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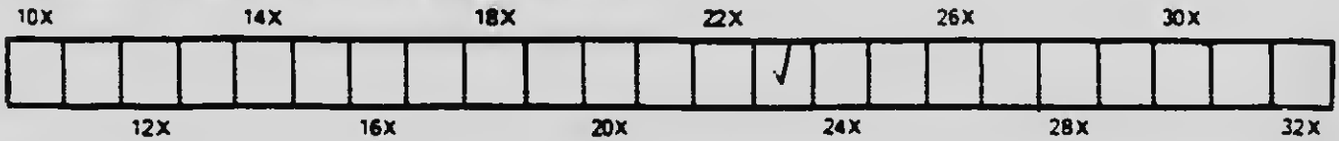


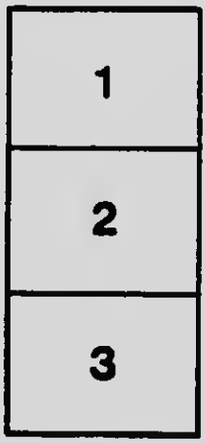


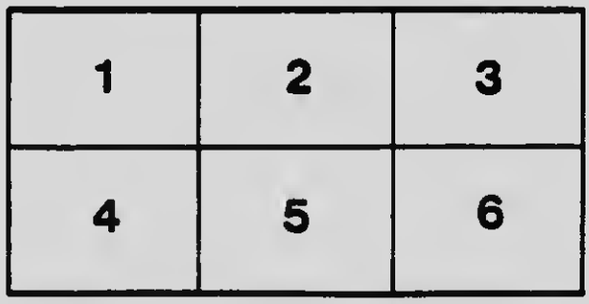

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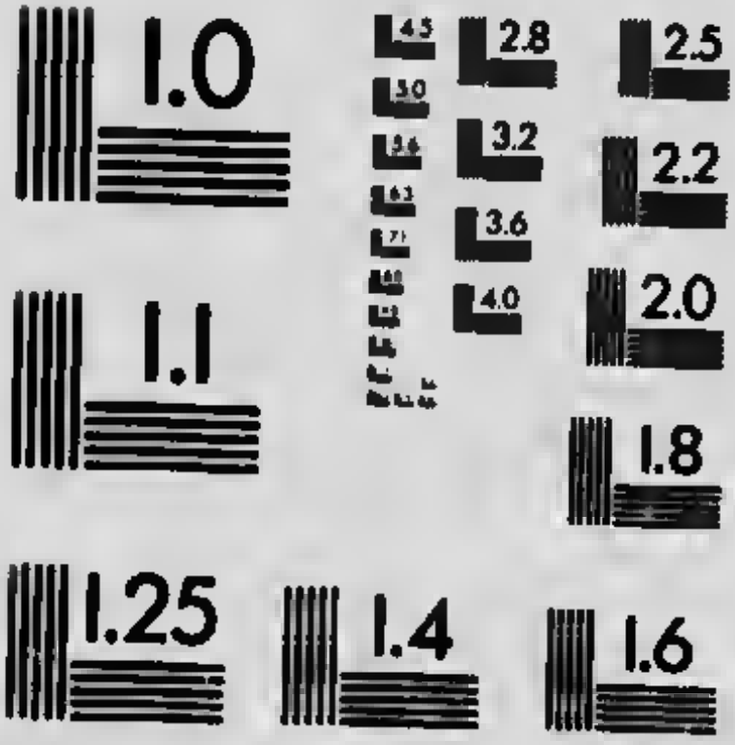


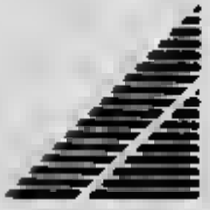

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PIONEER CORNER

VIEW FROM THE HEAD

BULKHEAD at the Lock of the HEAD RACE CANAL

BULKHEAD

POST OFFICE

ONE OF GENERAL STORES

PARK

The PITTSBURG REDUCTION Co. The largest ALUMINUM Works in the World

LOWER BAY

SHAW

UPPER BA

MELV

ISLA

EUG HABERER

The Calcium Carbide Works.

THE CANADA ENGRAVING & LITHO CO MONTREAL

# SHAWINIGAN FALLS and its Industries

...E MAIN POWER HOUSE

Lo... NG
throug... ine of
THE P... TOCKS

SUPERINTEN... RESIDENCES

...Y RAILWAY STATION

FALLS from CAVE

THE BRICK-YARD

THE NEW BA... ...WA

...TEL

The BELGO CANADIAN PULP & PAPER Co.

ST. MAURICE RIVER

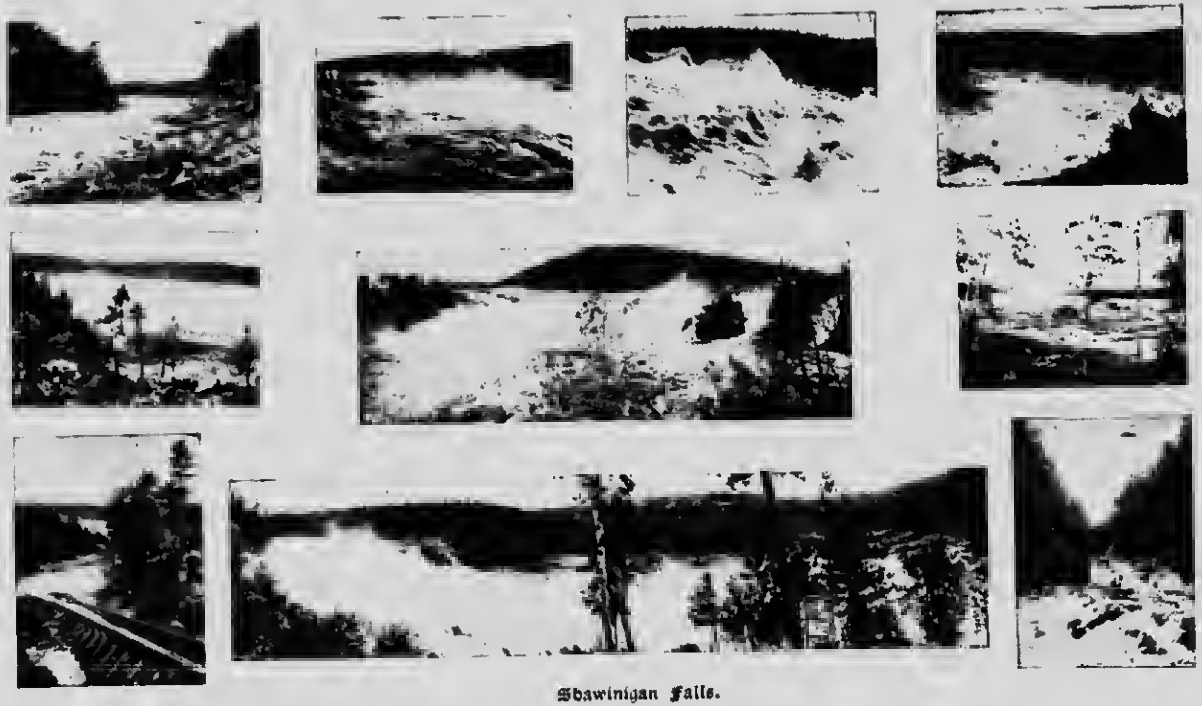
...PER BAY

MELVILLE'S ISLAND

With the Compliments of

The Shawinigan Water & Power Co.

November 1st, 1901.



Shawinigan Falls.

# Shawinigan Falls, P. Q.

## THE EVOLUTION OF A MODERN MANUFACTURING COMMUNITY. .

### THE STORY OF HOW IN THREE YEARS THE FOREST GAVE PLACE TO A THRIVING CITY WITH NUMEROUS LARGE INDUSTRIES. .

**The St. Maurice River and its Early History**

IT was in the latter part of the eighteenth century that the agents of the Hudson Bay Company first penetrated to the upper waters of the St. Maurice, established several trading posts, and there collected each season's supply of furs for the European market. This was long after the settlement of the City of Three Rivers, which in 1618 was the head of navigation on the St. Lawrence and which later became the

**Pioneers.** point of departure for the intrepid Hudson Bay Company's explorers and traders. These hardy pioneers penetrated as far north as Kickendath at the headwaters of the St Maurice River where they passed on over the height of land to the Hudson Bay country. They returned with stories of the great wealth of timber which covered the country to the north, and soon after, the pioneers in lumbering began operations on the Upper St. Maurice River. Not until the '40's did these operations assume any considerable proportions, as the handling of the lumber over the numerous waterfalls in the river involved a considerable expenditure of money, but in 1852 the Provincial Government undertook the general improvement of this great river, having the object of opening up the vast tracts of timber lands owned by the Province of Quebec

**Early Operations.** Lumbering continued with general success for many years, but it was not until attention was attracted to this country through its vast spruce tracts available for the manufacture of pulp and paper, that the dawn of its industrial development came. It is probable that this district contains a greater quantity of first quality spruce, which may be easily floated to the mills, than any other district on this continent.

Lumbering on the St. Maurice River.

Grand Mere.

**First Mill at Grand Mere**

About thirty miles above Three Rivers where there is a fall in the St. Maurice River of about 40 feet, there was established in 1887 a pulp mill, which furnished the foundation for the present magnificent industry at that place. It required the energy and ability of such men as Sir William Van Horne and General Russell A. Alger to bring this development up to its present standard, and the building of the great works of the Laurentide Pulp Company at Grand Mere, and their success in utilizing the raw material and the power of the St. Maurice River, put the stamp of approval on the valley of the St. Maurice as the future seat of an industrial development, which should include many large plants for the manufacture of the spruce into pulp and paper.

**Shawinigan Falls.**

Before the works at Grand Mere were fully completed, the attention of capitalists was centered on Shawinigan Falls, about eight miles below Grand Mere, where the waters of the St. Maurice fall in a cascade, a distance of nearly 150 feet. It was this grand waterfall that years ago the Indians had named Shawinigan meaning "Needlework," because of a fancied resemblance between this most beautiful cascade and the glittering bead and quill work of their people.

Words are inadequate to express the beauties of this wonderful work of nature which bids fair to rival Niagara Falls as a resort for the tourist and lover of scenic beauty.

**Government Policy.**

For years the attention of those familiar with the St. Maurice River had been attracted to this great power, but complications involving the title to both the water power and adjoining property, delayed, for some time, its acquisition by those who might be willing to venture the necessary expenditure to develop its latent energy. Finally the Privy Council of England decreed that the title to the bed of floatable and navigable streams was vested in the Provincial Government, and following this decision the Provincial Government quickly adopted the policy of selling its water powers, but only where an assurance was given of an intention to develop and utilize the same.

**Formation of the Shawinigan Water and Power Company.**

A company was immediately formed to take over this valuable water power, and under a charter granted by the Provincial Government giving it broad privileges, the Shawinigan Water and Power Company was incorporated on January 15th, 1898, and immediately commenced active preparation for the development of the power of Shawinigan Falls, the energy of which had for all time lain dormant. Under its charter the Company has the right to acquire


Outline Map—Shawinigan Falls and surroundings.

**Charter rights.**

property, develop water power [illegible] electricity for [illegible] heat and motive power, and to construct all works necessary for said purposes, to acquire by purchase the works of any individual or corporation engaged in a like business, to transmit power generally throughout the Province of Quebec, to distribute electricity and to sell the same in the various municipalities, including *Montreal*, and also the right to *expropriate land for its various purposes*, including that necessary for a transmission line to any point.

**Real Estate**

Having secured the water rights, the company proceeded to acquire sufficient land to provide a site for the location of manufacturing establishments and the development of a town. This was accomplished by purchase from individuals, and consists of about [illegible] acres of which 200 acres are reserved for industries and about [illegible] acres are subdivided into town lots. The land is comparatively level and practically all of it available for building purposes. Having acquired the water rights and property, the next step was the adoption of a plan of development which would meet the demands for power in various forms.

The Town.—From uncleared forest in 1900 to a town of some 3,000 people in 1901.

In order to understand intelligently the proposition at the outset, we must consider first the magnitude of the power of Shawinigan Falls, its location, and the various forms in which power may be delivered to the consumer.

**St. Maurice River and Its Drainage Area.**

The St. Maurice River has a total length of over 400 miles and is fed by innumerable lakes and streams. The drainage area is about 18,000 sq. miles, and this territory is almost wholly covered with dense forests, which insure a steady flow of water throughout the entire year, the normal flow of water being 26,000 cubic feet per second. After examining the Government reports and statistics, covering a long term of years and making personal observations, Messrs. T. Pringle & Son, of Montreal, and Mr. Wallace C. Johnson, of Niagara Falls, N.Y., reported that it was *entirely practicable to develop for commercial purposes* 100,000 *Horse Power*. At this point the river falls a distance of 150 feet, and the formation of land and water is such that power may be developed which will have, at all times, a working head of 130 feet.

**Location of Shawinigan Falls.**

Shawinigan Falls is distant 21 miles from Three Rivers, 90 miles from Quebec and 84 miles from Montreal, all of which cities are situated on the St. Lawrence River and are ports for ocean going vessels.

Watershed of the St. Maurice River.


Map showing route of transmission line to Montreal.

The proposition therefore involved the selling of power, both water and electrical, at sufficiently low prices to attract to this point large consumers, and the transmission, electrically, of the surplus power to large cities near at hand.

**Natural Features and Plan of Development.**

The natural features of land and water at Shawinigan Falls are such that a great amount of power may be obtained by a very simple development. The plan adopted included the building of a canal about 1,000 feet long, 100 feet wide and 20 feet deep. At the end of this canal is a substantial concrete bulkhead from which the water is conducted through pipes to the Power House, 130 feet below. Each Pipe, Water Wheel and Generator will produce 5,000 horse-power. The canal has a capacity of 60,000 horse-power, and the present development includes a bulkhead for 30,000 horse power, Power House and pipe lines for 15,000 horse power, Water Wheels and Generators for 10,000 horse-power.

**Paper Mill Development.**

In addition to this main development, it was decided to take advantage of the fact that at one point the Shawinigan River and the St. Maurice came within 1,000 feet of each other, but with a difference in levels of 150 feet, and here, at a point on the upper bay, a second development has been made for the purpose of supplying water for the operation of Paper

Upper and Lower Bay and First Development.

Mills, and other industries which might desire to use large units of water power. This development consists of a large crib dam through which the water passes at the bottom. Inside of this crib, and on the bank of the river, is a solid concrete bulkhead from which the penstocks lead the water through the bank and down to the lower level, discharging through the wheels into the Shawinigan River, which acts as a tailrace. **Construction.**

This development has a capacity of 15,000 horse power, which is to be utilized by the Belgo Canadian Pulp Company—but the plans call for a duplication of the present crib and bulkhead immediately adjoining the present site, doubling the available power at this point.

The absence of rapids in the St. Maurice for five miles above Shawinigan Falls, and the great bay on the upper level, preclude the possibility of interference by frazile or floating ice, which is a source of much trouble to many water powers in this northern country, while the broad bay below the Falls furnishes splendid means for carrying the water off after it passes through the Power House. **Favorable Conditions.**

Penstock—Inside.

Bulkhead—Inside.

Bulkhead—Outside.

Penstock—Outside.

Showing method of conveying water from the upper to the lower level.

**Preliminary Work.**

The results of investigation justified the promoters in believing that *both water and electrical power could be developed here at a capital cost very much less than that of any other power of like magnitude.* and subsequent developments have confirmed this conclusion. The greater part of a year was consumed in making the necessary surveys and maps of the ground, from which to study the situation and decide first how to proceed with the work.

**Contractors Begin Work.**

It was early winter of 1899 before the Warren-Burnham Co., of New York, the contractors for the work, got under way, for although the contract was let in April, it was necessary, in order to bring in the machinery and plant, to build four and a half miles of railroad to connect with the Great Northern Railway of Canada. The work went on continuously day and night during the two following years, and in the meantime contracts had been let for the necessary water wheels, electrical generators and various machinery and apparatus necessary to complete such a great plant.

**Water Wheels and Generators.**

The Water Wheels, each of 6 000 H.P. capacity, were built by the I. P. Morris Company, of Philadelphia, Pa., and the electrical generators, of 5000 H.P. each, by the Westinghouse

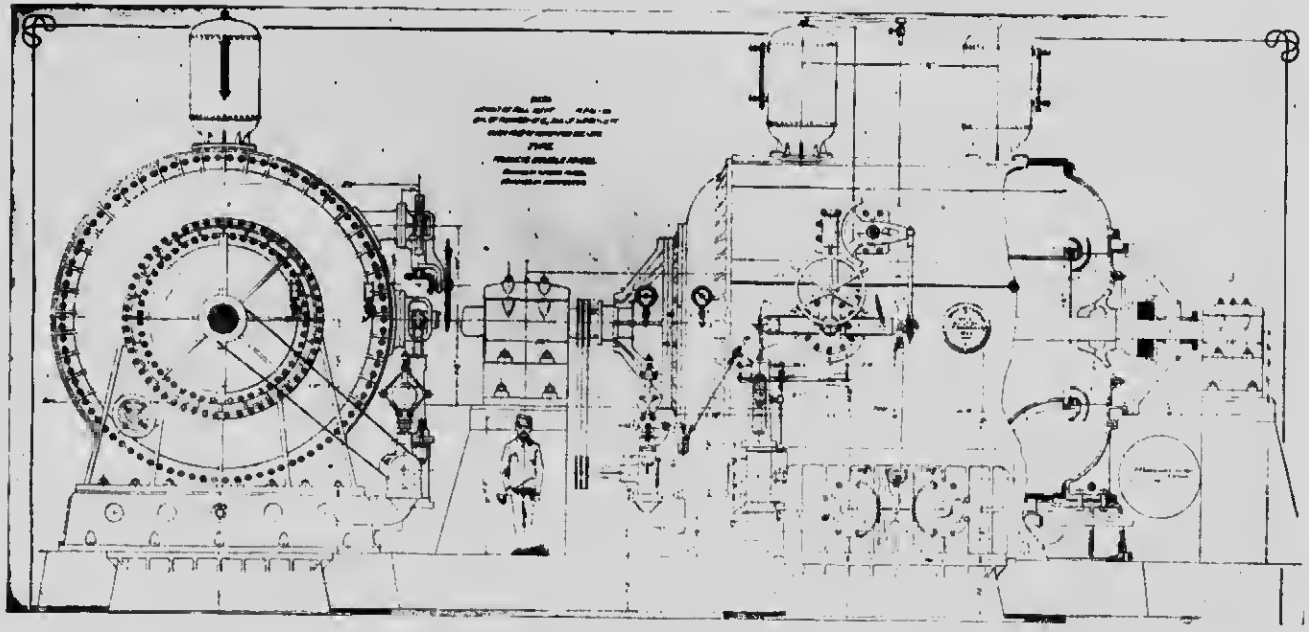
Electric & Manufacturing Company. Beside these, numerous other well known concerns were engaged to build special machines and apparatus for this plant.

**Contracts for Power.**

While all this work was going on, equally important steps were being taken in another direction, for while it might be easy enough to develop this natural power, it is to be kept in mind that the essence of this proposition was to attract to the spot consumers of power. Fortunately the inducements which the Company was able to hold out were so great, that the location immediately attracted the attention of far-seeing business men, not only in this country, but in Europe, and the result was that before the Water & Power Company's works had proceeded far, other companies who had contracted for large units of power, entered upon the construction of immense works to utilize the same, so that this place, which had but a short time before been simply a wood land, was quickly converted into a veritable beehive of industry.

**Time Required.**

For over two years the work has been carried on, employing at times on the Water Power development alone over 1,500 hands. During the past summer the work reached its final stage, and it is now practically completed.



Water Wheels.

The Generators.

That it has been well and substantially built is attested by all; and that it will prove a great factor in the development of this section of Canada, none can doubt.

**The Town.**

Meanwhile the town of Shawinigan Falls has been growing rapidly and has now reached the dignity of an organized municipality. It is well laid out, has electric lights and will shortly have a complete water supply and sewage system.

**Buildings**

It is interesting to note the speedy transition in building operations as evidenced in various parts of the town. Whereas the first were large frame buildings, there are now many fine brick and stone structures. The first Catholic Church, which was a temporary wooden building, is being superseded by an $80,000.00 stone edifice which will be a splendid structure. The City Hall, which is in process of erection, will be another fine building.

Many other instances could be quoted, all of which go to prove that even so early, Shawinigan Falls has thrown off the garb of a primitive town and taken on the appearance of a modern, up-to-date city.

So much for the town, but there is another element of this matter of power which has only been briefly alluded to, viz., the transmission of electrical energy to distant points.

The Two Power Houses.

**Transmission of Power to Distant Points.**

The advances made in electrical engineering make the electrical transmission of power to Three Rivers, Montreal and various towns and cities lying between Shawinigan Falls and those cities entirely feasible. Power to the amount of over 20,000 H.P. is to-day being delivered in Buffalo by the Niagara Falls Power Co. (transmission line running 40 miles). In California, power is being transmitted over 90 miles, and is a commercial success, and a line is being installed in that State, over which power will be carried a distance of 150 miles. The essence of the proposition of transmitting power long distances, is, *what is the cost of power delivered at the end of the transmission line*, as determined by the cost of generation and transmission, including interest, depreciation, and operating expenses and the amount of power lost in transmitting? *The low first cost of developing the power at Shawinigan Falls makes possible its transmission to remote points.*

**Transmission Line**

In connection with the transmission of power from Shawinigan Falls to Montreal, a feature of no little advantage is the possibility of this Company making an arrangement with the Great Northern Railway and other railroads, whereby its transmission line will run over their right of way for the greater part of the distance to Montreal. This would not only lessen the first cost of the transmission lines but would reduce the maintenance expense to

View of Montreal.

a minimum. The line would pass through fifteen towns and cities, many of which would furnish users of power.

**Electrical Power in Montreal and Other Cities**

The capital involved in the generation of power at Niagara Falls is many times that required at Shawinigan for the same amount of power. At Buffalo steam power is developed at a minimum cost owing to the low price of coal, averaging about $1.80 per ton. The average cost of coal at Montreal is $3.25 per ton. There are in the City of Montreal over 700 steam plants and the average cost of producing power is about $60.00 per horse-power for 24 hour power. The power of Shawinigan Falls can be sold in Montreal at prices approximating 50% of the cost of steam power, and on this basis will show a satisfactory profit to the Power Company. In quoting the above figures, it must be understood that the cost of steam power is dependent somewhat on the size of the plant and would vary from $24.00 in the largest plants to $80.00 or $100.00 in the smallest plants, and the same thing would apply to price put upon electrical energy. The use of electric power generally for manufacturing purposes in Montreal has not been pushed, as the existing Companies have a limited and fixed available power, which is being used largely for lighting purposes, although these Companies are now selling very many small units of electrical power at exceedingly profitable prices.

The story of Shawinigan Falls would not be complete without some mention of the Companies who are to operate there, and who have built the factories which will contribute so much to the future prosperity of the Town.

**Pittsburgh Reduction Company.**

The first company to appreciate the advantages of Shawinigan Falls was the Pittsburgh Reduction Company, operating plants at Niagara Falls and Pittsburgh, Penn., for the manufacture of aluminum by the use of the Hall electrolytic process.

**Aluminum Its uses.**

It was the invention of this process by Charles M. Hall, the Vice-President of the Pittsburgh Company, that revolutionized the manufacture of this lightest of metals which has become so indispensable to many trades. Besides being used extensively in the making of various utensils it has recently come largely into use for the manufacture of wire and cables for the transmission of electrical energy. It is interesting to know that one of the largest consumers of aluminum is the German Government, which employs this metal in all possible ways in connection with its army equipment, thereby lightening very considerably the burden of each man.

The Pittsburgh Company are the largest manufacturers of aluminum, and the plant at Shawinigan Falls, which is intended especially to supply the foreign markets, will, when in full operation, be the greatest establishment of this kind in the world

Aluminum Works of the Pittsburgh Reduction Co., and the Waterwheels in their Power House.

The Officers of the Pittsburgh Reduction Company are: President, R. B. Mellon; Vice-President, Chas. M. Hall; General Manager, Arthur V. Davis; Superintendent of Shawinigan Falls Works, Fredk. A. Stoughton.

**The Belgo-Canadian Pulp Company,**

Whose home office is in Brussels, Belgium, has practically completed the first installment of its big pulp and paper plant. This Company, which has contracted with the Shawinigan Water & Power Company for the necessary water power to operate its works, owns very nearly 1,000 square miles of choice timber limits on the St. Maurice River and tributary streams, and has an established European market for its product.

**The Output.**

The daily weight output of the Pulp and Paper Mills will be as follows:

Ground Wood Pulp.....125 tons
Sulphite Pulp ..... 60 "
Paper.....100 "

**Modern Equipment.**

The plant is constructed in accordance with the plans of A. C. Rice, Esqr., C.E., of Worcester, Mass., and is most modern and up-to-date in all respects. The conditions under which it will operate are expected to result in the greatest possible economy in cost of production.

The Pulp Mill and some of the machinery therein.

**Management of the Company.**

Mr. Edmond de Vylder, of Brussels, Belgium, is the President and Managing Director of the Company, and contributes the successful experience of a lifetime to the policy and conduct of its business affairs.

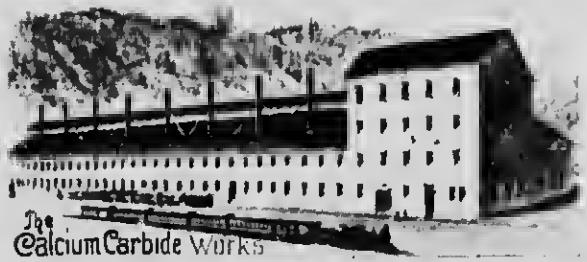
Mr. Chester A. Ring is the Resident Managing Superintendent of the Company. The interests represented by this Company include many of the strongest financial institutions on the European continent, among whom are the Bank of Outremer, the Bank of Paris and the Bank of Brussels, Belgium.

**The Shawinigan Carbide Co.**

When Thos. L. Willson discovered the process of manufacturing Calcium Carbide, he laid the foundation of an industry which has developed to the extent of being the largest single consumer of electrical energy of all the electrolytic processes.

**Uses of Calcium Carbide.**

At Niagara Falls, N.Y., the Union Carbide Co. has contracted for 25,000 H.P. of electrical current to be used in their extensive works at that place. The uses of Calcium Carbide are many, but its most extensive use is for the generation of acetylene gas, used wherever



The Calcium Carbide Works

The Brick-yard.

an isolated lighting plant is required, as well as in the lighting of cars and for similar purposes. The cars of the German system of Railways are lighted by acetylene gas and its use in Germany has demonstrated, that for this purpose, it is superior to any other light.

**Power the most Important Factor.**

The demand for Carbide is world wide and the most vital question as to the future of this wonderful product is—where can the Power be obtained to produce it?—for the manufacture of this article is primarily a question of Power. It takes one electrical Horse Power per year to produce a ton of Calcium Carbide, so it is evident that its successful manufacture can only be carried on where large units of electrical power may be obtained at comparatively low prices.

The plant being erected by the Shawinigan Carbide Company will be equipped in accordance with the most advanced ideas, and as the Vice-President of the Company is Thos. L. Willson, Esq., the inventor of process, the business will have every advantage to ensure successful operation. The officers of the Company are:—President, Jas. W. Pyke; Vice-President, Thos. L. Willson; Secretary and Treasurer, Geo. B. Mackay.

Vast development.

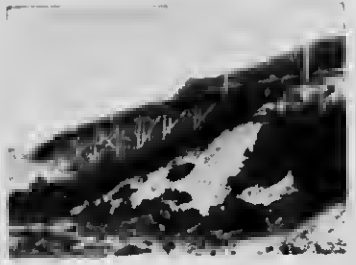
[illegible] at Shawinigan Falls, it is only necessary to recognize that the three concerns previously mentioned will, in the near future, use a total of over 35,000 H.P.

The Shawinigan Electric Light Company.

This organization is destined to be of considerable importance, as through it, the Shawinigan Water & Power Co. will supply Power to all the smaller industries at Shawinigan Falls, an arrangement which simplifies the system of distribution. Power in small units. It is evident that with so much available Power, electric light should be cheap, and it is generally used throughout the Townsite of Shawinigan Falls and vicinity,—in fact arrangements have been concluded whereby the Town of Grand Mere will be supplied with electric light by the above Company. It is evident that this Company will soon be a large user of Power.

Other Industries.

The example of the Pittsburg Reduction Company and that of the Shawinigan Carbide Company, large consumers of Power locating at this point, is being followed by other users of Power in the form of electrical energy, and negotiations now in hand will soon result in the establishment of other large works of a like character. For the manufacture of Bleaching Powder, Caustic Soda, Chlorate of Potash and any or all of the products obtained by



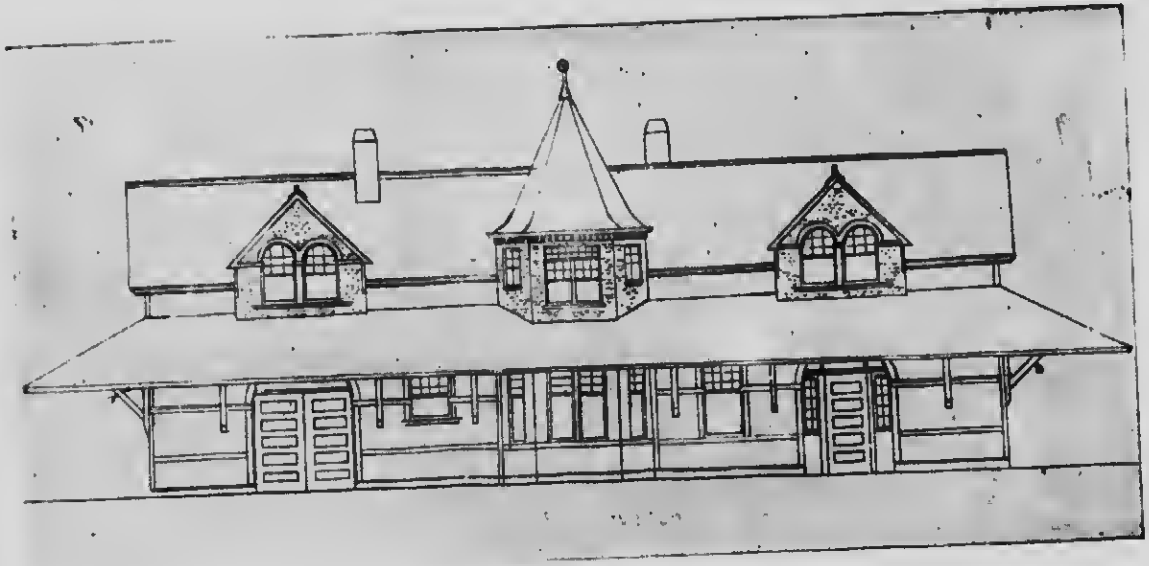
Electric Railway.

**Electro-Chemical Companies.**

the electrolytic process, no place offers more attractive conditions than does Shawinigan Falls. As Power is the raw material for these industries, they must be located as near as possible to the source of electrical energy. The coming of these industries, employing as they do, only male help, must naturally be followed by mills to employ the female portion of the community, and already the putting down of a large cotton mill is numbered among the probabilities in the near future.

**The Future.**

If so much has been done, and yet we but stand upon the threshold, it is easy to look into the future and prophesy that in but a few years this thriving town will be a great manufacturing city. To justify such a prophesy we have only to turn our eyes to our near neighbors in New England. If Lowell, Lawrence, Manchester, and other great manufacturing cities have been built up by the development of the water power of the Merrimac River, why should not the St. Maurice, with ten times the power, do as much for Shawinigan Falls?



Railroad Station.

Residence.

Residence.

Town Hall.

Cascade Inn.

Residence.

# THE SHAWINIGAN WATER & POWER CO.

J. N. GREENSHIELDS, K.C., President.
J. E. ALDRED, Treasurer.

JOHN JOYCE, Vice-President.
RICHARD W. DOUGLAS, Secretary

## DIRECTORS

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President Montreal Street Railway, etc.

JOHN JOYCE, Boston,
Director American Distributing Co., etc.

THOS. McDOUGALL, Montreal,
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H. H. MELVILLE, Boston,
Vice President Great Northern R.R., etc.

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D. MURPHY, Ottawa.
President Ottawa Transportation Co.

J. N. GREENSHIELDS, K.C., Montreal,
President.

J. E. ALDRED, Montreal,
Treasurer.

RICHARD W. DOUGLAS, Montreal.
Secretary.

**OFFICES: MONTREAL—SHAWINIGAN FALLS.**

WALLACE C. JOHNSON, Chief Engineer.


Bird's Eye View.