thought of a water road present in the public mind. As farms grew larger and produced more food, people all along the lower lakes and the river looked for a market.

Both the United States and Canada were beginning to think about better water travel when suddenly they were at war. One cause of the war was the fact that England had been forcing American seamen into her service. A second cause was the belief of many Americans that Canada would be glad to become a part of the United States, if the United States tried to take Canada. The Americans who believed this were wrong. In the fighting Americans took Mackinac Island in the St. Marys River and

Canadians destroyed the canal and lock at Sault Ste. Marie and most of the village south of the rapids. Americans burned the government buildings at York in Canada and the British burned the White House in Washington. It was a useless war, a war that changed the shape of no nation, but it did have results.

The two parts of Canada, Upper and Lower, had met one enemy. In fighting back they gained a feeling of oneness that never before had seemed possible between the two parts of Canada. Although they had different laws and churches and although one part spoke French and the other English, the people knew that they were all Canadians.

The United States learned that this new Canada did not want to become a part of another nation. Each nation learned that their best good lay in accepting each other. This idea has remained and grown. The long dividing line between the United States and Canada is *unfortified.* This proves to all the world that the two nations trust each other.

By the middle of the present century this trust was so strong that the nations were able to work together to plan and build a seaway, which shared plans, shared costs and shared use. This was something very new and hopeful in the history of nations.

CHAPTER V

A NEW IDEA

Even before the War of 1812, people living near the lower lakes began to live well. Farmers had larger fields and grew more than they needed for themselves. Some small industries, chiefly wood and grain mills, grew up. But since neighbors all produced the same things, markets had to be found in the lake towns.

Travel on the lakes was not easy because of the great fall of water at Niagara and the land with the high escarpment. Boats could not go from one lake to another, and portage on the land was very costly. The more business grew, the more people became interested in the problem of travel on the lakes. But there seemed nothing to be done about it.

By 1815 soldiers of both countries had returned home from the war. None returned more happily than William Hamilton Merritt of St. Catherines, a town near Lake Ontario, a few miles from Port Niagara.

During the last part of the war Merritt had been held by the U. S. Army. Now he was married to the daughter of a New York government

leader and he wanted to make a success of his life.

Merritt's father, a Loyalist from New York, had moved to Canada in 1796, when Hamilton was a baby. Like most boys of his time, Merritt did not have much schooling. He worked in his father's store in St. Catharines and went into the army at the beginning of the war.

Young Merritt began to build a house and a general store, in St. Catharines. He had a farm near a small stream, Twelve Mile Stream, that ran past his farm and then into Lake Ontraio, near St. Catharines. Merritt closed the stream at one end and built a flour mill on his land. He also built several other buildings in which he made shoes for horses, drink from grain and wooden containers. Merritt had little money to pay for all this building, but he had ideas and he was not afraid. In the years after the war men were thinking of a happy future and it was easy for Merritt to find persons to help him.

Merritt's sister married Charles Ingersoll, a man who had served under Merritt during the war. Ingersoll worked very hard to build up the businesses Merritt had started but which now belonged to both. Ingersoll remained at home while Merritt went to Montreal, Quebec and New York to buy things to sell in his store. Their work was very successful.

As Upper Canada grew, the store became

more and more important. It was not easy to travel in that country, so farmers did much of their buying at one store, like Merritt's. Farmers who came to the mill would stop to buy at the store. But when Merritt came home from a buying trip later in the summer of 1818 he was very surprised to see that his stream was dry. His mills could not work without water. Other mills along the stream were also quiet.

"In the spring we have too much water," a neighbor told Merritt. "And now we have none."

People knew that something must be done to make the mills work again. They looked to Merritt for ideas.

Hopefully, Merritt and two or three other men walked up the escarpment. Many people thought the escarpment was a hill or a mountain, but it was neither. It went up and remained high, like the neighboring land. It was 326 feet above Lake Ontario. Merritt saw that the waterways which usually ran into his stream were dry. But on the higher land the Welland River, the Grand River and several small streams could be seen beyond the top of the escarpment.

"We could bring water from the Welland to the place where we need it," Merritt decided.

"How would you get it over this high land?" one of his friends asked.

"We could *tunnel* through." Now that Mer-

ritt had an idea, his mind worked quickly. We must study the land. Then we can work." By the time the men had walked back to the mills, their plans were formed.

A study was made, and on October 14, 1818, a plan to build a canal was presented at a public meeting in Niagara. It is not known who first used the word "canal," or when. But Merritt used it to the best purpose. There was a newness about the idea of building a canal that would do two things: carry boats up a hill and carry water down. People liked the idea.

The plan had several parts. Boats would travel on a canal to the foot of the escarpment. There boats would be lifted up or on the return journey helped down by men or animals. On the top of the escarpment a tunnel would lead into a canal to the Welland River, which ran into the Niagara River. From there a boat could go into Lake Erie, just as La Salle's boat had done so long before. This plan, which grew from the need to get water for the mills, shows the quickness of Merritt's mind.

Many persons thought the plan would not work. Some laughed at it. But to Merritt, who had traveled much, the plan seemed very good. Several short canals already took boats past the places on the St. Lawrence River where travel was not easy. In the Allegheny Mountains there were several places at which small boats were carried up to higher land. Certainly such carry-

ing made one fearful: many things could happen to hurt the men or animals pulling the boats. But when the method was successful, the traveling cost less in time and money.

News of the plan crossed the Niagara River to New York State, where people were already interested in the plans for the Erie Canal, which was to join the cities of Albany and Buffalo.

It was thought that the Erie Canal would go straight to Buffalo, south of towns along Lake Ontario. If people agreed to Merritt's plan and if the work could be done in two years, as he said, his canal would be completed before the Erie.

People in Canada knew that boats using it would not go on Lake Ontario. This would mean that Montreal and the towns along Lake Ontario would lose shipping and other business. Farmers and businessmen who came to Merritt's meeting favored the plan.

But the town of Niagara was the center of a good portage business, and every portage man wished to keep his business. Together, these men were successful in stopping Merritt's plan. Merritt could not ask the government to help him because it had no money for such things. By summer's end, when rains brought water down Twelve Mile Stream, people no longer remembered how bad it had been when the mills stopped.

Then, suddenly, business in the whole country became poor. Merritt, too, lost everything.

In 1821, when business became better, the government of Lower Canada began to build a canal with locks, so boats need not go through the Lachine Rapids. This would bring new business to Montreal. Four years later this canal was in service. It was so successful that it was soon made larger.

Hamilton Merritt was also making new plans for a waterway. Upper Canada had made plans for a canal, but it was to be built far from St. Catharines. Merritt wished to build one that would help him and his neighbors. He began to interest people in his old idea of a canal. He also started buying pieces of land which he thought would increase in value. He planned to sell this land to help pay for some of the new canal.

At a meeting in St. Catharines Merritt declared that he could build a canal at a cost of $10,000. People were so pleased that they promised to give money to pay for a study of Merritt's plan. This study showed that the cost of the canal would probably be $30,000—or even $50,000 if locks were built to raise boats up the escarpment. Perhaps the people would not have agreed to the plan if work on the Erie Canal had not already started. Everyone knew that the Erie Canel would take business away from Ontario towns, so they listened to Merritt.

Merritt planned a canal four feet deep, the same as the Erie Canal. Locks would carry boats up the escarpment. From the top of the escarpment the canal would go through the land to the Welland River, and then to the Niagara River and in Lake Erie. Water for the part of the canal to be built up the escarpment would come from the Welland River. In the future perhaps another canal would go beyond the Welland to the Grand River and then into Lake Erie. If Merritt's plan *succeeded* it would be the first and perhaps the most important step toward a long waterway to the sea.

The government of Upper Canada told him he could begin work. No one questioned his plans. He had promised that the work would be completed in one year.

Merritt did not ask the government for money. That was to be supplied by interested people. Happily he began work. Early in 1824 he formed the Welland Canal Company and began to look for money and workers.

Merritt had trouble finding people in Canada who would give him enough money for the canal. They were afraid of such a daring idea, so he went to New York, where he found many persons willing to help him.

To people in New York the problems in building the canal did not seem big. It was to be only 28 miles long and the Erie was to be 360 miles long! Merritt explained the problem

of the 326-foot escarpment, but few persons listened. They knew nothing about the land in Canada, and most of them liked the idea of building a canal with their own money.

When Merritt was certain that he would have enough money, he traveled along the Erie Canal, studying the working methods and materials. The canal workers were very friendly to him because the Erie Canal was nearly finished and the men hoped to get other canal jobs. Work began on the high land in the last part of that year. People came every day to watch the building of the tunnel. Then suddenly one day water from underground began to fill the tunnel. Men ran to save their lives and never again would a workman enter that tunnel. The whole plan for working on the high land had to be changed.

People no longer believed in Merritt or his daring idea.

"How did Merritt ever think he could make boats go up a hill?" they asked each other, shaking their heads. They were surprised that they had ever believed in the plan.

Behind closed doors, the leaders of the canal company met to consider the problem. Now, in the middle of winter, after spending thousands of dollars, they had nothing. They would have to make new plans and find more money.

And, while they met, the Erie Canal was coming nearer to Buffalo and to Lake Erie.

CHAPTER VI

THE WELLAND CANAL

The people of St. Catharines were very pleased with the new plan that the Welland Canal Company signed early in 1825. The canal was to go from the stream at St. Catharines to a place on Lake Ontario. There were to be locks around the mill *dams*, which would be good for business and land values in the town.

The canal was to be larger than first planned. Wooden locks—35 of them—were to lift or lower ships at the escarpment. Stone locks would be better but the company did not have enough time or money to build them. Wooden locks, which would last a few years, would prove the value of the canal, which was to be seven and one half feet deep, 54 feet wide on top and 34 feet wide at bottom.

Instead of the tunnel there was to be a canal called "Deep Cut," which would go through the high land to the Welland River. The bottom of "Deep Cut" would have to be below the Welland River, because water for the locks and

canal to Twelve Mile stream must come from that river.

The water supply was very important. "When the canal meets the Welland River our water problems will end," the planners told each other hopefully. That river had a good supply of water. Boats could move easily on the river for 30 miles and only the last eight miles were needed for the part of the canal, which went to the Niagara River, above the falls.

The leaders of the canal company knew that they had two problems with that part of the canal's road. One problem was the fast current above the falls; the other was the large pieces of ice that came down to the head of the Niagara River in Lake Erie each spring.

The Niagara river, with its ice, its fast-moving current, and great watertall had always been a problem for boats. The canal planners were afraid that a boat might get through the canal—only to be carried over the falls by the current. Special plans were made to meet these problems.

Workers began to come, asking for jobs on the canal. The Erie Canal was to open later in 1825. Some parts of it were already completed, and builders wanted to start working on the Welland Canal.

"We will have the canal completed as far as the Welland River by 1827," they promised. "We are experienced in canal-building."

No one seemed to realize that their experiences with the Erie Canal was very different from the kind needed to build the Welland. Work began and continued during the year 1826. The road for the canal to the escarpment with its locks by the mills was made. The 35 locks to carry boats up the escarpment were built. The canal became famous as visitors made special trips to watch the work. They saw hundreds of men move great amounts of earth—a million and a half feet of earth were moved. Nothing like this had ever before been seen or dreamed of. Miles of canal sides were nearly finished. The whole building plan filled people with wonder.

"It is very different from the Erie Canal," a traveler noticed. "Even when I stand here and look at it, I cannot see how a boat is going to get up that mountain!"

There would be no water until the Welland River water could come into the canal. The road for "Deep Cut," a mile and one half long, would have to be made before water could fill the locks.

The year 1827 came and all was still well. The canal from Lake Ontario to St. Catharines was opened. Many boats used it and businessmen were pleased. The town grew. Everyone was proud of the canal.

Work on "Deep Cut" began, but went slowly. The earth which had to be moved was not the

kind the builders had expected. A large amount of money was offered to any person who could build a machine to make the work move more quickly.

A builder received the money for a method that was then considered a wonder. He put a basket on a chain at each end of a line which could be pulled. The line was joined at one end to a strong piece of wood which was put into the ground at the top of the hill. As one basket was filled with earth, it dropped down and the earth was put into bags and carried away. The dropping of one basket caused the other basket to go up the hill for filling. This seems to be the first labor-saving method used in canal building. Still, when winter began, "Deep Cut" was not completed.

The winter was colder than usual and spring was late. So when someone found a water supply under the earth the builders let the water come into the canal road so that boats could carry earth out as the work continued.

Time passed. Workmen agreed to take their pay in paper promises to pay later. Stores agreed to honor these paper notes. Builders received their pay in shares in the canal company.

A cold wind was blowing one day when Merritt went up from town to see how the work was moving.

"In two more weeks we will be finished," a builder called to him.

"I hope that you are right!" Merritt answered, and walked on.

Suddenly, above the sound of the work, he heard a strange and fearful sound.

"Help! Help!" Shouts of fear came from a group of men working on "Deep Cut." Then more shouts as men ran for their lives. Merritt turned in time to see the high earth at the side of "Deep Cut's" road falling down on the men. From the whole length of the Cut men ran to give help. They tried to hold back the moving earth with their hands; others pulled the shouting men away from the falling earth. Happily, no lives were lost.

Hours later, when there was time to think about what had happened the men were still shaking from fear.

"The sides of the canal are too high," one man declared. "We should have known that."

"But look! What is this?"

Several men were standing near the place where the earth had fallen. One moved his shoes along the bottom. *"Quicksand!"* he cried. "Quicksand!"

"If we have come to quicksand, we will never finish 'Deep Cut.' " Merritt turned to a crowd of workmen waiting near him. "No more work today!" he shouted. They all hurried away, glad to leave the place.

This second attempt to tunnel through the hill had failed. The builders now saw that a cut

could not be made deep enough to bring water from the Welland River. Several *engineers* made new plans.

The plan accepted was a strange one, but it worked. The plan was to raise the height of the water in the Grand River by building a dam. Then a canal and *aqueduct* would be built to bring water from the Grand River over the Welland River into "Deep Cut" at a new and greater height. Much of the earth which had been moved at great cost must now be brought back to "Deep Cut" to cover the quicksand. Because of the new height of the water in Deep Cut, locks had to be built at the Cut to lift and lower boats.

More money was gathered and the work began again. The canal and the locks were successful. Boats could sail from "Deep Cut" into the Welland River.

Late in 1829 two ships—one Canadian and the other American were the first ships to sail from Lake Erie to Lake Ontario.

In all the years of planning and building the canal there were some people who declared their doubts, saying many things that were not true. They had guessed that the canal would not be finished at the time that the company had promised because there would not be enough men to do the work. Because of such talk some ship-owners had not made plans to use the canal, so they were not prepared when

the canal was opened. As a result, the canal company lost business and did not receive much money when it was most needed. Some people thought that the canal had failed.

The Welland Canal did not fail. There were many problems but the canal was the first step toward building a joined waterway from the Great Lakes to the sea. The Welland served the ships of its time well, and it caused men to think more and more of canals and waterways. Men had found a way to go around Niagara Falls; now there was hope that the rapids at Sault Ste. Marie and the troubling places on the St. Lawrence River could also be passed by some day.

Men were writing and talking about the need for a seaway that would join the lakes to the Atlantic Ocean.

Merritt's great work and the far-seeing ideas of other men brought no quick results. But they planted an idea—an idea which took a long time to grow. But one which time made richly fruitful.

CHAPTER VII

YEARS OF CHANGE

Interest in canals grew quickly during the 1830s and 1840s. Canada built the Rideau Canal, which joined several small lakes and rivers to make a waterway from Ottawa to Lake Ontario. Many other canals were built in the United States and Canada, which gave people water roads for carrying things to market at little cost.

The canals had become necessary during these years because of the thousands of people who had come from Europe to Canada and the United States. Many of them came with the idea of going west to live. From New York City they went up the Hudson River, through the Erie Canal and then by sailing ships into the Great Lakes. Those who arrived at Quebec or Montreal from Europe did not have the easy, three-miles-an-hour ride which those using the Erie Canal could take. Since the canals built along the St. Lawrence were not joined, they were more useful for carrying supplies than people.

A man named Alexander Sinclair wrote a report of his trip from Scotland to Canada. He was twelve years old then but he never forgot it. Sinclair and his family arrived in Montreal and then traveled up the St. Lawrence River to the town of Prescott. Here is Sinclair's story in his words!

"In the spring of 1831 my father sold the farm and everything except what we could carry to America, such as clothes and books. . . We went to Greenoch, where we waited for a ship. The "Tamerline" sailed down the river and we waved good-bye forever to all our family and friends. Most of the people on the ship were sick and, because of strong winds, we were on the ship seven weeks and two days. The views along the river were beautiful and farmers came to the ship to sell us food. . .

"A large ship came beside us and took people and their bags for Montreal. From Montreal we traveled in boats to Prescott. Each boat had six men to row or pull it. It was then that I first saw the cowlike animals named oxen at work. In going up the rapids, the men tied a long chain to the boat and tied the chain to the animals. Men with long sticks kept the boats on the rocks. The journey from Montreal to Prescott lasted almost two weeks."

During this long and fearful journey the people would sleep on the shore at night. So many people came from Europe this way that

many men left farming for the better-paying work of pulling boats along the edge of the rapids.

There were good, hopeful years in America. Andrew Jackson, the first president of the United States who had come from the newly-settled lands in the West, was very interested in the settlement of the West. During the 1830s many persons talked about going west—and some did go.

In the state of Virginia in the United States, young Cyrus McCormick built a new machine to gather wheat. He also used a new method to sell his machine. McCormick allowed a farmer to have the machine before he had paid its whole cost. Because of the machine, the farmer could plant a much larger amount of wheat than he could gather by hand. Later, when he sold his wheat, he could finish paying for the machine. Because of the machine and the new method of payment, many families were able to move to rich farm land around and beyond the Great Lakes.

Ships and houses were needed for all this movement of people. And even small houses needed wood. Roads were needed so that wood could be brought from the forests, to build the ships and houses. Roads were made quickly by placing lengths of wood across the road. There were many, many trees, so many that in some places people thought that there were more

trees than could ever be used by man. Men cut down more wood than they needed, and sometimes trees were burned just to clear a field.

"There is more than enough," people said. "Enough of everything in America!" For people living along Lake Huron, Lake Michigan and the lower lakes, farming was good. The country around and beyond Lake Superior was good, and so was the fishing. But the mile of rapids at Sault Ste. Marie stopped travel there. Machines and supplies for a house could not be carried in the little boats used to go up the rapids. And how could farmers bring down what they produced?

In 1837, when the Michigan country became one of the United States, people talked of building a canal along the south shore of the rapids. If the government would help, the work could be done. It was reasonable to hope for help because the United States government was interested in canals and roads. But in *Congress* one of the lawmakers, Henry Clay, told the other lawmakers that the government should not spend money to build a canal so far away. His talk ended with the famous words: "I would as soon think of building a canal on the moon!"

The state of Michigan decided to build the canal herself and open a waterway to her northern shore. People in the portage business at Sault Ste. Marie were not pleased but plans

were made and work started. Then it was discovered that Michigan's road for the canal cut through land which belonged to the United States government and work was stopped.

Fifteen years passed before people knew enough about north Michigan and Lake Superior to listen to the idea of a waterway to this freshwater lake, which is larger than any other. Most people in the United States and Canada had no interest in the rapids at Sault Ste. Marie. The few who had heard about the canal probably agreed with Henry Clay that the place was too far away to be important.

The Indians had learned to travel on the rapids, as they had learned to row on the Ottawa and the St. Lawrence rivers. They knew how to bring furs down the water and they brought other things back with them on their return trips. Few other people traveled on the St. Marys River. The villages by the rapids did not change for years. They were half-Indian and half-American on the south shore and half-Indian, half-French in the little village on the north shore.

Then suddenly many people became interested in a waterway to Lake Superior.

The good years ended and many people became poor. Men who had never thought of going to the West now wished to find new places in which to live. Soon they and their families were moving. Some people traveled by

canals and lakes; others walked, carrying what they could and saving their little amount of money to buy land.

A second reason for the sudden change was the failing of the fur business. By about the year 1840 people in Europe decided that they no longer wanted any more fur. Other markets had to be found for the beautiful furs of North America. Boats filled with furs remained in Montreal, Quebec and other St. Lawrence River cities.

Another cause of change—this time a change for the better—was the finding in the 1840s of salt, iron and other materials on the shores of Lake Superior. But these discoveries were followed by a new problem: how to get the iron out and move it to the mills of the east.

Lake Superior was as far from the other lakes as Lake Ontario once had been. Men were not thinking about a through waterway; they just wanted to get the iron down. Already the one large ship which had been built for use on Lake Superior was very busy. Smaller boats, built quickly, could be used in good weather, but in a storm they turned over, taking men and iron to the bottom of a very deep cold lake.

Then there was the problem of getting the iron onto a ship. Some companies took the iron to shore by wagon in summer and by sleds in winter. The iron was heavy and could not be

carried on the small Indian boats. And then there was that mile at Sault Ste. Marie, where iron must be carried over land—a very slow and costly method.

The iron industry grew. News of jobs spread and more people came north. Sault Ste. Marie grew and became richer than it had ever dreamed it could be. A good portage business was built. One villager built a *railroad* through the center of the town. Horses pulled wooden wagons carrying iron, wheat and other materials through the village and down to the water. On the return trip wagons brought machines and other supplies. Shippers had to pay five cents for every 100 pounds. And there was an added charge if their material had to be stored until a ship with space to carry it arrived.

The village was rich and happy as never before. Shippers and travelers did not like the amount of time and money needed to carry these things over land, but no one could think of a better way. Because of the rapids and rocks on the river, boats could not be used.

Something that no one expected resulted from the need to stop at Sault Ste. Marie for portage. Shippers and families traveling through had to be housed and given food while they waited. They had time to see the beauty of the rapids and of the forests. They told other people about the country. Writing to his family back home one traveler told them: "You should

come and see this place and ride the rapids—something the Indians do very well."

Some day, because this kind of news was spreading Sault Ste. Marie would not seem as far away as the moon.

CHAPTER VIII

SAULT STE. MARIE

Among the many persons who heard of the rapids and came to see them was young Charles Harvey. Harvey worked for a company in the eastern part of the United States. Like others, his company was interested in doing business in the west. So Harvey had been sent to lower Michigan for this purpose.

All went well until Harvey became sick. After he got better he still had to take a long rest. He had heard about the good air "up north" and decided to visit the Lake Superior country. There he hoped to get back his health and at the same time to look about for business.

Sault Ste. Marie was looking its best when Harvey walked away from the ship, which stopped at the foot of the rapids. He set out to find another ship to take him on to Lake Superior. The village of about 500 people was crowded with travelers. Men and boys rushed about, helping to carry supplies to and from boats, portage cars and wagons.

Harvey was able to find a ship that would

soon sail west. He used the few days of waiting to make friends and to watch the portage. When he returned late that summer, he was feeling well and was much pleased with the business he had done.

But what interested him even more than health or business was the talk he had heard about the need for a canal with locks to run beside the mile of rapids. Men in the iron business up north were not pleased with the long waiting time at Sault Ste. Marie. Large amounts of coal had been found south of the lower lakes; iron should be brought to the coal, men told Harvey. Industries and mills in growing cities along the lower lake shores needed large amounts of iron. And here it lay—a lot of it—waiting for ships!

Harvey knew that in 1851 the Michigan government had considered building a canal. It had wanted to ask the United States government for half a million dollars to build a canal with locks by the rapids. Rich portage people had worked against this plan.

"We do not need a costly canal," they declared. "We move the material."

"Send ships through by canal and our village people will go hungry," they explained.

Because of the portage people's successful talk against the plan, it failed. Then in the summer of 1852, word came that the United States had set aside land to be sold to the

people. The money from this sale was to be used to build a canal and locks at St. Mary's rapids.

The plan was for a canal 100 or more feet wide and twelve feet deep. Work on it was to begin before the end of three years and to be completed in ten years. A length of land, 400 feet wide along the rapids, was given for the canal.

Harvey decided to build that canal! He had already sent word to the E. T. Fairbanks Company, for whom he worked, about the great need for such a waterway. Now he studied the job ahead of him. Time was needed to sell the land and during this time there was no money to buy machines, nor pay builders and workmen. Men with money must become interested. A company must be formed to give money and start the work, while the land was being sold. Like Merritt before him, Harvey knew that he would have to go east to find men willing to advance the money.

The Fairbanks brothers and others liked Harvey's idea. They began to raise money and form a company. Harvey found the engineer, L. L. Nichols, who had worked on the Erie Canal. The two men went to Sault Ste. Marie to make a careful study before winter put a stop to shipping. While Nichols measured and studied, Harvey went down the St. Marys River in a small boat. He was looking for stone which

could be used for the locks. Nichols had told him that the wood used in the Welland Locks would have to be changed in ten years. Harvey wanted his locks to remain strong.

Early in the next year Harvey went to talk with government leaders in Michigan. He was the only man there who knew much about the canal, but he was not the only interested visitor. Portage people from the village were there to tell the state lawmakers why a canal should not be built. Then, to everyone's surprise, Harvey said that the canal and locks should be even larger than the government had planned! Why should a man who wanted the canal raise a new problem?

"You talk like a portage man," one lawmaker told Harvey. "You want locks three hundred and fifty feet long?" he asked. "There will never be a ship on the lakes long enough to need such a lock! You know that, young man!"

"I think that in 25 years you will see big ships going through there," Harvey told him. "And they will carry heavier amounts than go through other places.

The lawmakers laughed, but Charles Harvey was able to make people believe him. The new plan for the bigger locks was made a law. The law contained one other change. The time allowed for building the canal was changed from ten years to two. Think of just two years to

raise money, to begin and to complete building a mile of canal with two stone locks and good gates! And this was to be done on land far from the markets and supplies! Portage men, who made this time period part of the law, were pleased. No company, they thought, could do the job in two years. The canal would not be built and they would continue to do business as usual.

Harvey was surprised by the new time allowance but continued with his work. With a friend, he went north to choose land to be sold. Three quarters of a million acres seemed a very great amount of riches. The value of the land, however, was not known. Much land then sold for 25 cents an acre. However, Harvey's first studies of the land helped him to choose wisely.

In the east, the canal company was being formed and money was sent to Harvey. Now a leader of the company, Harvey began to buy machines and to look for men to work on the canal. He was 24 years old. Like Hamilton Merritt, he liked to work, had many ideas and was sure of himself.

As he worked he began to realize how short was the two-year time allowed for building. He began to buy quickly—wagons, animals and other things needed for the work. He had also to buy food and to find a ship and men who

would agree to go with him to work on the canal.

On the journey north he explained plans for each man's work very clearly. When the ship stopped at the foot of the rapids, each one knew what he was expected to do—and did it. Long houses were built for the men to live in and a house to cook in. By the end of the second day each man had hot food to eat and a place to sleep.

Early the next morning Harvey led a march to the starting line he had made on the ground and work began.

Problems were met with at once. The first was the coming of crowds of mosquitoes. These very small, winged, flying bits of trouble came in such large numbers that many men left their jobs. Harvey sent word to cities in the east asking more men to come and work for him. But many men were afraid to come so far out in wild land.

Before the canal was finished Harvey had sent letters to many cities in Europe, asking for workmen. Men from Germany, Ireland, Scotland, Sweden, Finland and many other nations were working on the job. It was through them that the name Sault was changed to Soo. This had been a place of many names. Now no one seems surprised that the cities by the rapids keep the French name, Sault Ste. Marie. The river is given the English name St. Marys. And

the country around the rapids is called the Soo.

Health was another problem in that far-away place. Harvey met this one by building a house for sick workmen and bringing a doctor and helper to work there. The men were charged 25 cents a month; the company paid the rest of the costs. The plan was a new idea which pleased everyone and saved many lives.

Work continued through the winter. Fires were built to keep the men warm. Any man who looked as though he were suffering from the cold was ordered to stop work and to get warm.

Building of the locks began in the spring of 1854. Some walls were made of rock found on the ground; others were built from stone brought from an island down the river.

With the coming of good weather, the state of Michigan sent an army engineer to look over the work. The canal company in the east also sent men to see that their money was being used wisely.

"You cannot possibly finish in time," they all agreed.

The visitors used up valuable working time. Their doubts about the canal's timely completion did not help Harvey's low spirits. There was not much money left and the government land sold slowly.

The Army study reported soft earth at the head of the canal. But this proved to be all

rock. And it had to be moved! Then came sickness and a very cold winter. But nothing stopped the work.

In the spring of 1855 the lock walls were finished, the wooden gates were in place and the canal sides finished. All that remained to be done was to take out the last, short wall of earth and to let in the waters of Lake Superior. Before this could be done, a dam had to be built to hold back the water while the last of the earth was taken out.

This dam was not Harvey's job. It had been planned by the engineer and was half-finished when he suddenly died. His helpers finished it as well as they could, for there was no time to wait for another engineer. When it was tried, the dam did not hold. Harvey dared not take a chance with men's lives by having them work without the dam.

This was the moment when Harvey almost gave up all hope. He walked up and down the dry locks, studying the short length of earth that still had to be moved. Then suddenly he turned and shouted to the nearest man.

"There is a ship at the foot of the rapids: Run! Buy all you can of the cloth used for the ship's sails!"

"Sail cloth?"

"Yes. Buy all the captain will sell you!"

Soon a large amount of that cloth was placed on the ground near the canal. Harvey did not

explain. He was afraid the men would laugh at him.

He had the men turn under one edge of the cloth and fill it with small pieces of stone. On the other edge he had them tie *floats*.

"Bring up the small boats, there! Take that end and climb in. . .careful now." Two men in each boat took the weighted cloth out over the water to an island. For a moment they waited—then the weighted edge went down, down and out of sight. The floats held the upper edge on top of the water.

That cloth dam held. From then on the men were able to work safely.

They worked day and night. Then one April day Harvey carefully moved the south edge of his cloth dam and let a little water come through. He moved it further and a small stream of water came into the west lock.

"Close the lower gates," he called. "We'll let the water in."

Word spread through the village and men, women and children ran to see the opening of the canal. With wonder, they watched as the water became a stream that backed up against the gate—and the gate held. Carefully the gates were opened; the canal began to fill. The job was finished—and more than a month before the two-year period allowed for it had ended. Lights still had to be placed. Walks had to be made and many small jobs completed before

the real opening of the canal. But there was time for all this.

On June 28, 1855 the first ship, the S.S. "Illinois", passed through the new canal. For days ships had been moving in the water below, trying to get into position to be the first through it. Every part of the canal proved to work well —the gates turned, the water raised the ship and the ship left the canal at the western end—all in about twenty minutes, not days, as with portage.

On that day of joy no one used the words "Great Lakes-St. Lawrence Seaway." At that moment in the 1800s men were not thinking of a long waterway. The big need was to get materials down to cities on the lower lakes, to bring grain to mills and to carry people to the northwest land. But now the two big problems, Niagara Falls and the rapids at the Soo, would no longer trouble ships. Men's dreams and plans could grow for a waterway to the sea.

CHAPTER IX

SHIPS AND CITIES

More and more people were coming from Europe to the shores of the United States and Canada. The Erie Canal carried hundreds of them on to the west. The Welland Canal was so much used that new locks were made for it. In 1843 the government of Canada decided to buy the canal from its owners. It then built a larger canal with fewer locks.

Some canals along the St. Lawrence River were also made wider and deeper. By 1860, five years after the canal at the Soo was opened, a few small ships were taking material directly across the ocean. Large ships, however, could not use the small river canals, and most lake travel was still made up of shipping between one city and another.

During the years from 1854 to 1867 friendship and travel increased between Canada and the United States. There were several reasons for this. First, Canada had changed her money system, making it the same as that used in the United States. The value of a dollar in Canada

and the United States was never completely equal. But it was close enough to make business and travel between the two countries very easy. In 1854, the two nations signed an agreement which allowed certain materials from one country to enter the other, without government charge. Under this agreement, also, Americans could fish in the waters of Canada and use the St. Lawrence River and its canals, Canadians were given the right to use Lake Michigan waters. These signs of friendship were important steps toward the future, when the two nations would build a seaway together. The agreement also helped to increase business between the two countries.

Many railroads were also built during this time. They helped bring materials from the farms to the lake towns for shipping. Increasing travel between the United States and Canada also led to the building of Victoria Bridge, near Montreal, which is still in use.

During the war between the states in the United States (1861-1865) England favored the South. This fact troubled Canadians and made them wonder. Would the United States turn against Canada? Could the widely-separated parts of Canada hold together if this happened? This question caused the different parts of Canada to decide to join together and form one government, covering the whole top part of North America.

The once very small village of Bytown, on the Ottawa River, became the seat of the new government of Canada. It was named Ottawa. Large buildings were put up in the town, where once Indians and traders had been the only visitors. This new government was formed in 1867, a little less than one hundred years after the United States was born.

After the war, the United States began to widen and straighten the St. Marys River. This job continues to this day as larger and larger ships are built. In 1876 the United States began building a second lock at the Soo. This Weitsel Lock was 515 feet long, a size most people expected to be big enough for all time. But by the time the lock opened in 1881 the newer ships were so large that the lock already seemed small.

The different kinds of lake boats tell the story of growing water travel. Sailing ships had taken the place of the small Indian boats, called canoes, that were first used on the lakes. Then came the *steamship*. Although these steamships cost more to build and to run, they came to be used in place of sailing ships.

The first steamship used on the Great Lakes was built in 1818, in the Niagara River. Her name was S.S. "Walk-in-the Water." More such ships came after her—many of them very fancy and costly.

The St. Lawrence canals were not built for

large steamships and until the late 1840s no steamship tried to ride the rapids. People believed that it could not be done, an idea that was proved wrong by a ship named "Ontario." This steamship was built for travel on Lake Ontario, but she was so fast that a company wanted to use her for trips between Montreal and Quebec. But how to get her down?

She could not use the small canals. Could she ride the rapids? Two Indian guides, Old Jock and Old Pete, the best river guides known, were called to help.

"We will give each of you a thousand dollars if you take the ship safely to Montreal," the ship's owners told the Indians. The guides accepted.

How the journey was safely made is a story told by a river man who heard it from Old Jock.

"First, the Indians built a box-like object, about 40 feet square. It had floats every 10 feet and long wood sticks going down from its bottom. When this strange-looking object was ready, watchers were sent down the river—one to the head, one to the foot of each rapids and several to watch from high up in the trees in between. The device was pulled to the head of the west rapids and placed in the water. Each Indian watched as the current rushed it down the river. At Montreal it was taken out of the water and turned over. There it was seen that not one of the long wood sticks was broken.

This proved that the water in the rapids was deep enough for the "Ontario" to ride.

"Up the river the whole group of Indians went onto the steamship, and each man guided the ship through that part of the river which he had watched. The only person on the ship who was not an Indian was the engineer. The happy owners of the ship gave him one thousand dollars also."

After this, so many people wanted to have the experience of riding through the rapids that a ship was built just for this purpose. It made a day's journey that could be enjoyed only by people with little fear. During the ride, the captain and an Indian guide would stand watching the white top of the rushing waters and the dark rocks. No one dared to speak to them.

"Hi Yi!" The Indian would shout the old cry of trouble and the ship's wheel would be turned—just in time. Often the ship would touch a rock and the force of the boat's movement would throw the travelers to the floor. Such things made good stories for travelers to tell their families at home, but they were bad for the ship. Another rapids ship had to be built so that one could always be in use, while breaks in the other were being fixed. People continued to ride the rapids in these two ships until the year 1952. Now the new seaway has covered the rapids.

During the later years of the 1900s people

began to come to the Great Lakes for summer visits. The Thousand Islands, one of the most beautiful parts of the long waterway, became a favored place. Long ago, settlers had come there and built homes and businesses. Now new buildings were put up for visitors. Families who could return each summer would buy an island and build a small house on it. There, a man who owned an island, house and boat could feel like a king.

The real business on the lakes, however, was not taking care of travelers, but moving things by ship. Grain and iron had to be taken down and coal and other things brought up, before the ice formed in the water.

Lake towns and cities grew quickly. By the late 1800s one could not tell the story of one man's discovery or work, as one could in earlier years. Hundreds of men made the cities, sailed the ships, moved the iron and grew grain. Thousands of people worked in and around the lakes.

The town of Kingston on Lake Ontario was a big shipbuilding center from its start. Later it stored grain for shipping. The city of Toronto built ships, stored grain and then became a world-famous grower of seed and other farm supplies.

On Lake Erie, Buffalo became an important grain center, shipping to places all over the world. She was one of the first cities to send

coal north in grain boats—a use of the return trip of boats that other cities followed. In many other cities large industries and businesses grew.

Shipping changed when iron was found in the Mesabi Mountains in the state of Minnesota. Enough iron was discovered there to last one hundred, two hundred years—Who could tell how much there was?

Ships were made longer and new machines were built to carry iron to and from the ships. The new industries needed more and more iron. "Get it down fast!" was the cry. Boats carried the iron and then raced back north, to bring more iron for industry.

CHAPTER X

A SEAWAY—FOR AND AGAINST

A new period in lake shipping began when the first shipment of Mesabi iron came down from Lake Superior in 1892. The iron was very good. The amount of it in Minnesota was so large that it was too much for use in North America alone. Why not ship it across the sea? The waterway continued to the ocean. But many people failed to understand that it could not be used by the big iron-carrying boats.

To ship iron on the 2,342-mile length of the Great Lakes-St. Lawrence waterway these problems had to be met: the rapids at the Soo, the Niagara Falls and the several lengths of rapids on the river. The United States had already built the Weitzel Lock at the Soo. Canada had built a lock along the north shore. During later years other locks were built.

However, the locks of the third Welland Canal, completed in 1887, were only 14 feet deep, like those of the canals along the St. Lawrence. The length of the locks was usually about 270 feet, too short for the new lake ships. Most

shipping on the lakes continued to be between towns along the four upper lakes. Beyond them, grain or iron had to be moved from ships to smaller boats.

By 1895, shipping problems below Lake Erie had become very great indeed. Canada and the United States formed a group to study them. The group would report on the value of building a deep water *channel* from the Great Lakes to the Atlantic Ocean. This was the first of several groups formed by the two nations to study seaway ideas during the next 60 years. News of all these meetings reached the public. It helped people to understand the problem. They could easily see the need for an opening to the sea for larger ships, by way of the Great Lakes and the St. Lawrence River.

One of the men at the first two-nation seaway meeting was a Canadian engineer, Thomas C. Keefer. He had served on the Erie Canal and on other river building jobs. And he knew the St. Lawrence River well. To him the answer to the shipping problem was simple: build bigger and better canals and locks. He believed that the inner part of North America could become a *seaport* for the world.

The plan he offered was much the same as the one really put into use 60 years later. However, many people had to be shown that it was necessary before any such work could be done.

There was much talk of waterways, and many plans were offered.

By the 1900s, people talked and thought more of waterways. The Suez Canal, which opened in 1869, had joined the Red and the Mediterranean Seas. The opening of the Panama Canal, built by the United States in 1914, came in time to prove its great value during World War I. It too made people in Canada and the United States show greater interest in bettering ship travel on the St. Lawrence.

In 1900 a group of engineers met to study waterway plans for the United States. They told the president that the United States should build a canal of her own, 21 feet deep, on the American side of the Long Sault Rapids. This idea lead the United States to ask Canada to form a study group, with three members from each country. The group, called the *International* Waterways *Commission,* reported on such questions as Niagara power, St. Lawrence Power, water height in the lakes and *boundary* water problems.

As a result of these studies an agreement on Boundary Waters was made in 1909 and an international commission was made part of the agreement. It seemed for a time that something would be done to make a better waterway to the sea. But World War I came and no more plans were made.

In 1917 another plan was offered. Many

people showed interest and many meetings were held. But in the end, again nothing was done. In 1924 the president of the United States, Calvin Coolidge, formed another group to work for the seaway plan. Herbert Hoover, who later became president, headed this group.

Now it seemed as though plans would move forward. But then those who were not in favor of a seaway began to act. They tried to prove that the seaway was not necessary. They gave these reasons:

1. The need for a better waterway is not proved. Trains can carry all that is necessary, or more railroads can be built.

2. If any waterway is built, it should be all American. Canada is friendly now, but why take a chance working with another nation?

3. The good that could come from a large waterway is not great. The new canal for it would have to be closed to shipping in winter and shippers would not be interested in a short-season watercourse.

4. The cost of a canal would be very great; all would have to help pay for it but only a few people would be helped by it.

Other reasons were also given for not building a better waterway, but these were the most important ones. In one sense, however, the more some people talked against the waterway, the more others began to see the need for one. Those in favor of it explained:

A Seaway—For and Against

1. There is a need for a deep waterway. It would help 17 states and one-third of all the people in the nation live in these states.

2. Train costs are high and there are not enough trains for use during busy seasons.

3. Travel on water is not costly and ships are better for carrying large amounts of such materials as iron, grain, coal and oil. The question is not between trains and ships: both are needed. The St. Lawrence Waterway is already in use; it only needs to be made better. The cost, while large, is small when one considers the value of the waterway.

4. A better waterway would bring ocean-going ships to the middle-west part of the United States, for the good of the whole nation.

As the talk went on, shipping at the Soo continued to be great. Its locks were closed by ice for four or more months each year. But even so the amount of yearly shipping at the Soo was larger than that through the Panama, Suez, Kiel and Manchester canals, all added together. The heart of North America did not have a road to Cathay, but it had great riches going down and a great market for things coming up.

Canada was so sure that plans would go through that she began to build a new Welland Ship Canal (number four). It would be the right size for the planned seaway—25 feet deep. The new canal cost $130 million and was completed in 1932. It has eight locks, each 80 feet

wide, 859 feet long and 30 feet deep. This great canal made a waterway between the four upper lakes and Lake Ontario; but it did not help the St. Lawrence problem.

In some way, the powerful locks of the new Welland Canal gave people more interest in the idea of a seaway. Other things also happened: power entered the picture. While the Welland was being built, the Beauharnois *power plant*, with canal and locks, was started down the St. Lawrence River. It got its power from the rapids on the river.

Once again it seemed that a seaway and power plant building plan would become a United States law. A seaway agreement between the United States and Canada was signed in 1932. But not enough lawmakers in Congress were in favor of it. Canada could not build the seaway alone and so nothing further was done.

President Franklin D. Roosevelt, like most presidents in the 1900s, was in favor of the seaway. In 1941 he entered into an agreement with Canada to build a power plant and other buildings on the St. Lawrence River. But before the agreement could be made into a law the United States had entered World War II and the plan could not be carried out.

Then during the late 1940s several important things happened to make the public interested in the seaway again. It was feared that the Mesabi iron was in short supply. Years earlier

it would not have been possible to believe this. But two World Wars and new industries had used up great amounts of iron. Who could have guessed, in 1890, that there would be two World Wars? Who could have then guessed that so many cars, machines, and other things made of iron would be built?

In 1948 a very good iron supply was discovered on the Labrador-Quebec *border*. A 400-mile train journey would bring it to the St. Lawrence River. The iron could go on up the St. Lawrence River, past Quebec and Montreal, but what about those 22 short locks and the narrow, *shallow* canals? The long, low boats that brought the iron down from Lake Superior could not go through these waterways.

This again made clear the need for a better water course. It also made clear to people in the United States and in Canada the need for power from the international part of the river. Canada knew that it was time to act. She declared that she would build a seaway of her own.

In 1951 Canada passed the St. Lawrence Seaway Act and made plans to build the seaway entirely in Canada. New York state was not included in this plan and quickly tried to meet her power needs alone. But there were those in the United States who knew that hope for both power and shipping lay in the efforts of both nations working together.

Then the idea of a *toll* became a question. Neither nation had charged tolls at the Soo or the Welland canals. The idea had been that free movement of ships would be good for all of the people. But tolls would pay back the governments for the cost of building and keeping the seaway working. This might lead more people to favor the seaway. The toll idea was accepted. The plan was to charge as little as possible, so that many would use the seaway; but to charge enough to pay back costs in fifty years.

In 1954 the Congress of the United States passed a law to form the St. Lawrence Seaway *Development* Company, to work with Canada to build the seaway. In the office of President Dwight D. Eisenhower a group of men from Canada and the United States watched the signing of this important law. One Congressman expressed what all who were present must have been feeling when he said:

"Across the river we have held hands; now we cannot part. We are one in a great plan—to build for the future of America."

Jacques Cartier had discovered and named the gulf and river on St. Lawrence's Day in 1535. Now, on the same day of the year 1954, people gathered together on both sides of the river to honor that day and the new seaway. In this friendly way Canada and the United States marked the beginning of their work to-

gether. The job was the biggest on which two nations had ever joined. Plans had long since been ready. Now the work could begin.

CHAPTER XI

THE POWER PLAN

The St. Lawrence Seaway begins where Lake Erie enters the Welland Ship Canal. It passes through that canal and crosses Lake Ontario. Then it continues through the St. Lawrence River by way of several small lakes that are part of the river. It ends at a point just below the Jacques Cartier Bridge at Montreal. There are still more than one thousand miles to the sea, but the water there was already deep enough for ocean shipping.

Coming from the west, the first part one sees is the Welland Ship Canal, which has eight locks of seaway size. All that had to be done there was to deepen the canal from 25 to 27 feet. This work was done and paid for by Canada.

Crossing Lake Ontario, the seaway enters the St. Lawrence River. The drop from this point to the ocean is 225 feet. Much of it is in three groups of rapids: the Long Sault, the Soulanges and the Lachine rapids. Through the Thousand Islands part of the seaway, in the west

part of the river, the drop of water is not great. Here the channel was also deepened two feet, by the United States.

Further east, the water falls a little more than 90 feet at the Long Sault Rapids. There the fast current and rocks were always a problem, even for the Indians and their small boats. At a place called Iroquois Point, the power plant—an important part of the whole St. Lawrence plan, begins to share the river with the seaway.

In order to produce power here, three very big jobs had to be done. A control dam had to be built at Iroquois Point. A power-house was needed at Barnhart Island. And another dam, near Long Sault would store water for the power-house and canals.

The idea of using the fall of water to make power is not new. It was discovered centuries ago when man first learned that a water wheel turned by a river's current could bring water to his fields. Later, men discovered that a very heavy object could also be turned by the force of falling water. Hamilton Merritt's mills, like others, used this method.

But a fall of water *AT ONE PLACE* was necessary for the new power plan. The 90-foot fall of the Long Sault could not be used for power until a deep lake was made and the fall forced to come at one point: the powerhouse.

In the present century, the force of the fall is used to turn machines to make electric power.

To make a power lake where once the Long Sault Rapids ran, 18,000 acres of land on the American side had to be covered with water. More than 200 farms and 600 small houses were on this land. On the Canadian side, the land to be covered by the lake included even more homes and buildings. Canals in that part of the country had brought much business along the St. Lawrence north shore. Three towns, four villages, more than 200 farms, 40 miles of railroad and 35 miles of roads had to be moved to make that lake. It was to be 30 miles long and from one to four miles wide. Would the people living on these lands agree to all this?

The Hydro-Electric Power Commission of Ontario began to plan for this moving job early. As soon as plans for the seaway were made in 1951, the Commission sent men to visit every family, business, school and church in that part of the land. They explained the plan to the people and then asked the question:

"Will you help? Will you move three or four miles back from the river? We will build you a new, modern house about the size of your old one, in a new town. We will put in electric power and all else that you will need.

"Or, if you want to stay in this house, we will move it and set it on new land. The cost

of the plan you choose will be shared by us and the Power *Authority* of the State of New York."

This was not an easy question for people to answer. Most had lived by the river for many years. Their work and their neighbors were there.

"The trains and the roads will be moved back," the company man told them. "A new town and a shopping center will be built."

Young people liked the idea of change; older ones were not so pleased by it. But they did not stop the move. The idea of moving was not really new; plans for it had been talked about for a long time.

Three towns and four villages agreed to move. In one sense the people were happy to have the question finally settled. Old Iroquois was one of the towns which would be covered by the power lake. There one hundred and two families wanted to have their houses moved; the others decided to take new homes. People went to choose the place for their homes, back on higher land. Machines for moving one hundred and two houses arrived, along with the builders of the new homes. Buildings not to be moved were destroyed.

Workers went through all the towns and villages, marking each building, large or small, with a number. A farm building by the rapids might be marked number 3175—each one of the four numbers told workmen something

about what was going to happen to the building. Was it to be moved or destroyed, and when. In the end, only two buildings were left standing in Old Iroquois, both on the edge of the town. One was a hundred-year-old house, which people wanted to save. The waters of the new lake come near it; but they do not touch the doorstone.

As one might guess, everyone was interested in moving-time. The movers tried to make the house-moving simple. They usually arrived at a house early in the morning.

"Stay where you are," the mover might tell the family living in it. We've just come to move the house."

Some people put signs on their houses. One had these words: "We have to go but watch us grow!"

"So you are going," neighbors called. "Hope we move tomorrow."

One afternoon in the summer of 1957 people driving by the town of Morrisburg watched the town in the act of being moved. Here a machine was cutting through the stone walls of a house and raising it. The house next to it was already set on wheels, waiting to go. Down the street, workmen were trying to move another house. The long season of dry weather had made the road bad for the wheels of the large moving machines. The men tried and tried but the house would not move. People watched with

interest. Again the men tried; again the moving machines made a loud noise but the house did not move.

"Where is it going, when it goes?" someone asked.

"Up the road to New Town—about three miles away." Any new town was then called New Town.

"Do the people who own that house really want to move?" another man wondered. That question troubled many visitors who were driving along there that summer.

"Well, now," the workmen turned and gave a thoughtful answer. "They can choose. They get a new house or they can get their old house moved, like this one."

"How wonderful!" someone in the group declared, looking without pleasure at the old house that did not move. "Most people must choose a new house."

"Certainly not," the workman told him. "Up at Old Iroquois—have you been there? More than a hundred people liked their own houses better than new ones. Those old houses, moved and painted up pretty, do something for a new town. It isn't good to have everything new; seems too sudden."

"People gain a lot by moving," someone else declared.

The workman gave some thought to this idea. Then he asked: "Would you think you had

gained if you had lived all your life by the canal and had to leave it? If you had watched ships day after day and had to move so bigger ships and electric power could come? Would you like to live miles back from the water, where you could not see what was happening? What good is a new house if you leave the ships? It makes a man wonder. They tell us it is for the good of all. I did not say no to them. That next house there is mine. We move tomorrow."

The moving machine again made loud sounds. This time the wheels started to turn. Slowly, the house was moved to the road. "You will have to move your cars," a workman told the people watching. We're coming down that way."

While the moving of towns was going on, hundreds of workmen arrived to start building the dams and the powerhouse. Near where the powerhouse was to be a mile-long *cofferdam,* larger than any in the world, was built. Two other cofferdams were also needed. Some idea of the great amount of moving water which had to be controlled can be realized when one remembers that 236,000 feet of water run down from Lake Ontario every second.

But that water no longer ran against the big rocks of the Long Sault. No longer do the rapids sing. Down by the powerhouse, the cofferdams cleared out the last amount of water so that new building could begin. In 1957 the Long

Sault river bed, more than 30 miles long, was dry—a strange sight to anyone who had ever been through the rapids.

Work on the Iroquois Dam at Point Iroquois, Canada started early in 1955. It controls the water coming from Lake Ontario. The Long Sault Dam, built at the foot of Long Sault Island is three miles from the powerhouse. It controls the amount of water in the newly-made power lake and the amount going to the river below.

All the new building along the St. Lawrence has a certain beauty. But this long dam is like a beautiful song in stone. It reaches, in a part circle, from New York state to a point near Barnhart Island and has 30 gates, each 50 feet wide.

The power lake, named Lake St. Lawrence, was filled in July 1958. The day was chosen in honor of Dominion Day in Canada and Independence Day in the United States. Crowds of people watched from both shores as the last cofferdam was destroyed on July 1, to begin the filling of the lake. For a few minutes the river seemed to wait. Then the freed water rushed into the old river bed. Century-old stones were covered. Water deepened back of the powerhouse and began to spread, beginning the lake that covered old streets, towns and farms.

Day and night the water ran—spreading wide and deepening. On July 4, a United States

government ship was the first to pass through the two new locks and the canal, going east. The first trading ship was Canadian, going west. By the end of the first week, 263 ships from ten nations had used the locks.

The powerhouse just west of Cornwall, Ontario joins Barnhart Island with the north shore of the river. It is built right on the international line between Canada and the United States. It is really one building 3,300 feet long. But because it is built on the international line it is often considered two powerhouses and it has two names. The United States and Canada each pay half of the costs of the powerhouse.

Reaching up from the end of the power lake, the building is a wonderful sight—long and powerful. From special rooms on the roof at each end of the building one can see the view. There, too, on the roof are large machines which raise or lower the gates of the powerhouse. *Flags* of the two nations fly near each other, at the middle of the building. These mark the only powerhouse built and shared by the governments of two nations. From this powerhouse electric power is sent far and wide to homes, towns and industries—a promise of jobs and better living for all the people.

CHAPTER XII

LAKE SHIP ON THE SEAWAY

The three buildings of the power plan are very large and interesting. But the seaway is there, too, on the very same part of the river. The seaway was in men's minds first and the good that comes from it helps the United States, Canada and many other nations. Ships—big ships—belong with a river. Anyone who has watched the ocean-going ships at Montreal or Quebec finds much of interest in the thought of some of these ships coming up into the lakes and of the long lake ships going down to the sea.

After Canada had passed an act for the seaway in 1951 her engineers began to work. When the United States passed its law for the seaway in 1954, a first step was to ask the engineers of the United States Army to plan the needed buildings. The engineers began this important job and the public was given news about the work and its cost. The building was not done by the government, however. Different builders were asked to study the work and then

tell what the job would cost. The Army engineers would then choose a company to do each job.

The army engineers could begin their planning work quickly because they had long experience in seaway building. They studied the currents in the St. Lawrence River, the placing of locks and many other problems. Engineers from both countries worked together.

One of the problems they met successfully was choosing the amount and location of the land to be covered when the new lake was made at Long Sault. They planned so carefully that when the lake was filled, the new towns and roads were just as near to it as had been expected. There had been no guessing, only careful planning.

The direction of the movement of water in the power lake is planned so that the ice that forms in winter is not too thick, nor does it stop the movement of water to the machines in the powerhouse.

Ships must cross the power lake. Where? In what direction? With what movement of water? All this has been perfectly worked out. Later, the United States might want to build a lock to go around the Iroquois Dam. Or Canada might want a lock by the north shore. If so, the work can be done without added costs for changes in the present building.

With the seaway complete, a great lake ship

can leave the upper lakes with perhaps, grain from the middle-west United States. She will pass through the Welland Ship Canal and locks. Then she will cross Lake Ontario, travel about 80 miles down the St. Lawrence River to Iroquois Point. There she will come to the first power project, Iroquois Dam, and the first seaway building, Iroquois Lock.

Iroquois Lock is a single one because the drop in water height there is only six feet. The lock cuts right through Iroquois Point and sets the ship down at the west end of the power lake. This lock is one of seven new ones. Five of these new locks were built and paid for by Canada.

On through the power lake, more than 30 miles long, goes the grain ship, east and a little south, as it moves toward the United States part of the river. A deep water channel helps the ship move quickly as it goes safely past the powerhouse and dam. Soon the ship enters a canal and comes to a lock, a joining canal, and a second lock. These locks each lift or lower 45 feet. This gives the force of a 90-foot drop to the powerhouse for making electric power. The parts of the seaway the ship is now using—the canal and two locks—were built and paid for by the United States.

As the lake ship leaves the lock it is let down 45 feet into the river. It moves more quickly as it passes under the new International Bridge.

This seaway bridge was built to take the place of a smaller one which joined New York state with Cornwall Island. A sign built onto the older bridge in 1936 by an international businessmen's club was saved and placed on the new bridge. It says:

"This unfortified boundary line between the Dominion of Canada and the United States of America should quicken the remembrance of the more than century-old friendship between the two countries, a *lesson* of peace to all nations."

Even better than these works is the spirit of the two nations which built the beautiful new bridge. Canada built the under part of it and the United States, the upper. Both nations own the bridge and share the cost and work of taking care of it.

A short way down the river from the bridge the international line leaves the river and cuts off east over hills and mountains to the Atlantic Ocean. The remaining part of the seaway was built and paid for by Canada.

As the lake ship comes into Lake St. Francis, it enters the quiet waters that the first travelers on the St. Lawrence were so happy to find. For 30 miles the ship goes on an almost straight line to the west end of the Beauharnois Power canal. Near the east end of this canal, two locks take ships past the Beauharnois Powerhouse. The fall of water here is about 82 feet. Each lock

lifts or lowers half that height. Under the downriver lock is a tunnel for cars.

Beyond here the ships go through more quiet waters in Lake St. Louis to the Lachine Rapids part of the river. Here, where once the traveling was so troublesome, the Canadian engineers decided to go a new way. This would bring the seaway along the south side of the rapids. To do this, many problems first had to be met.

Four bridges already joined the north and south shores of the river. They were low, but strong and engineers were able to change them rather than build new ones. One of the most interesting jobs on the entire seaway was the work done on one, the Jacques Cartier Bridge.

This large bridge brings cars into the heart of Montreal. The part of the bridge over the seaway had to be raised 80 feet. Engineers wanted to do this raising without stopping the use of the bridge. How could this be done?

Work began on new higher roads leading to the bridge. In the summer of 1957, hundreds of men and machines worked south of the bridge —yet everything remained in order. The bridge was never closed for more than three hours at a time. Men worked on it while cars went driving by. Some months later the bridge was raised, to the wonder of all who watched the work.

Other problems were met as the seaway neared the city. They included the need to

make an agreement with the Indians at the Caughnawaga Indian *Reservation.* This land had once been an Iroquois village. Now, under an agreement made with the Indians in the year 1763, it is a Reservation belonging to an Indian group called the "Six-Nation *Confederacy.*" It is a free nation, within Canada, which has its own government. Part of the land of the reservation had to be used for the new roads leading to two of the seaway bridges. The use of this land was a matter of careful agreement with the Indian chief.

The seaway leaves the river above the Lachine Rapids and enters a canal that goes across the south shore. There, a lock lifts or lowers ships 30 feet to another canal. Near Victoria Bridge a lock lifts or lowers ships the last 22 feet and the canal leads them on down the river.

All this work was completed long before the grain boat started out in the upper country, filled with fresh grain. Very quickly the lake boat left the river and entered the canal. It was set down by Cote Ste. Catherine Lock and, a few minutes later, by St. Lambert Lock. Bridges raised as the boat moved by and passed under the Jacques Cartier Bridge and into the wide, deep St. Lawrence River. The last thousand miles of her 2,342-mile journey was nature's gift to sailing—an open, safe way to the sea.

CHAPTER XIII

MEN AND MACHINES

How many men helped build the seaway and the power plants? No one will ever know. For many groups of builders had any number of men working for them. Some had from six to hundreds of men at a time, working around the clock. Government workers worked in many cities along the river. Here and there, a lonely ship worked on a canal. The number of workers is supposed to be 22,000. That number tells only part of the story.

Add to those 22,000 all the men and women working in industry to make the hundreds of machines used on the job. Add to these all the men who brought the machines to the job—by train, wagon, car and ship. Add to these the foreign workers who made special parts in Germany and Italy. Add the men on the ships which carried the parts to America. The number of workers will never be known—it is certainly many thousands more than the 22,000 who worked on the river.

Before all these workers arrived, people along

the river wondered what would happen to their towns, with so many strangers coming. Would they be good neighbors? They proved to be good ones, for workers brought their wives and children. They joined churches and clubs. Their good pay brought good times to the river towns. Thousands of workers found homes in towns and villages on both sides of the river. At first it was thought that because of the hurry to finish, work must be continued seven days a week. But experience showed that more work was really done when all workers rested one day. A six-day work week was set for all. But throughout the seasons of good weather work continued around the clock. The roads were crowded in the morning, in the late afternoon and at twelve in the evening as men went to and from their jobs.

While this happy picture is true of the whole, some parts of the country near the river did have more problems during building. On the Canadian shore, the city of Cornwall was able to help the smaller towns near it. It was used to caring for ships, travelers and trade. But across the river New York towns and villages never had had a canal close by, nor any shipping. The seaway had been talked about for many years; then suddenly workers came in great numbers. In one town the number of people doubled from 14,000 to 28,000 in a few months. How could a town be ready for them so quickly? With the

new workers came problems of housing, schools, health, roads and many other matters. These could only be met with success after some time had passed.

But men on the job and their families were not the only people who crowded in. History tells the same story over and over again. When the first Welland Canal was being built, neighbors walked there to see what was going on. At the Soo, during the building of that first canal, hundreds of visitors came up the St. Marys River to see the sights. In the late 1950s, cars made travel very easy; thousands came to watch the wonders taking place along the St. Lawrence River. And they all asked questions, millions of questions.

To help the public, the Canadian company set up a visitors' center near the town of Cornwall. There guides—teachers and young people—explained the work, showed pictures of the plan and took visitors to the powerhouse, out on the dry river. All this was free to the public.

During one summer almost a million people visited the center. On one of its trips to the powerhouse the center's *bus* took visitors through a tunnel under the "old canal." Then it climbed up to the top of the cofferdam—that mile-long row of round containers filled with earth and rocks taken out during the building. Think of the difference between this modern

cofferdam and Charles Harvey's simple cofferdam of sailcloth, floats and small stones!

Near the powerhouse, visitors left the bus to watch, while the guide explained the busy scene. He told them that the workmen's hats were of different colors, to show their jobs. It seemed to be an army at work there: workers in wood, stone, iron. Then there were the office workers and the engineers. People took pictures and asked questions.

"Where is the *boss*?" someone asked, looking around.

"Boss?" The guide did not understand the question. "Who do you mean? There are many bosses on the different jobs. You see. . . ."

"No, I do not see. I'm from the state of Michigan. Now, when we built the first locks and canals, Charles Harvey walked up and down that mile of land and watched everything. Even when the last lock was built the boss was right there. You could see him looking at everything."

"I have read about your locks," the guide told the visitor. "But you see, this job is different. The part of it to be used for the making of electric power is about 35 miles long. Then there is the seaway, widening it out. The seaway on this river is 114 miles long. The "bosses" are two nations and one state in each nation (Ontario and New York). Each of them have companies and. . . ."

"Oh, all those companies. But I mean one boss."

The guide smiled. "No one man could take care of all of this. It is done by working together; by dividing up the job so that, working together, everything comes out right and on time."

Most of the visitors were quiet as the bus took them back, through the tunnel, along the road. When they came back to the Center, they looked at the pictures on the wall with new understanding.

Across the river at the New York town of Massena, a small group of visitors went out with a guide to visit the powerhouse from the United States side of the river. A long bridge led to Barnhart Island and the United States end of the building and cofferdam. On this second visit to the powerhouse the building began to seem more real—less like a dream. Standing there, seeing the flags of both nations, which always fly there, one feels very proud of this sign of friendship. That is no dream! On this place in the great river, a friendship is as real as the stones that make a dam.

As one studies all the buildings of the power plants and seaway, one realizes that man, with his own strength, could never have done the job alone. It was possible only because men have learned to make machines do what had not before been possible.

CHAPTER XIV

CHANNELS AND HARBORS

As the time for the opening of the seaway in 1959 came closer, people near the lakes talked about the sights they soon would be seeing: the big ships with foreign flags coming to lake towns. But some realized that there was still much work to be done. New, large ships could not stop at most of these places along the shores.

In 1959 not a single Great Lakes channel, not one *harbor* was as deep as the 27 feet of the seaway. A large, ocean-going ship or a boat heavily-filled with iron from Labrador could come up the seaway to its end at the Welland Canal and Lake Erie. It could cross the lake almost to the mouth of the Detroit River. There it would be stopped by the channels in Detroit River, in Lake St. Clair, in the St. Clair River and in the St. Marys River. All of these were 25 feet deep in the down channel and 21 feet in the up channel.

Nor, when the seaway opened, was any Great Lakes harbor as deep as 27 feet. Six of

them were 26 feet deep but more than fifty other harbors on the lake were only 18 to 22 feet deep.

The United States Army Engineers had realized this problem and had been making careful studies of how to meet it. Millions of dollars and years of work would be needed to change the channels and harbors. Once they had been deep enough for shipping between the lakes and for any ship that could come up the St .Lawrence River. But most of the channels and harbors had been built before 1920, when a lake ship was usually less than 600 feet long, and 18 to 22 feet was deep enough.

Then in 1949, a new iron-carrying boat was built. Suddenly every other lake ship looked small. After the success of this one great boat, 18 other large boats were added to the Great Lakes group and eight ocean-going ships were changed for lake service. Later, others were added and still more are being planned.

In 1957, while the seaway was being built, the army engineers began to deepen the joining channels. Many different kinds of boats and from 800 to 1,000 men are needed for this job.

Every one of the Great Lakes channels is always being used by ships that are in a hurry. Along the busy St. Clair-Detroit River, a ship passes every 15 minutes. And there are other problems. Many people sail pleasure boats there

and a ship captain must always watch out for these small boats.

Work on the channels is being done by the United States government, but the work on the harbors must be done by states, or cities. Before the seaway opened, the lawmakers of the United States government ordered a study of harbors. This would help them decide which harbors should be worked on and when, and how much work should be done. Such a study, which has never before been made, will take a long time, but will be very valuable.

The lake harbors look very much alike. The people who came there long ago built their small houses by the mouths of rivers. Water was needed for drinking, for food and for the family washing. The lake and river also made it easy for people to travel. Soon other people came to live near the water and a village, a town, a city grew up by a river that was also a harbor. The city of Duluth has the St. Louis River; Toledo, the Maumee River. Milwaukee has three rivers near each other. But there is no natural harbor on the lakes, such as is found by the sea. The city of Toronto in Canada has the one most like a sea harbor—it is behind a chain of islands.

As shipping increased man-made harbors were built in front of some cities. There are some good ones on the lakes, but many are not deep enough for large ships. Some grain boats

can use the channels. And some shippers believe that, even with the seaway open, it is still wise to ship to Montreal and there ship by another boat across the ocean.

But certain large cities in the United States, like Cleveland, Milwaukee, Toledo and Chicago, will want to ship directly to Europe as soon as they can. For all of these cities the opening of the seaway is a great date.

CHAPTER XV

THE SEAWAY IS FINISHED

The great plan for shipping and power is completed. Electric power is being supplied, and, since 1959, ships have been using the seaway. The dream is real now.

But in one sense the seaway is not"finished" and perhaps it never will be. Like all the earlier building along the Great Lakes-St. Lawrence waterway, its success will lead to more building. Already there is talk of making the Welland Ship Canal larger or of changing some of its locks. Already plans for more locks on the St. Lawrence are being made, looking forward to the time when they will be needed. No one knows how soon the people of Quebec may need power from the Lachine Rapids. People have considered these needs already; but there will be others as larger, faster ships are built and as business increases.

For three years there was some thought of using a method of sending air into the water to keep a channel free from ice, as is done in Stockholm, Sweden. Now a method like this

one is used to keep a channel open at Prescott, Ontario, on the seaway. Some day ships may be able to use the whole seaway all year.

During the years of talk for and against a seaway, its value to the states close by was always agreed upon. Now even those people living far from it believe it may help them. Farmers in Maine are working on plans to build a road through wild country so they can send what they grow to Quebec. In Ontario and New York the good that comes from the new electric power is already felt. New industries have brought new jobs. Other industries can grow larger, now that there is enough power. Better roads and cars mean that many a farmer who could not make enough money on a small farm can continue to live on his farm, while he works at a good job in town.

A pleasant surprise has been the interest other nations take in the seaway. Several are building ships for use on it. Many others have sent groups there to study it.

Such matters are important to the business success of the seaway, but most travelers think of its beauty and of the wonders of its building, rather than of costs and business.

On a day in late summer, during one of the years of the seaway's building, travelers stopped by the Welland Canal. On its upper part large lake ships moved quietly. Lower down, many bright-colored cars had stopped so that the peo-

ple in them could come close to the lock. There they saw the ships lifted up or set down that 326 feet of the escarpment between Lake Erie and Lake Ontario. One big ship seemed to fill the lock completely. But no, a small one, going to Duluth, moved in with her. It would go up at the same time as the larger one. Across the wall between the locks a ship going to Bremen, Germany was going down, carrying cars built in Detroit.

At first the big ship was so low in the lock that she was out of sight of a person sitting in a nearby car. But slowly she rose as the water ran into the lock and took her up. Now the people in cars could see the men on the ship.

"Have you done your washing yet?" a watching man called.

"I do mine the first day of the week," the sailor called back, laughing. The crowd laughed too; they had been quiet with wonder long enough.

"Hi!" a young boy called. "How long is your boat?"

"She is 685 feet." Smiling, the sailor added: "See how clean she is? We have just finished painting every one of those feet."

The ship was already high above the people. The big gate opened and the ships moved on to the next lock. It did not take long, only 15 to 18 minutes for each lock.

Some visitors went down by car to the On-

tario end of the canal. Toward the end, the road goes through a forest. For the widened mouth of the canal is placed between long fingers of man-made land, on which grow many trees. Entering the Welland Canal, a ship moves slowly. It seems as though it is feeling its way and thinking about the great climb that can be seen before it. But when it leaves the Canal, the ship moves quickly and freely in the wide lake.

Crossing Lake Ontario, a ship going east will travel through the deepened Thousand Island part of the river, through the Iroquois Lock and into the new Lake St. Lawrence. The engineers who planned the great changes made new beauty as they destroyed the old.

The great rocks and rushing, white-topped waters are gone. In their place the quiet waters of the long, new lake touch the wooded shores. The music of the waters, the songs are gone; but now visitors sing around fires and make different music. Many pleasure boats can be seen. Day and night great ships move by on the river.

As a ship enters the seaway near Montreal, travelers on it see, high above the busy city, the mountain that Jacques Cartier climbed. Near the water below the city is the place where Samuel de Champlain landed and talked with the Indians. Not far away is the place where La Salle's farm stood.

These men wanted to find the riches of Cathay. Today men have completed years of looking for riches of a very different kind . . . at home. The long years of talk and planning have ended with success. The world can see that when nations work together, as have the United States and Canada on the seaway, more wonders are possible—wonders as great as men's dreams.

GLOSSARY

aqueduct—A sort of canal built to carry water from one place to another. Sometimes it is built over a bridge.

authority—A person or persons having power to do certain things.

border—The outer part or side.

boss—The chief person on a job: the one who tells all the others what work to do.

boundary—That which marks the outside edge; the dividing line between two nations such as the United States and Canada.

bus—A large car built to carry many people.

canal—A waterway made by man for boats to go through or to carry water from one place to another.

channel—The deeper part of a river or lake; a body of water joining two larger bodies of water.

cofferdam—A dam built to hold back water and allow men to work on the bottom of a river.

colony—A group of people who have come from one nation to another but who continue to live under the rule of the mother country.

commission—A group of people which is given certain powers and duties.

confederacy—A union of people, groups or states for a certain purpose.

Congress—The law-making part of the United States government. The people of the United States choose two groups of lawmakers, the Senators and the Representatives. Together these two groups are called the Congress.

current—The movement of water, especially the fast moving part of a stream.

dam—A wall built across a waterway to hold back the water.

development—The act of making something grow or become better.

engineer—One who has studied the art of building and of machines.

escarpment—A high bank of earth; a long high face of rock or earth.

flag—A piece of cloth with certain colors. It is used as the sign of a nation.

float—n. An object that stays on top of water. v. To stay on top of water.

fort—A building with strong walls, guns, etc., usually guarded by soldiers.

fresh—(of water) without salt.

fur—The soft, thick, hairy skin of animals, often used for clothes.

governor—A person sent by a king to rule in his name; also the person chosen to be head of a state in the United States.

gulf—A part of an ocean reaching into land.

harbor—A place along the side of a river, lake or ocean in which ships can safely stay.

Indian—A member of any of the peoples who first lived in America.

international—Including two or more nations.

lesson—Something which is learned.

locks—Parts of a canal which have gates at each end to let water in or out thus raising or lowering boats as the height of the water changes.

loyal—True to the lawful government or to the king of one's country.

migration—A movement of people from one place or country to another especially in order to make a new home.

narrow—Not wide.

portage—The act of carrying boats or other things over land. Also, the road over which the boats or other things are carried.

power plant—A building which contains machines that make electric power.

quicksand—A kind of soft deep earth that contains water and from which a person or heavy animal cannot escape because of his weight.

railroad—A special kind of road made for trains to travel on.

rapids—A shallow part of a river where the water runs very fast and the bottom is covered with rocks which are a danger to boats.

reservation—A piece of government land given to the Indians for their own use.

route—A road or course traveled.

sag—A low place in the ground.

seaport—A city at the edge of the sea where large ocean-going ships can bring travelers and goods.

shallow—Not deep.

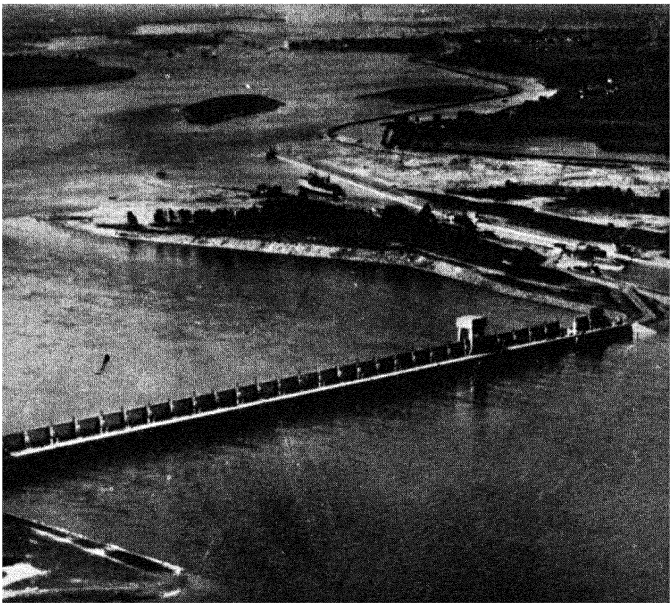
sled—A device used for pulling heavy loads over snow and ice.

steamship—A ship driven by the power (steam) coming from very hot water.

toll—A payment required for the use of something like a bridge or canal.

tunnel—An underground road for trains or cars. Sometimes a tunnel is built to carry water.

unfortified—Not having forts and not guarded by soldiers.



ST. LAWRENCE SEAWAY

Two great modern nations looked to the future. Both shared the same problem. Both shared the same need. And both had the same will.

This is the story of how two nations planned together and worked together to build a great waterway. It is a story of men and dreams and machines. Above all it is the story of one of the wonders of our time — the greatest peacetime effort of two nations in all history.

PYRAMID PUBLICATIONS, INC.

Cover: photo by Shostal Inc.
design by Irving Bernstein

Printed in U.S.A.