

SCRAP  
BOOK



# A TOTAL ECLIPSE ON AUGUST 29

Remarkable Phenomenon  
Begins Near Winnipeg.

## CANADIAN EXPEDITION

Mr. J. S. Plaskett, With Other Eminent  
Scientists, Will be Stationed at  
Hamilton Inlet, Labrador.

On the 29th of August next Canada will be treated to one of the grandest and most striking of astronomical phenomena—a total eclipse of the sun. The body of the sun presents a brilliant surface known as the photosphere, which radiates to us our light and heat. Above this is a layer of gases known as the reversing layer, which absorbs portions of the sun's light and produces the well-known dark lines in the solar spectrum. At total eclipses, when the disk of the sun is cut off, this layer has been seen to produce a bright line spectrum, showing it to be glowing gas. Above this is a gaseous envelope known as the chromosphere, through which burst great flames of hydrogen and metallic vapors. Then comes the remarkable streamers of the corona, frequently extending out three or million miles from the sun's disk. Too faint to be seen in sunlight as soon as the sun's disk is covered, this pale, yet striking, halo springs into view. Partly shining with its own light and partly by reflected light, its exact nature is not yet entirely settled. It is remarkable as containing an element not yet found on earth.

### Begins Near Winnipeg.

The eclipse begins near Winnipeg, sweeps across the country and reaches the Atlantic Ocean at Hamilton Inlet, Labrador. Here at Northwest River the Canadian expedition will have its station. Mr. W. F. King, chief astronomer, and Mr. J. S. Plaskett are in charge of the expedition, and will be assisted by Dr. Chant, Prof. De Lury, Dr. Marsh, and Messrs. John R. Collins, D. J. Howell and J. Edward Maybee, of the Royal Astronomical Society of Canada.

For photographs a very complete equipment has been provided, consisting of a \$3,000 20-inch coelostat, four cameras, one of 82-inch focus, two of 10-foot focus, and one of 40-foot focus, which will give an image of the sun 4 1-2 inches in diameter. In addition to these, for spectrographic work, there will be a Brashear 3-prism train spectroscope, an objective grating spectroscope and a prismatic camera. A number of telescopes will be used for visual observations.

## TO WATCH SUN'S ECLIPSE

### PARTY SETS OUT FOR LABRADOR

Members of Royal Astronomical Society Set Out for Quebec—Will Sail 1,400 Miles to Get Observations.

Professor Delury and Dr. Chant, of the University staff, and J. R. Collins, of this city, left last night for Quebec where they will join Mr. Menzies, who left here Sunday evening en route for Labrador to make observations of the eclipse of the sun which occurs on August 30.

Mr. Menzies, who is resident observer at the Agincourt Observatory, will be in charge of the magnetical observations. Several other members of the Royal Astronomical Society will be included in the party, and Dr. Marsh and Mr. A. H. Jenkins go from Hamilton. A number will go from Ottawa. Dr. King, astronomer in charge of the observatories in Ottawa, is head of the expedition which is expected to leave the city of Quebec on Wednesday.

### TO ESCAPE THE FOGS.

The party will proceed to the head of Hamilton inlet, in the north of Labrador, a distance of 1,400 miles from Quebec, and 100 miles inland from the coast. Here the total eclipse can be seen and the observations will not be interfered with by fogs. The party is leaving early so as to get their instruments in position and make all necessary preparations before the interesting event comes on.

The total eclipse at that place will last 2 mins. 33 secs., and all the observations, photographs, etc., have to be taken in that time. At Toronto the eclipse will be seen as a partial one, commencing at 5.39 a.m., maximum 6.34 a.m., end 7.34 a.m. Greatest magnitude .774, or somewhat more than three-fourths of the sun's surface.

### ECLIPSE EXPEDITION HOME.

Most of the members of the expedition which visited Labrador to observe the solar eclipse on Aug. 30, and which was unsuccessful returned to-day per ss. King Edward and are leaving for their homes. Among the members to register at the Chateau en route for home were Dr. Bell, W. F. King, Miss King, John Macara, W. P. Near, Ottawa; C. A. Chant, Alfred DeLury, J. E. Maybee, Toronto, and others.

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The work of lightening the steamship Victorian, ashore at Cape Charles, was continued yesterday, and it is probable an effort will be made to float her today or to-morrow.

Owing to the high wind and sea yesterday, it was impossible to communicate with the steamer Virginian, ashore at Crane Island. As the spring tides are now taking off, there will be a better opportunity to work at discharging cargo, and it is thought that in a few days she will be sufficiently lightened to be floated off.

The Department of Marine and Fisheries has issued the following notice, dated September 6th: "During attempts to float Victorian channel will be obstructed or dangerous for navigation. During these attempts a tug will be sent to Batiscan and another to Grondines to warn all vessels that they must come to anchor until further informed. During these attempts semaphore will be closed except for inch arm which will be left horizontal as indicating six inches, attempt will be made probably to-morrow or Friday at high tide. Most important that all pilots should be specially warned."

## VISITED SEVEN ISLANDS.

### Industrial Activity of the Place Highly Spoken of.

Mr. Rodolphe Forget, M. P., for Charlevoix, spoke yesterday of the trip to Anticosti from which he has just returned, and on which he accompanied Hon. Raymond Prefontaine, Premier Gouin and Mr. Speaker Sutherland. He is very enthusiastic over the wonderful improvements of the province on the banks of the river. One of the most interesting places visited was seven Islands, on the lower north shore. Here there are pulp mills and a railway and other works on which over \$2,000,000 has already been spent. The mills are of cement, and "as solid as if they were put up on St. James street." 18,000 barrels of cement reached the point on one steamer.

There is also a very interesting whaling venture being carried on at the Islands, and Mr. Thos. Gauthier, of Montreal, is president of the company. The enterprise promises well, over thirty whales having been taken

in one month. One day's catch was three, and as each produced about 90 barrels of oil, it was estimated that the catch was worth from five to six thousand dollars.

Mr. Meunter was also visited at his Island home, on which he has spent large sums of money. It is questioned if he will remain there much longer.

### FIRST CARGO OF WHALE OIL.

Montreal last week received what is believed to be its first cargo of whale oil. It arrived by the schooner Florence M., Capt. Trepannier, which brought a full cargo of whale oil from the Quebec Steam Whaling Co.'s factory at Seven Islands, a few hundred miles below Quebec. The second cargo left Seven Islands per schooner N. W. White, Capt. Tremblay, on Thursday last for Montreal.

MINARD'S LINIMENT Cures Garget in Cows.

*See Daily Telegraph Sept 7/05*

Barkt. Rosina, Capt. Johns, from Barbados, with a cargo of molasses for Montreal, arrived in port at noon yesterday under sail and anchored in the stream. *Sept 7/05*

## A LIMB SHATTERED

### Young Man Meets with Painful Accident at Seven Islands.

*Sept 7  
Thursday Morning*

The ambulance was called down to the steamer King Edward, yesterday morning, to remove to the steamer Montreal, a young man named Alexander McLeod, who had his left leg badly shattered by the accidental discharge of a gun at Seven Islands. Young McLeod informed a Chronicle reporter that he went out shooting last Sunday. He carried a rifle and a shot gun. The latter was loaded with large shot, such as is used in killing seals. He laid the rifle down on the grass, and when picking it up it struck the gun, causing the latter to discharge, the contents entering his left leg just above the ankle, tearing away a quantity of flesh and badly shattering the bones, one piece of bone about three inches in length, being blown away. The report of the gun was the means of bringing the unfortunate young fellow assistance, and the service of Dr. Ross, of Seven Islands, was secured. That gentleman dressed the wounded limb and made the victim as comfortable as possible. As McLeod was desirous of reaching home he was placed on board the King Edward and brought up to Quebec. McLeod, who is only sixteen years of age, originally belonged to Hudson Bay, but for about a year has lived at Rossmore, Ont., where his widowed mother now resides. He has two brothers, one of whom works for the Grand Trunk and the other for the Canadian Pacific Railway. He went down to Seven Islands a few weeks ago. It is thought the injured limb will have to be amputated.

# FAILURE OF ECLIPSE PARTY TO LABRADOR

Everything Was in Readiness  
But Sun was Obscured  
by Clouds.

## INDIANS SAW IT, HOWEVER

They Were Only Nine Miles From  
Astronomers and Were  
Terrorized.

(See also page one.)

Special to The Montreal Star.

Ottawa, September 8.—Mr. J. T. Plaskett, assistant to Dr. W. F. King, the Dominion astronomer, accompanied by Mr. Joseph Pope, under secretary of state, and W. H. Winters have arrived in Ottawa from their trip to Labrador with the Canadian observation party, which went to observe the eclipse of the sun, and which proved to be a failure, owing to the cloudy atmospheric conditions which prevailed.

Mr. Plaskett says that the camp of the Canadian party was situated at the head of Hamilton Inlet 150 miles from the sea and at the outlet of the Northwest river, on which Mr. Hubbard met his untimely end last year. In anticipation of the eclipse, the observers had their valuable instruments, many of which came from the Royal Observatory at Greenwich, in position, but unfortunately all their preparations were in vain.

When August 30 dawned, masses of clouds absolutely obscured the sun and rendered it impossible to secure a single observation. One of the disappointments of the trip was the information which reached Dr. King and his associates the day following, when an Indian from a settlement only nine miles away came to camp and told the astronomers that his tribe had been terrorized by the sight of the unusual phenomenon. They had had a clear view of the eclipse.

The Canadian party otherwise enjoyed their trip. Partridges and rabbits were plentiful, and in the streams entering Hamilton Inlet there was no scarcity of trout.

Dr. King also returned to the city this morning and confirmed the statements made by Mr. Plaskett in regard to the failure of the expedition.

## BACK FROM LABRADOR.

The party scientists who went to Ungava to observe the solar eclipse returned to Quebec yesterday by the steamer King Edward. They report that owing to unfavorable weather conditions on the day of the eclipse, their mission was not successful.

The following letter, which was handed to the Chronicle for publication speaks for itself:—

Quebec, Sept. 7th, 1905.

To the Editor of the Chronicle:

Dear Sir,—The members of the Canadian Government Eclipse Expedition of 1905, who arrived this morning from Northwest River, Ungava, on the King Edward, will appreciate your giving mention in your columns of the inclosed testimonial tendered to Capt. A. Belanger.

Yours very truly,

ALFRED S. JOHNSON,  
7013 Perry Ave.,  
Chicago, Ill.

## TESTIMONIAL.

S.S. King Edward en route, September 6, 1905.

To Captain A. Belanger,  
S.S. King Edward.

We, the undersigned members of the Canadian Government Solar Eclipse Expedition of 1905, desire to express our appreciation of the skill and caution with which the ship was navigated and our lives secured on the occasion of our voyage on the King Edward to Northwest River, Ungava, to observe the total eclipse of the sun, August 30. On many occasions we have had opportunity to witness, and we shall ever bear in grateful remembrance your solicitude and generous self-denial for the safety and comfort of the passengers committed to your care.

(Signed.) W. F. King, I. J. Kavanagh, S.J., Alfred S. Johnson, J. A. Lajeunesse, O.M.I., M. Aldous, J. Macara, Frank P. Jennings, Henri Simard, Ptre., C. P. Choquette, Ptre., Joseph Pope, Walter E. Lyman, J. A. Russell, G. P. Jenkins, W. Menzies, W. P. Near, J. R. Collins, Winnifred King, S. Codd, E. Walter Maunder, A. S. D. Maunder, Alfred T. De Lury, David J. Howell, J. Edw. Maybee, Chas. Upton, Louis Gauthier, D. B. Marsh, Henry H. Lyman, Louis B. Stewart, C. A. Chant, C. S. Plaskett.

# RETURN OF CANADIAN SCIENTIFIC EXPEDITION TO LABRADOR



**REV. I. J. KAVANAGH, S.J.,**  
Professor of Science at Loyola College,  
who was one of the Canadian eclipse  
observation party to Labrador.  
—Photo by P. J. Gordon.

Rev. I. J. Kavanagh, S.J., Professor of Science at Loyola College, has returned from Labrador, where he was a member of the party sent by the Canadian Government to study the eclipse of the sun. The King Edward, which was the vessel used by the party, reached Quebec yesterday morning, and Father Kavanagh immediately took train for Montreal.

When interviewed to-day, he spoke at some length and very interestingly of the life and work at the camp. He was of the first party sent, and is, therefore, familiar with the whole course of events there.

"You want to get the story of the trip. Well, to begin at the beginning, we left Quebec on the King Edward, the boat which runs to Natashkwan, on the Labrador coast. From that point on we had to charter the vessel for the party. Our route led us to Hamilton's Inlet and into Lake Melville. Between this lake and Lake Grand lies the North-West River, which is nothing more than a narrowing of the lake. It was on the bank of this stream that we pitched camp near Rigolet, the principal post of the Hudson Bay Company in those regions.

## POST FULL OF MEASLES.

"Rigolet is also rather well known of late as the post from which the ill-fated Leonard Hubbard left on his disastrous journey into the wilderness. The factor at Rigolet is Mr. H. M. Cotter, and no praise would be worthy of his unflinching courtesy and kindness to the members of the party.

## Rev. Father Kavanagh Tells of the Experiences of the Party—Saw Many Interesting Things, But Not the Eclipse of the Sun.

to the post, splendid mink, bear, otter, sable and now and then a silver-fox, one of the rarest and most beautiful of furs, a fine skin being probably worth \$2,000 in London. Rigolet, by the way, is the first post at which Lord Strathcona worked for the Hudson Bay Company. He married the daughter of one of the factors there, and she is the present Lady Strathcona. Some of the buildings put up during his time at the post are still standing.

## POWERFUL ANIMALS.

"But when describing the post and camp I must not forget the dogs, as they are probably the most in evidence of anything about the place. It is not so much for their numbers as for their quality. There were only about ten or a dozen of them, but you could never forget their existence. In the first place they are not like the huskies of the North-West, but are a much larger and heavier dog in every respect. To give you some idea of their strength, four of them will draw two men and 300 pounds of equipment on a long journey. When we were setting up camp, Mr. Cotter harnessed six of them to a heavy waggon to draw lumber, and the great difficulty was to prevent them from running away with the load.

"They are very strong, but their strength is even exceeded by their ferocity. They are terribly savage brutes, and have been known to eat even their masters. When they are hungry it is very dangerous to trip or fall within reach of them, for they would be on you in an instant, and that would be the end of it.

"The only thing they are afraid of is this.

"Here Father Kavanagh picked up a long whip tightly rolled up, made of walrus hide, with a very short handle.

"This whip is about 25 feet long, and in experienced hands is a terrible weapon. It could almost cut a man in two. Some of the members of the party were curious enough to try to wield the whip, and one of them received two weals across the face which considerably damped his ardour in the practice.

"These dogs, by the way, cannot bark, but they make up for it by the greatest proficiency in the art of howling. It was a most amusing thing at the camp, when we would be sitting around the camp-fire and a song would be started, to hear the dogs join in, not only on our side but also at the other post. It had a weird effect in those surroundings, which might be called even beautiful.

"The first thing we did after we pitched our tents was to make pedestals of cement and set up our sun eclipse observation instruments. Then they had to be adjusted and there

When we got there every bit of yellow in the place was in service as a danger flag to give warning of an epidemic of measles, which had attacked the inhabitants of the post and had laid even the factor on his back. It was rather inconvenient for us at first, as we could hold communication with so few people, not being able to get even our washing done for fear of spreading the infection.

"Just across the river from Rigolet is a post of the rival Revillon Company. Competition is very keen, and has resulted very well for the trappers, who are getting much higher prices for their furs. There are two kinds of Indians about the place, the Esquimaux, who live about there the year round, and the Montagnais, who come only to dispose of their furs, and who trap and hunt back in the wilderness.

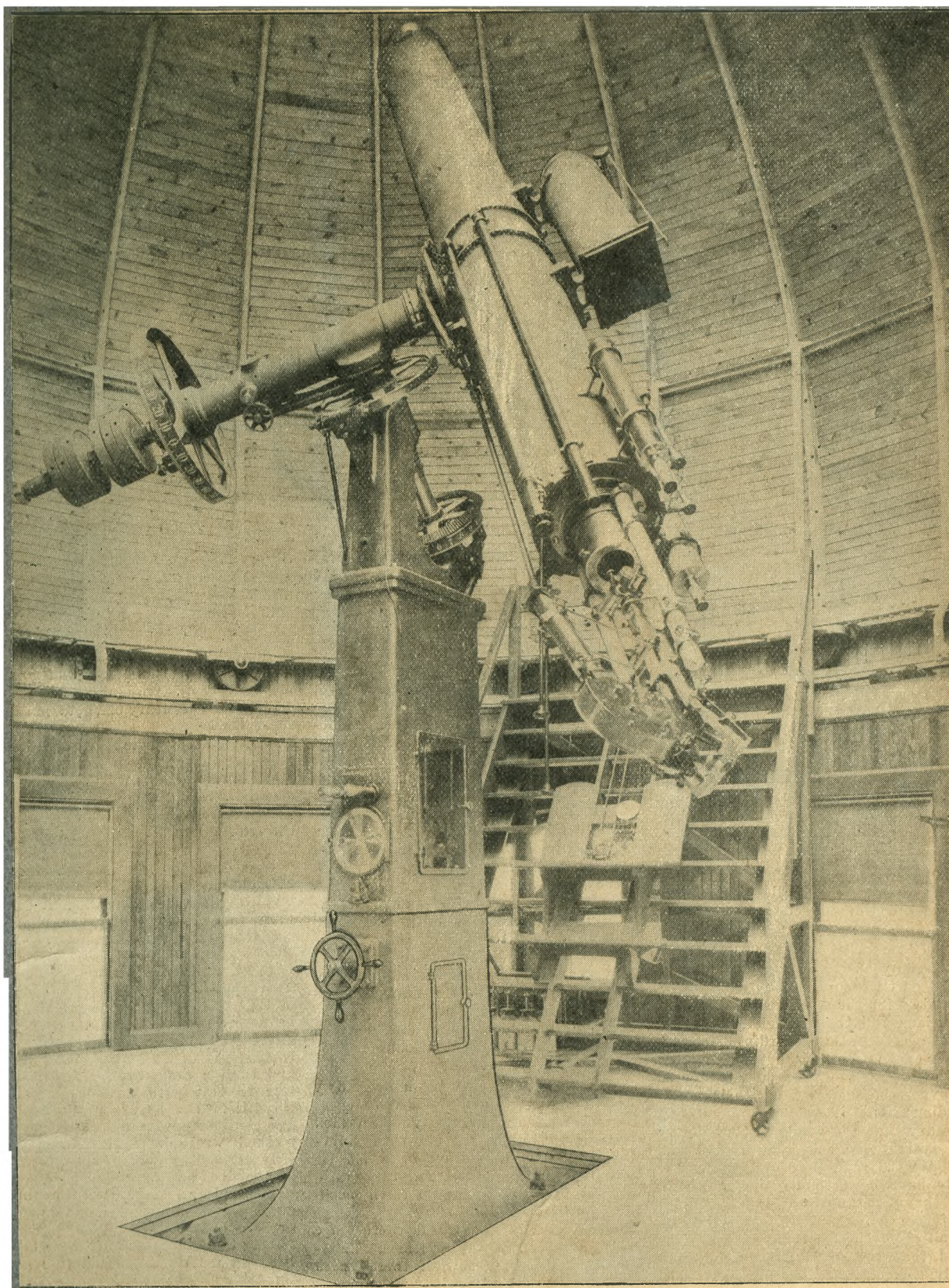
## ESQUIMAUX A FINE SORT.

The Esquimaux are a very fine sort of Indians, intelligent and good-natured. They nearly all speak some English. I never saw anything so fine as the furs which are brought in

were a thousand and one other things to keep us busy. The work to be done was allotted to each, and we had daily practices so as to be perfect in every movement when the eventful time arrived, for we would have only a little over two minutes to do everything in.

## A FORLORN HOPE.

"After we had been there about ten days we realized that we were only a forlorn hope. It rained at least twice every day. Still we went on with our arrangements, and when the moment came we were all at our posts. Though the clouds were too dense for any observations, they did not take much from the effect of the eclipse. It was terrible in its grandeur of appearance. We were all anxiously waiting, when the clock indicated that the eclipse was at hand, and suddenly a darkness fell over everything, as if a pall had been drawn over the earth. We could not see even across the narrow river. But the mountains, fifty miles away, were in all the brightness of the sunshine. I will never forget the beauty of the sight."



THE EQUATORIAL TELESCOPE AT THE DOMINION ASTRONOMICAL OBSERVATORY.

# Dominion Astronomical Observatory at Ottawa

A Splendid Building Added to the  
Canadian Public Service

THE erection of an Astronomical Observatory, equipped with all the apparatus that modern science can suggest, marks another step in Canada's advance towards nationhood, and adds one more to the many places of interest centring in the "Washington of the North." With the beautiful Gothic pile on Parliament Hill Ottawa already possessed an attraction which, like a magnet, drew visitors from far and near: but since the present Government came into office the Ottawa Improvement Commission have added greatly to the scenic beauties of the capital. Moreover, the Astronomical Observatory is the first of a series of new buildings to be completed by the Government. There are now under way the National Museum, the Canadian branch of the Royal Mint, and a home for the records and archives of Canada. Last, but not least, the building of a new Departmental block has virtually been decided upon. The site is not yet selected, although the expectation is that it will be on the west side of Sussex street. The drawing up of the plans and the awarding of the contract will doubtless follow the settlement of that important question. When all these buildings are in position, and some further contemplated scenic adornments in the way of walks and drives carried out, Ottawa may consider itself no mean rival of the sister-capital at Washington.

The Astronomical Observatory occupies a commanding eminence at the Central Experimental Farm. It is an inconvenient place to reach, as the street cars stop some distance from the farm, and even by the shortest route the walk is "quite a step," as our American friends would say. Nowhere in town, however, could a more admirable site be chosen. All around there are green fields and avenues of trees. At no great distance the waters of the Rideau Canal and Rideau River gleam in the sunlight, and away to the north rise the towers and spires of the city, dominated by the graceful outlines of the Parliament buildings. The observatory is a two-storied structure of white sandstone, with red sandstone trimmings. The main entrance is surmounted by a tower, two stories higher than the rest of the building, which supports a revolving dome of burnished copper. To the east and the west are wings, receding at an angle of fifteen degrees. Attached to the western wing is a Transit and Meridian house, now in course of erection. The walls of the observatory are extremely massive,

and the building is deemed to be fire-proof throughout. The great Equatorial Telescope is the chief object of attraction. It rests on a massive pier of concrete, which is enclosed within circular brick walls, and is entirely separated from the rest of the building. The dome which overhangs it revolves lightly on wheels. In one part of the dome is an opening five feet in width, closed by a shutter. With scarcely an effort the dome can be turned in any direction desired. Then the shutter is drawn back, and the telescope focused on that quarter of the heavens sought to be examined.

The Equatorial Telescope has an aperture of 15 inches and a focus of about 19 1-2 feet. Brashear of Allegheny supplied the objective, while the mounting—the tube and the pier on which it runs—were the work of Warner & Swasey of Cleveland. To the telescope is attached a stellar camera, by Brashear, of 8 inches aperture and 40 inches focus. The purpose of this camera is to photograph the stars and nebulae. The telescope equipment also includes a spectroscope, likewise by Brashear, which is arranged for both photographic and visual observations. Then there is a solar camera with a negative enlarging lens, by Brashear, the object of which is to take daily photographs of the sun and to record the sunspots. Next might be mentioned a position micrometer for measuring stellar distances, for example, the angle between two stars that are close together. This instrument is furnished with an electrical illumination by Warner & Swasey. A registering wedged Photometer by Brashear permits of the determining of star magnitudes. Reference in this connection might be made to the Coelostat. This consists of a plane mirror, 20 inches in diameter and about 3 1-2 inches thick, made of glass silvered in the front surface, the surface being flat to within one-hundred-thousandth of an inch. The mirror is made to rotate at such a rate as to send the light reflected from the sun or stars in a fixed direction, when it will then be reflected from a concave mirror of long focus, forming a stationary telescope which will be used for solar research work.

The Coelostat was recently taken to Labrador by Dr. King's party for the purpose of reflecting light from the mirror referred to onto the cameras and spectroscopes with which the observations of the eclipse were to be made. So much for the Equatorial Telescope and its chief accessories.

The next important instrument which calls for mention is the Meridian Circle, of 6 inches aperture, by Troughton & Simms of London. This is to be placed in the Transit House attached to the main building. By its aid the absolute places of stars can be determined, which





THE DOMINION ASTRONOMICAL OBSERVATORY NEWLY ERECTED AT OTTAWA.

will in turn facilitate the determining of the geographical positions, latitude and longitude. This is a very important branch of work, as can be readily seen. There are three transit instruments by Cooke of York, England, of three inches aperture, in connection with the observatory, and two of them are fitted with the Repsold micrometer. They are employed for determining the

differences of longitude and for ascertaining latitude. One of the transit instruments will remain in the Transit House, the others being available in field work. The apparatus on hand also includes about a dozen transit theodolites for boundary surveys and other work.

The time service is not the least important department of work at the observatory. In the equipment for this work are two sidereal clocks, a Riefler and a Howard. The Riefler clock is considered a very fine piece of mechanism. The clock movement is enclosed in a large glass cylinder, which can be exhausted, or partially exhausted, of air, and thus kept at a constant pressure. In the same room are two mean time clocks, which are used for giving out time to the observatory building, and also the standard time to the Parliament and Departmental buildings. The system used is an electrical one. The clocks in the Parliament and Departmental buildings are simply dials, which register every minute, the movement being performed by means of an electrical current. The "master" clocks in the

observatory are corrected every morning, so that they never vary more than about the tenth of a second from the true time. The true time is obtained from the sidereal clocks, their time being tested by the transit of stars across the meridian.

A half second's pendulum, by Saegmuller of Washington, is used to determine the force of gravity.

The observatory expects shortly to have a seismograph for recording the vibrations of the earth.

The institution will also shortly possess an ice-bar measuring apparatus, by Saegmuller, which is now being standardized in the United States Bureau of Standards. This will be used for testing the units of length in measures and tapes employed in surveying. The bar is of steel, with platinum discs let into it, and ruled across with fine lines, the distance between these lines being measured by the micrometer. The bar is kept covered with melting ice, in order to maintain it a constant temperature.

The remainder of the observatory equipment comprises a large induction

coil, fifteen-inch projection lanterns and other optical and electrical apparatus. It will be seen that the institution is well supplied with apparatus for the carrying on of the three important departments entrusted to it, viz., stellar work, the determination of latitude and longitude, and the determination of international surveys.

# The Solar Eclipse of 1905

The Canadian Expedition  
to Labrador



The Scientific Side of  
the Story

By ALFRED SIDNEY JOHNSON,  
Special Representative of The Globe in the Expedition

THIS year's eclipse will ever be remembered as the eclipse of Naughty Five. The Canadian wing of the observation army scattered along the track of totality was turned back in discomfiture, but not in utter rout, for, though a failure from the point of view of solar physics, the expedition returned not altogether empty-handed. Some important astronomical, physical and magnetic work was done, among other things a basis being laid for all future surveys in the little known region visited, and for a charting of the waters of Hamilton Inlet and its expansion, Lake Melville.

It would be interesting to know just why the fickle goddess who presides over the distribution of eclipse favors was so unpropitious to observers in general on this side of the Atlantic, for the Lick party, at Cartwright, on the Labrador coast, fared no better than the Canadian party; even the partial phases were largely obscured by cloudy weather within the wide area of their visibility over the continent. Our equipment was well-nigh perfect—in general intelligence, in instruments and in operative skill. We had a sufficient distribution of the clerical element to allay the wrath of seven devils and to show that the spirit of cordial joviality is not the exclusive prerogative of the laity; we had with us a fair representation of the gentler sex to tone down all too boisterous display; we had made our offerings to Father Neptune in due and varying proportion; we had as members of our party the typical tourist of leisure; the "professor" with his scientific devotion, his butterfly net and his good-fellowship withal, and others who would have added grace and lustre to another chapter of the "Inno-

cents Abroad." Yet, for all this, there was nothing to see! And we saw it—in all its ineffable glory of wasted effulgence and sublime indifference. We were hid, as it were, in the cleft of the rock, while God passed by!

But not even the total obscuration of the eclipse corona from our momentary vision could detract much from the terrible grandeur of the scene as wobbling Mother Earth dragged us haltingly within the shadow cone, and then soon—ah! too soon—thrust us out again into what to our beclouded eyes appeared as the full glare of day. The darkness was not so intense as to prevent reading of exposure tables. The tents and other structures of the camp could be clearly discerned, while the forest-clad hills in the background were quite distinctly outlined against the sky. The chocolate-colored pall that suddenly swept over us caused an indescribable thrill, and never can those who experienced it forget the heart-sinking with which the first burst of returning sunshine brought the realization that one of life's great opportunities had been denied them.

But it has been ever thus—and probably ever will be—in eclipse work, which is an evolution of disappointments and puzzles. Instead of being a series of isolated, clear-cut discoveries, such as would catch at once the popular fancy, and afford unlimited opportunity to the fertile resourcefulness of imaginative journalism, the advance of eclipse work in modern times has been patiently, step by step, each achievement heralded by a forerunner, pointing the way to a successor, and opening up new puzzles for future solution.

Since 1878, for example, it has been generally recognized that the form of

the corona bears some relation to the periodicity of sunspots, assuming the form, roughly speaking, of great equatorial wings, at sunspot minimum, and of more evenly distributed radiations at sunspot maximum. But the relations of the two types—how or when one merges into the other, etc.—these are points still to be learned.

Similarly Professor Schaeberle's discovery in 1893 of the coronal arches rising above the prominences, supplemented by the later discovery (among them Mrs. Maunder's in 1898), that the apex of the coronal arches terminated in long, narrow streamers, reaching out to an indefinite distance from the sun—this has opened up an endless vista of problems as to the structure of the outer corona. And, to cite just one more in-

stance, the spectroscopy of the corona as passed through a similar evolution.

Eclipse work, itself being a gradual evolution, the equipment of the Canadian expedition, under the leadership of Dr. W. F. King, Chief Astronomer of the Dominion, followed in its general features, as might have been expected, the well-defined lines of all modern eclipse expeditions, though making new departures in certain special and unique lines and methods of research. Greatest stress, as usual, was laid on photographic work, which related on the one hand to the corona itself, and on the other to its spectrum and the spectrum of the "flash"—i.e., the lower stratum of the corona immediately surrounding the moon's disc during totality.

The entire photographic work of the

party representing the Dominion Observatory at Ottawa was in direct charge of Mr. J. S. Plaskett, who devised the outfit and superintended its installation. The principal instrument was a photographic telescope of 5-inch aperture and 45-foot focal length, immovably fixed, as is always the case with telescopes of such length in eclipse expeditions, on cement piers, and having the image of the eclipsed luminary reflected into it by a clockwork-driven mirror twenty inches in diameter, called a "coelostat."

The same mirror "fed" also three other telescopic cameras mounted alongside the "big fellow." Two of these were of 10-foot length and 1½-inch aperture, and the third of 7-foot focal length and ¾-inch aperture.

The method in which these minor tele-

scopes were to be used was peculiarly Mr. Plaskett's own specialty. By means of a series of colored screens an attempt was to be made to procure three-color photographs of the corona, and to ascertain its distribution of color. One ten-foot telescope was to be used with a yellow screen, being so corrected as to transmit only the rays to which the eye is most sensitive. The other, which was to be used without a screen, would record the greatest effect from the blue and violet rays. The seven-foot telescope was a "photo-visual," all rays being practically brought to the same focus, and by its means some photographs were to be taken with a red and some with a green screen. The complete series

(Continued on Page 11.)

# Dominion Eclipse Expedition.

(Continued from Page 7.)

of photographs would, it was hoped, render possible the production of a composite correctly reproducing the corona with all its color effects.

In addition to the four telescopes, the coelostat also fed two spectroscopic cameras and one spectroscope. Of these instruments the most important was a four-inch concave grating of ten-foot radius, used in connection with a curved film, and giving a spectrum nine inches long, extending from the orange to far within the ultra-violet. One of the remaining instruments was to observe the spectrum of the "flash," the other that of the corona.

In power second only to the equipment sent out by the newly-established observatory at Ottawa was that from the Royal Observatory at Greenwich, England, which was in charge of Mr. E. Walter Maunder, F.R.A.S., Superintendent of the Solar Department of that institution. Mr. Maunder was accompanied by his wife, also a distinguished expert on eclipses.

"This outfit," says Mr. Maunder, "was designed entirely for photographing the corona itself, and was placed in my charge by the Astronomer Royal, partly because it was practically the same outfit as that I took for Greenwich Observatory to Mauritius in 1901, and partly because it corresponded as nearly as might be to instruments which the Astronomer Royal was himself taking to Sfax, in Tunis, for this present eclipse. For when we are comparing the corona of one year with that of another, it is obviously an advantage that if possible the instruments employed should be the same in both cases. The principle of continuity ought to be carefully kept in view.

"It had always been the desire of Sir William Christie to send, if possible, an expedition from Greenwich Observatory to the sunrise end of the line of totality, in addition to himself conducting a party to some station where the eclipse fell late in the afternoon; but the means for doing so had been lacking until Sir Wilfrid Laurier's most courteous invitation to Mrs. Maunder and myself opened the way. For it is a rule in eclipse operations that all possible stations should be occupied, even those where the weather conditions seem likely to be unpropitious. The lesson has been taught us by both adverse and fortunate experience. In 1896, one station—Nova Zembla—appeared meteorologically hopeless; at another—Bodo, in Norway—the sun was so low at the time of totality as to offer no inducement for astronomers to stay there; yet these were the only favored stations at that eclipse. So, in 1886, no expedition was sent to the west coast of Africa, as to do so seemed a mere throwing away of energy. The forecasts were, however, falsified; the day was fine. In 1889, on the contrary, when an expedition was sent to the same neighborhood because fine weather appeared a certainty, complete disappointment was the result.

"So, though in the present year, Labrador appeared to be the least hopeful region along the entire length of the shadow track, that was felt to be no sufficient reason for leaving it unoccupied. And though the event has been unfortunate, and the expeditions, whether sent, like that of the Lick Observatory, to the coast at Cartwright, or, like that of the Canadian Government, to the interior at Northwest River, have only met with disappointment, there was pressing cause for occupying some station there. In 1901 a comparison of the photographs taken by Mr. Dyson in Sumatra and by myself in Mauritius showed an unmistakable change, both in a prominence and in the corona itself, in the very short interval of absolute time which elapsed between the two observations. If the corona could have been photographed successfully both in Labrador and in Tunis this experience might have been repeated under even more favorable conditions."

Mrs. Maunder's outfit was also exclusively photographic. It included the historic "pocket equatorial" with which she secured in January, 1898, the first photograph of the outermost coronal streamers. Another instrument was a camera fitted with a four-inch Delmar lens and mounted on an equatorial. A third instrument was intended to duplicate photographs obtained during this eclipse at a point near the sunset end of the shadow track. For this purpose Messrs. Goerz of Berlin had loaned a pair of lenses, of which one was brought to Northwest River by Mrs. Maunder, while its duplicate was in charge of Prof. H. H. Turner at Assouan, Egypt. With fine weather at both points, a double series of views would have been secured, which, combined in the stereoscope, might possibly have added to our knowledge of the structure of the corona by making it

appear as in relief. No attempt at this had ever before been made.

Still another outfit that under more propitious skies would have had to be reckoned with in dividing the honors was that installed under supervision of the Rev. D. B. Marsh, Sc.D., F.R.A.S., President of the Astronomical Society of Hamilton, Ont., one of Canada's most enthusiastic devotees of the most fascinating and exact of all the sciences. This outfit comprised the three telescopic cameras mounted on cement piers shown in one of the accompanying engravings. The central instrument, operated by Dr. Marsh himself, consisted of a five-inch Brashear telescope of 75-inch focal length, on equatorial mounting, clock-driven, which gave an image of two inches' diameter. After making brief exposures for the inner corona, the camera was to be reduced to its prime focus, when exposures of varying length were to be made to catch, if possible, the coronal streamers.

The telescope shown on the right, operated by Mr. G. P. Jenkins, F. R. A. S., Vice-President of the Hamilton Astronomical Society, was a 3-inch Dollond refractor mounted on an equatorial head, and equipped with a special enlarging apparatus for photographing the coronal streamers. In Mr. Jenkins' charge was also a Bausch &

Lomb 1-2-inch lens fitted with a Thorp grating and designed for taking photographs of the corona and two orders of spectra on the same plate.

The instrument on the left, of which the writer was kindly invited to take charge during the critical stage, included a 2 1/8-inch lens loaned by Charles Potter, optician, of Toronto, fitted with an enlarging apparatus, making a camera of five-foot focal length, equatorially mounted, and designed to photograph the inner corona and streamers.

During the partial phases after totality, exposures were made with all three instruments, but with no results of scientific value. Exposures were also made by Mr. Plaskett and Mr. Maunder. Dr. Marsh and the writer photographed the landscape with a certain exposure during totality, and again at the end of a definite period thereafter, to show the visual contrast wrought by the moon's shadow. And both Dr. Marsh and Mr. Jenkins three-quarters of an hour after totality successfully photographed the sun, showing large spots.

Father I. J. Kavanagh, S.J., professor of science and mathematics, Loyola College, Montreal, had undertaken the difficult task of observing visually and charting to scale the outer streamers. His preparation for this work included a feature unique in eclipse programmes, namely, preliminary practice upon the auroral streamers, which in that latitude were on every unclouded night the wonder and delight of the entire party. For thirty minutes before totality his eyes were to be bandaged, to insure the maximum of eye-efficiency during the critical period, when it was hoped that that organ—as it certainly can do even under ordinary conditions—would catch the phenomena of the extreme outer rays, far too dim and evanescent to make any impression upon a photographic plate.

The essential part of Father Kavanagh's apparatus was a sighting device somewhat similar in appearance to that sometimes used in warship target practice. It consisted of a skeleton framework ten feet long, at one end of which was the eye-piece, and at the other end an opaque disc of such size as to block out at that distance the dazzling effect of the inferior coronal effulgence. During the observations an assistant was to keep the shadow of the disc trained on the eye-piece. The device was attached to an altazimuth telescope, which during the last thirty seconds of totality was to be used for telescopic examination of the corona.

Still another unique attempt in eclipse work was that of Mr. J. R. Collins of Toronto, Secretary of the Royal Astronomical Society of Canada, whose apparatus was specially designed to make a sort of cinematographic record of the eclipse during totality by taking a rapid series of photographs showing the evolution of such coronal changes as might occur.

Polariscope observations were in special charge of Dr. C. A. Chant, lecturer in physics in the University of Toronto, and President of the Astronomical Society of Canada. By means of a polarimeter and polariscope camera, each equipped with a double-image prism, it was intended to see if the light from the corona was polarized, and, if so, to measure the amount and plane of polarization.

Meagre as were the results of the expedition from the point of view of solar physics, its record of achievement is not of the all-comprehensive blankness that prevailed on the morning of August 30. Mr. L. B. Stewart, lecturer in surveying and practical astronomy at the Toronto School of Practical Science, was the "advance agent" of the expedition, locating the camp site as nearly as possible on the central line of the eclipse, and afterwards determining precisely the terrestrial co-ordinates of the station. The importance of such work as

this in a region but little known and never adequately surveyed cannot be overestimated. Mr. Stewart also surveyed and mapped the surrounding locality, and in addition, from the vibrations of a set of half seconds' pendulums similar to those used in United States coast survey work, made observations of the force of gravity. Such observations furnish important data for determining the true form of the earth, since gravity varies with latitude, on account of the varying centrifugal force at the surface, and the varying distance from the earth's centre.

Mr. William Menzies of the Magnetic Observatory at Agincourt, near Toronto, who was assisted by Mr. A. T. De Lury, lecturer in astronomy and mathematics in the University of Toronto, and Vice-President of the Royal Astronomical Society of Canada, determined the local variation of the magnetic needle and incidentally obtained records of several magnetic disturbances coincident with marked auroral displays.

Northwest River post of the Hudson's Bay Company, which was selected as the site of the Canadian camp, is situated in latitude 53 degrees 31 minutes 31.25 seconds north, and longitude 60 degrees 7 minutes west. It lies in disputed territory, the Newfoundland Government extending the interpretation of its proclamation right to establish fishing stations along the coast to a claim of jurisdiction over all the territory north of the 52nd parallel and east of the 64th meridian, thus including the entire shores of Hamilton Inlet and Lake Melville. From the Dominion point of view, however, the northern shores of Lake Melville are a part of the unorganized territory of Ungava, its southern shores lying in the Province of Quebec; while Labrador, strictly so-called, or that portion of the peninsula under Newfoundland jurisdiction, is limited to a comparatively narrow strip along the coast. The camp, therefore, was located near the meeting point of three Provinces. It was from this point that Hubbard and Wallace started out on their ill-fated exploring expedition, and here it was that the former's emaciated body was brought in by the rescue party, who in one day covered the 35 miles that lay between the exhausted man and help.

The station was located at the mouth of the Northwest River at the extreme western end of Lake Melville. The camp site lay east of the buildings of the Hudson's Bay Company post, on level ground immediately back of a shelving sand beach, which afforded a landing only at some little distance up the stream. This, of course, multiplied the labor—strenuous enough in

any case—of constructing the station; for all instruments and supplies had to be transferred from the ship to a light draft schooner, and, after landing, had to be wheeled or carried along a sandy road to the site selected. The schooner used for the purpose was courteously placed at the disposal of the expedition by M. Michel Ducloux, factor of the fur-trading post of Revillon Freres, located on the south bank of the stream.

opposite that of the rival Hudson's Bay Company, and mention must here be made of the courtesy and helpfulness to the whole party of Mr. H. M. S. Cotter, Hudson's Bay factor at Northwest River.

Back of the camp was a thick woodland shelter on rising ground. In the front and off to the east, over the low, rounding point of land at the very mouth of the river, could be had a perfectly unobstructed view over the waters of the lake, the distant hills looking more like a bank of cloud on the horizon than permanent obstacles that would resist the dissipating effects of a little sunshine.

From Quebec to Northwest River is a voyage of between six and seven days. The "King Edward" (Capt. A. Belanger) was specially chartered beyond Natashquan, the easterly limit of her regular runs, a north shore fishing port about 500 miles east of Quebec. Fortunately on such a trip as this—to an almost unknown land, off the beaten track—there are many delightful experiences that are independent of conditions so vacillating and coy as those of the weather.

Failure to see an eclipse is not the worst thing that can happen, even to an eclipse expedition. To give way for a moment to the thought that such attempts are not worth while would be something far worse. For the future advance of science, as the past, will be largely through sacrifice—the casting of bread upon the waters in the faith of an unknown return.



CANADIAN ECLIPSE OBSERVATION PARTY OF 1905.

From left to right, top row—Rev. D. B. Marsh, J. E. Maybee, W. Lyman, Rev. J. A. Lajeunesse, W. Menzies, F. Jennings, M. Aldous, C. Upton, J. R. Collins, J. A. Russell, Rev. H. Simard, Rev. C. P. Choquette, C. George.

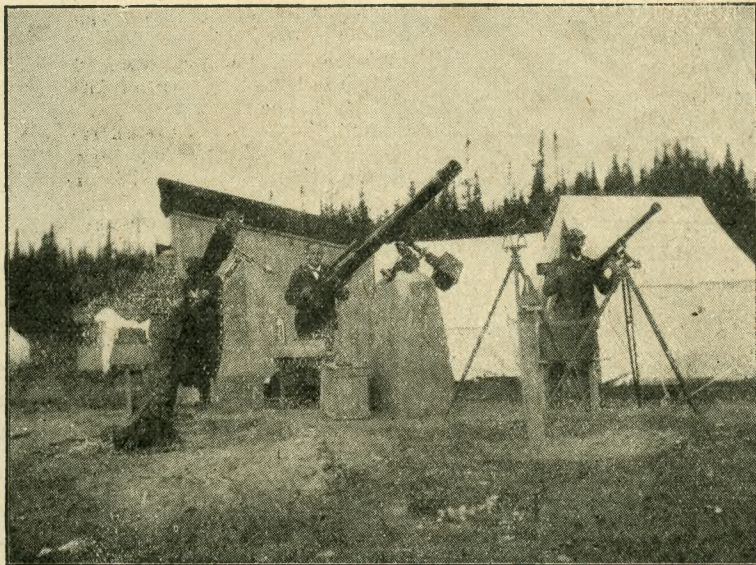
Middle row—G. P. Jenkins, L. B. Stewart, Rev. I. J. Kavanagh, S.J., Dr. W. F. King (Chief Astronomer), Miss W. King, Mrs. J. Codd, Mrs. Maunder, Mr. E. W. Maunder, D. J. Howell, A. T. DeLury.

Bottom row—H. H. Lyman, C. A. Chant, J. S. Plaskett, Joseph Pope, C.M.G. (Under-Secretary of State), J. Macara, L. Gauthier, A. S. Johnson, W. P. Near.



GENERAL VIEW OF CANADIAN ECLIPSE OBSERVATION STATION AT NORTHWEST RIVER, UNGAVA.

View looking west. The buildings in the background are those of the Hudson's Bay Company Post. The large structure in the centre is a dismantled and abandoned church.



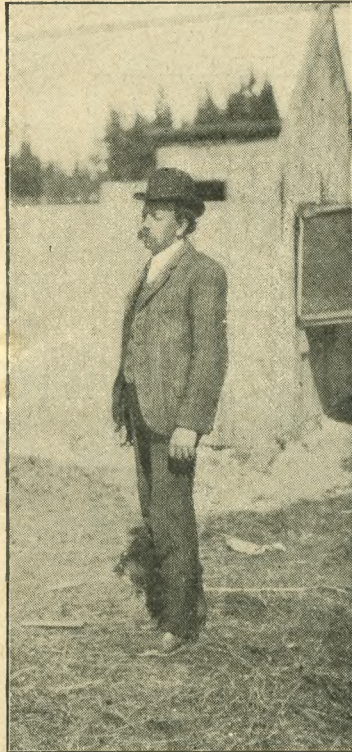
OUTFIT INSTALLED UNDER SUPERVISION OF REV. DR. D. B. MARSH, PRESIDENT OF THE ASTRONOMICAL SOCIETY OF HAMILTON, ONT.

The central instrument is being operated by Dr. Marsh himself; that on right of picture by G. Parry Jenkins, Vice-President of the Astronomical Society of Hamilton, and that on left of picture, by Dr. A. S. Johnson, managing editor of The Technical World Magazine, Chicago, Ill., and special representative of The Toronto Globe.

TWO CANADIAN ASTRONOMERS.

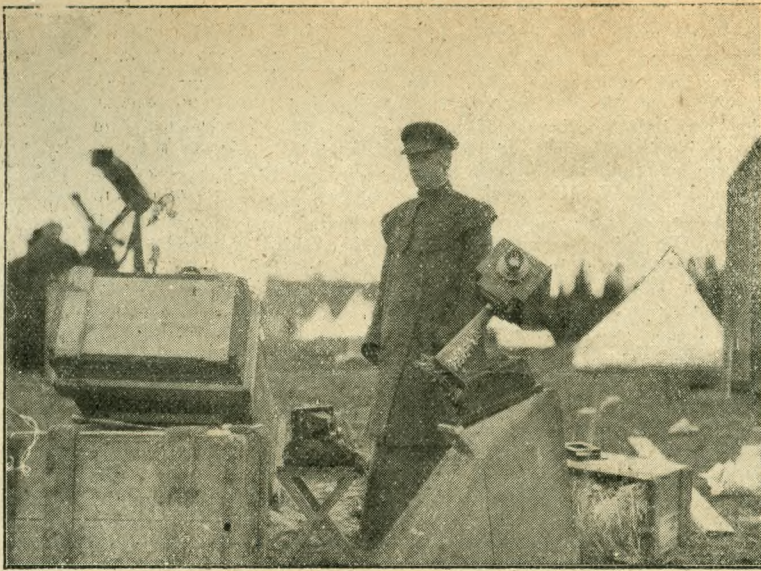


DR. W. F. KING,  
Chief Astronomer of the Dominion; in  
general charge of the expedition.



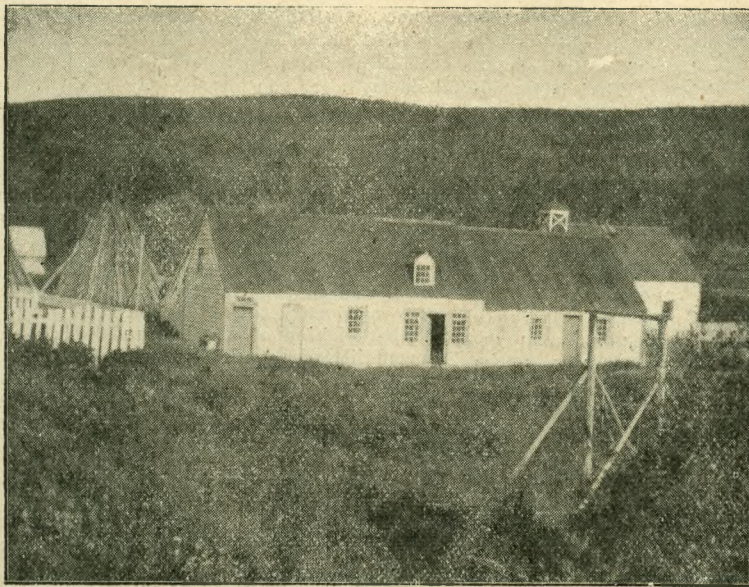
MR. J. S. PLASKETT, OF THE DO-  
MINION OBSERVATORY  
STAFF, OTTAWA.

Mr. Plaskett had direct charge of the  
entire photographic work in connec-  
tion with the Dominion Observatory  
outfit.



MRS. MAUNDER AND HER FAMOUS "POCKET EQUATORIAL."

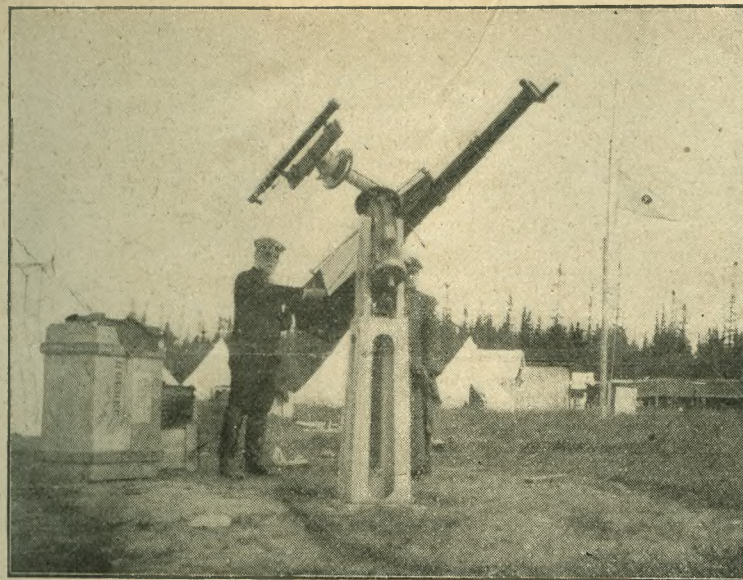
With this historic instrument Mrs. Maunder succeeded in January, 1898, in securing the first photographs of the extreme coronal streamers.



FORMER HOME OF LORD STRATHCONA AT RIGOLET.

Rigolet is a post of the Hudson's Bay Company on the north shore of Hamilton Inlet, about 40 miles from the Atlantic coast. This building, now used for office and store-room purposes, was built by Sir Donald Smith, and for fifteen years was his home and office, during the early days of his connection with the Hudson's Bay Company.





MR. E. WALTER MAUNDER, F.R.A.S., OPERATING PRINCIPAL INSTRUMENT OF THE GREENWICH OBSERVATORY OUTFIT.

Mr. Maunder, who, with his wife, joined the party on special invitation of Sir Wilfrid Laurier, is Superintendent of the solar department at the Royal Observatory, Greenwich, England. The eclipse flag was lowered to half-mast after totality.



REV. I. J. KAVANAGH, S.J., AND HIS UNIQUE DEVICE FOR EXAMINATION OF THE OUTER CORONA AND STREAMERS.

The telescope itself is merely an accessory. The framework attached thereto bore at one end a disc of such size as to block out the dazzling light of the inner corona, and facilitate visual examination, through the eye-piece, of the outer corona and streamers.

## ON THE UNGAVA.

Mrs. Hubbard's and Dillon Wallace's Exploring Parties Are Pushing Northward.

From Our Own Correspondent.

Halifax, N.S., Oct. 25.—The steamer Amethyst arrived last night from Gillisport, Labrador, and reports lots of snow. She brought no news of the exploring parties, headed by Dillon Wallace and Mrs. Hubbard, of New York, other than that one of the guides had returned from the woods, and thought both parties would push on to Ungava.

## ARCTIC EXPLORERS ALIVE AND WELL

Dillon Wallace and Mrs. Hubbard Returning from Labrador Wilds.

New York, Nov. 9.—Dillon Wallace, at the head of the expedition now exploring Labrador, is well, and has penetrated the country which cost Leonidas Hubbard, jr., his life. This information was received yesterday by Caspar Whitney in this despatch from St. John's, Nfld.:

"Lake Michkamau, Sept. 4.—Proceeding with Easten to Ungava. Return in winter. Richards homeward bound, bearing letters. All well. Dillon Wallace."

This despatch was sent by James Richards, a member of Wallace's party, who has returned to St. John's on his way to New York.

Mr. Whitney states that the party must have reached Ungava, and that if they are to return in winter, they are probably now making the journey on snowshoes.

Mrs. Hubbard Safe.

New York, Nov. 9.—Mrs. Leonidas Hubbard, Jr., who has been exploring in Labrador, and for whose safety fears were entertained, to-day reported her successful completion of the expedition. The following telegram, signed by her, and dated yesterday at Chateau Bay, Que., was received to-day by Herbert L. Bridgman, of Brooklyn. "Successful. Will return home by the steamer King Edward."

## BACK FROM LABRADOR.

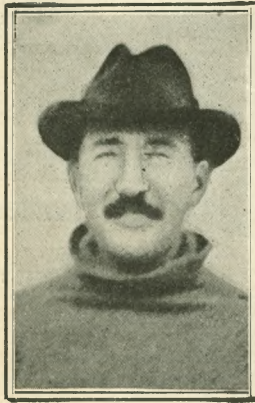
MRS. HUBBARD ACCOMPLISHED HER TRIP.

A Wild, Desolate and Sparsely-settled Country—Where Her Late Husband Lost His Way and Died.

(Special Despatch to The Globe.)

Quebec, Nov. 20.—Mrs. Leonidas Hubbard arrived in Quebec this afternoon from Newfoundland by the steamer King Edward, en route to New York. She was met on her arrival by The Globe correspondent, who sought an account of her exploration experiences in the wilds of Labrador. Mrs. Hubbard, who went to Labrador to carry out the mission of her husband, who perished from starvation in the attempt, is a delicate-looking woman, who probably does not weigh more than 110 pounds. Mrs. Hubbard declined to give out her experience for publication. She said she was in the newspaper business herself, and would retain her interesting knowledge until she reached New York to sell it. She admitted, however, that she had accomplished the object of her journey, which was to reach Ungava Bay. She did not go in search of gold, or any other minerals, consequently did not locate any. Speaking of the route she followed, she said she went to the northeast river, thence up the Nascoupee to Michikamou, and from there to the height of land, reached the head of the George River, and went down it to Ungava Bay, her destination. She said the country is very sparsely populated, and she met only two bands of Indians, who were encamped in tents, but would give no further information about them. She saw game, but not in plenitude. Speaking of her husband, Mrs. Hubbard traced the spot where he lost his way, he having turned in the wrong direction at the Northeast River, and wandered into barren land, where he died from exposure and starvation. Mrs. Hubbard, who was accompanied by an Indian guide, George Elsen, left for Montreal to-night.

**Wallace Succeeds in Labrador.**—Two noted explorers of Labrador, one a woman, have been reported safe after a summer of journeying into the far recesses of that mysterious land. Mrs. Leonidas Hubbard, whose husband died of starvation in the frozen



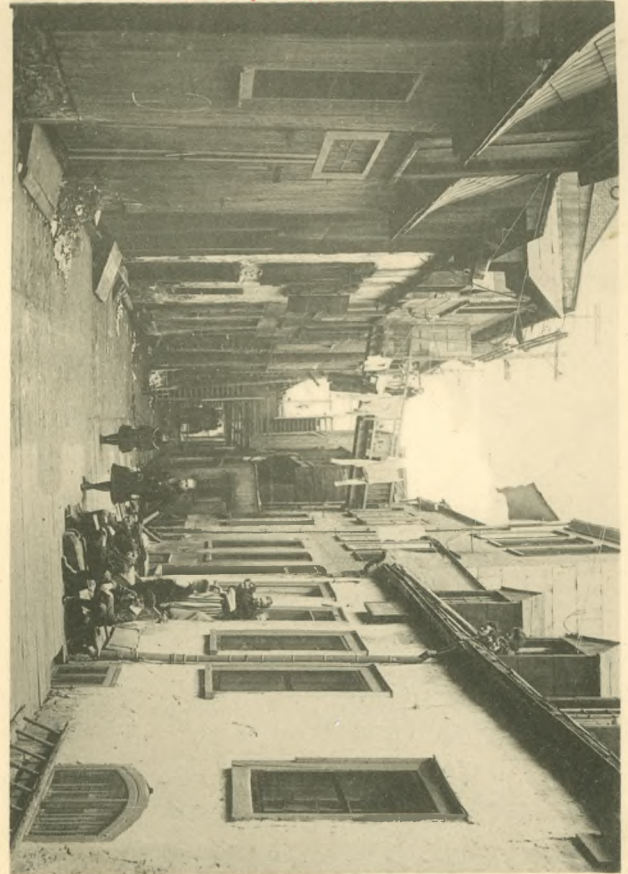
Courtesy of F. H. Revell Co.  
DILLON WALLACE.

fastnesses of the peninsula, has come back to civilization with reports of success. But as the *Boston Journal* remarks, she "did not begin to explore Labrador" as Dillon Wallace, at one time a comrade of her husband, has done. The *Brooklyn Eagle* says of Wallace's journey:

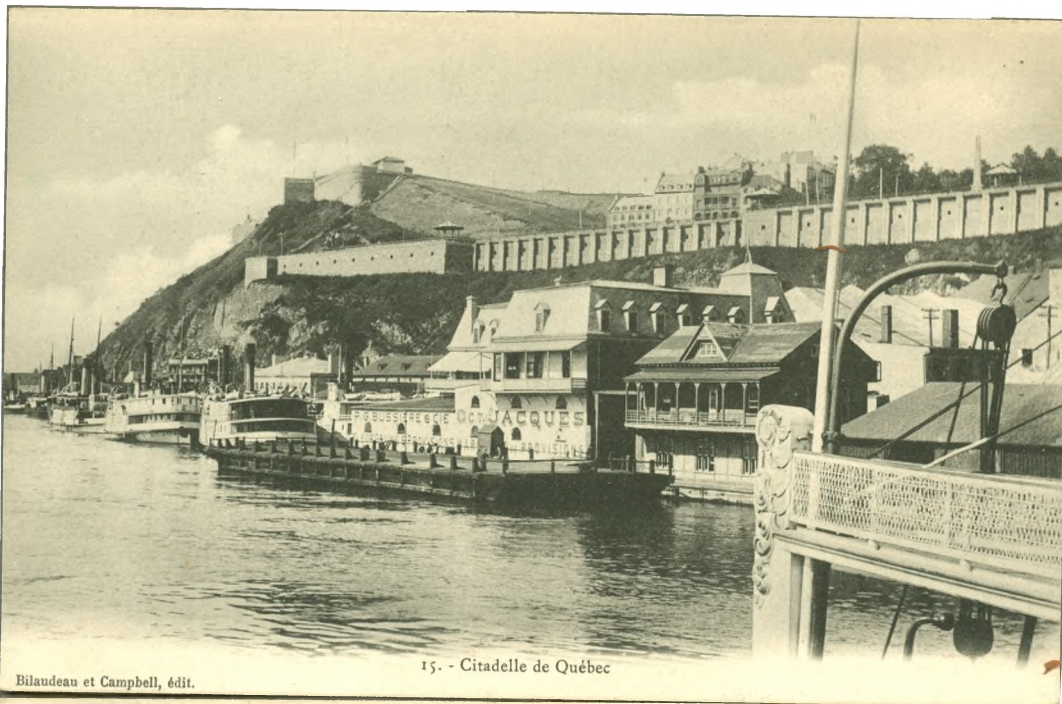
This explorer did not cross the great peninsula; he penetrated to Lake Michikamau, from which point he turned north, paralleling the coast and reaching the Hudson Bay Company's post on Ungava Bay on the 16th of October. Navigation is at an end, and the bays and "tickles" are filled with ice; hence it might be thought that the worst of his journey was to come; but, in following the coast line, as he is to do on the return trip, he will avoid the dangers and difficulties that beset him last year, when his companion, Leonidas Hubbard, starved to death, and Wallace himself barely escaped with his life. . . .

Wallace had only one companion, and it will be of interest to know how he managed the commissariat, for it is in the matter of carrying supplies that the great difficulty of northern exploration consists. In a temperate climate this difficulty is overcome by the existence of game and edible vegetation; in lands farther north it is overcome by perennial ice and snow fields offering a smooth track for dogs and sleds; but in a sub-Arctic region where the temperature swings from 90 degrees above in summer to 60 degrees below zero in winter, where gales, fogs, flies and frequent lack of game vex and perplex the traveler, the way is hard, indeed. . . .

It is a little curious that this great province should have been so slightly and unsystematically explored, since it is penetrated every year by trappers and traders, and the Indians and "breeds," as they call the half breeds, wander far into the interior, in the chase of caribou; but, if their traditions are well founded, they not infrequently starve there. As far back as 1838 John McLean, factor of the Hudson Bay Company post at Chimo, traversed a good part of the land which Wallace has already covered, but he left few data which would aid anyone who undertook to follow in his trail. The field for adventure is as enticing within a thousand miles of New York as it is in the Antarctic, where for long periods of time exploration will be a matter of merely confirming coast lines. Mr. Wallace does not rank with Peary or Stanley, for he set out to do a more modest work, but in its accomplishment he offers a more substantial addition to human knowledge than it is in the power of most of us to make.

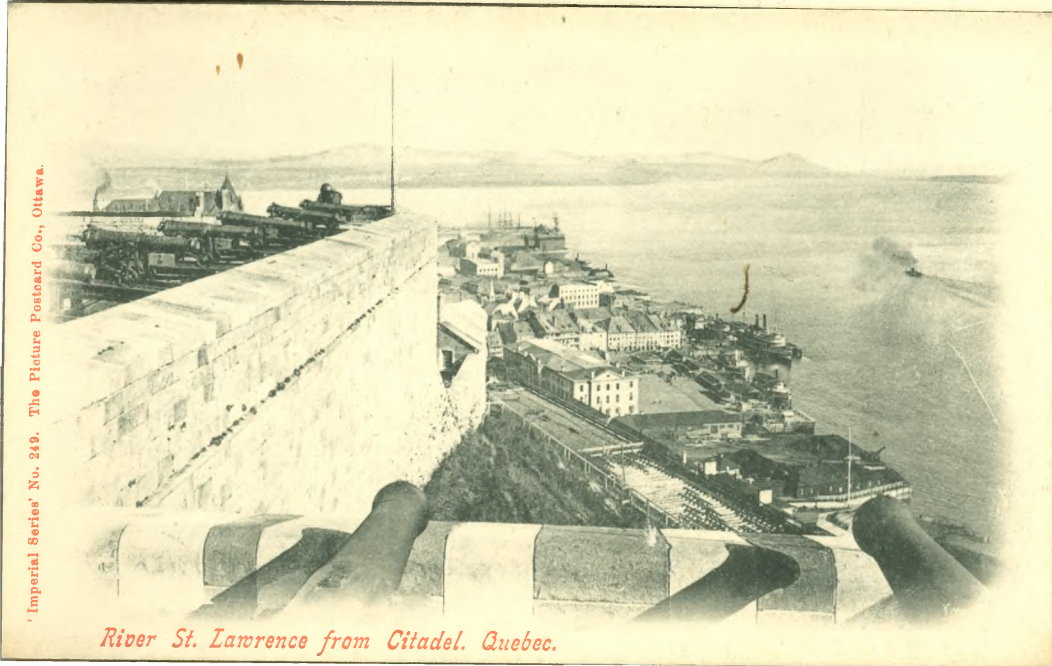


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Cap Street.



Biladeau et Campbell, édit.

15. - Citadelle de Québec



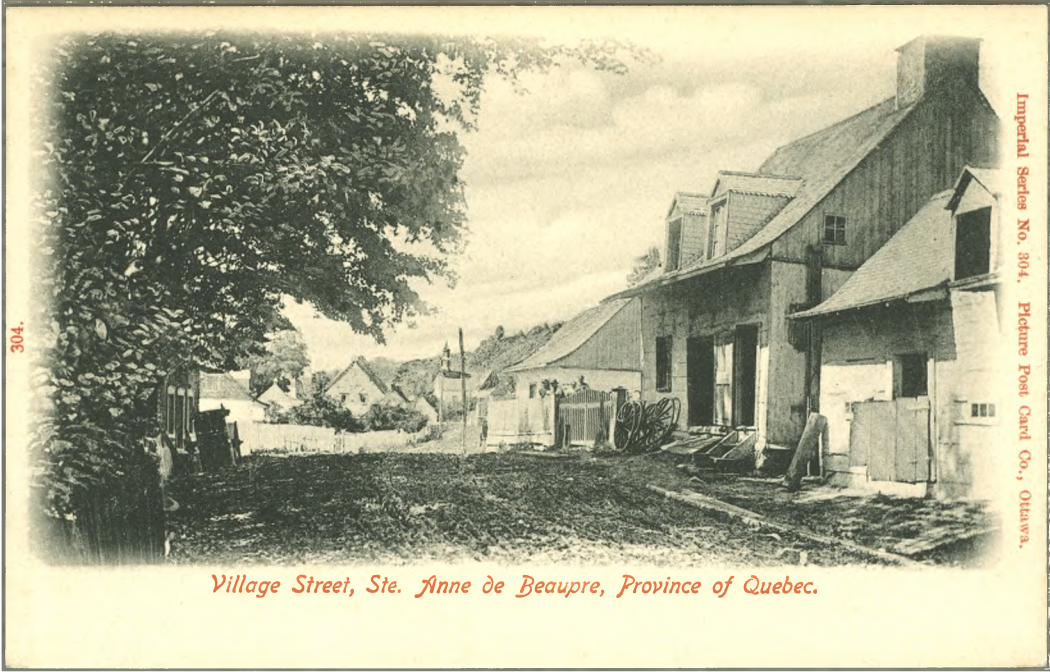
'Imperial Series' No. 249. The Picture Postcard Co., Ottawa.

*River St. Lawrence from Citadel. Québec.*



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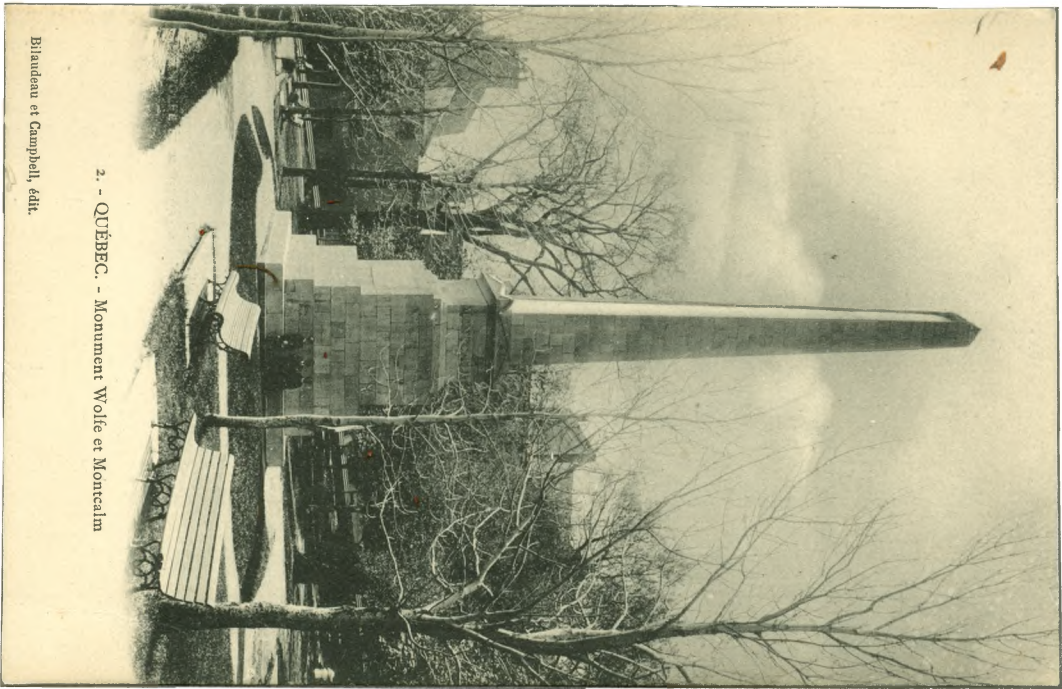
Imperial Series No. 304, Picture Post Card Co., Ottawa.

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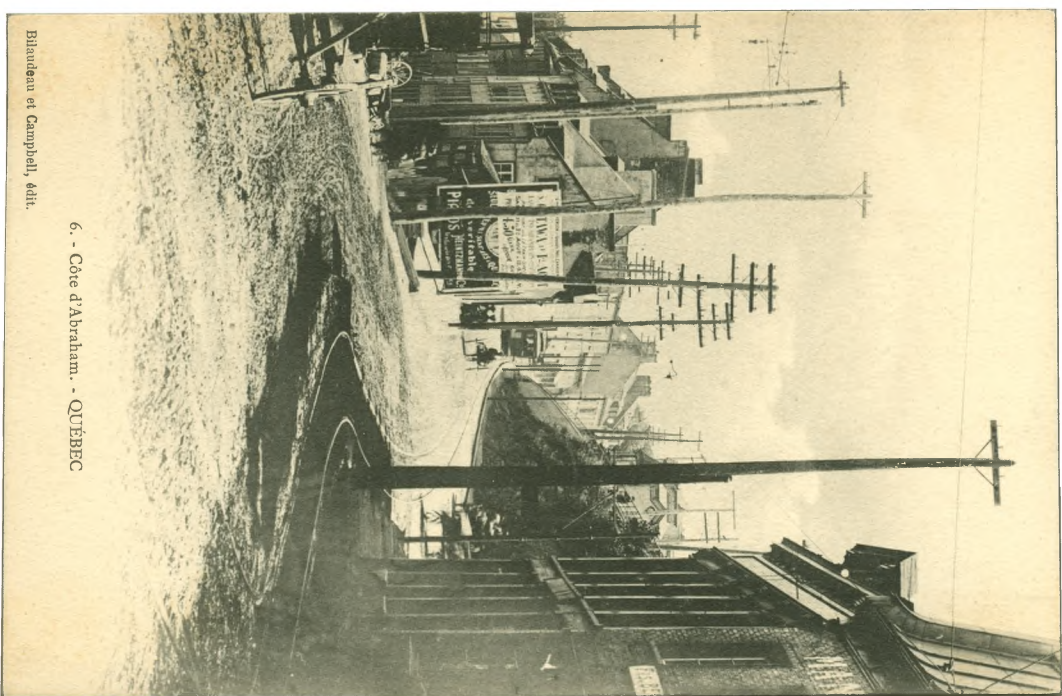
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*Levis from Quebec.*



2. - QUÉBEC. - Monument Wolfe et Montcalm

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6. - Côte d'Abraham. - QUÉBEC

Bilaudou et Campbell, édit.



THE 45-FOOT TELESCOPIC CAMERA.

In the structure at the left, from which the walls and canvas roof have been partly removed, was the 20-inch coelostat mirror for reflecting the image of the corona through the lenses of the large fixed telescope and three smaller telescopes, and "feeding" also three spectroscopes. In the foreground is Fr. Kavanagh's device for visual and telescopic examination of the coronal streamers.



SUNRISE ON THE GULF.

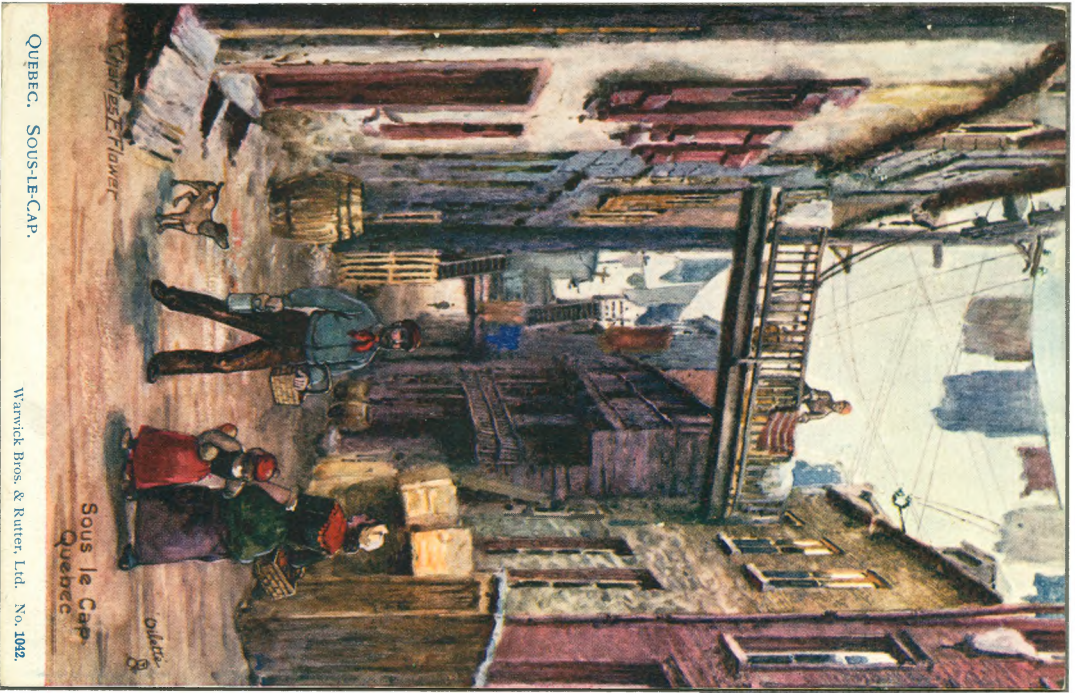
View taken near Trinity Bay, on the north shore of the St. Lawrence.





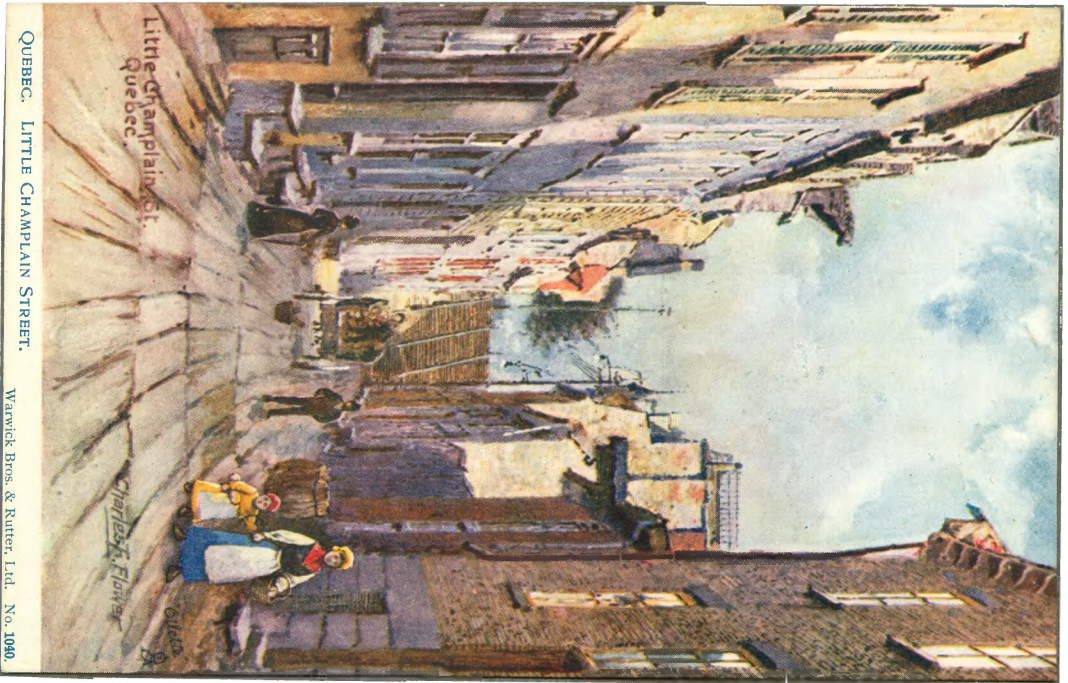


40 MAISON DU DUC DE KENT



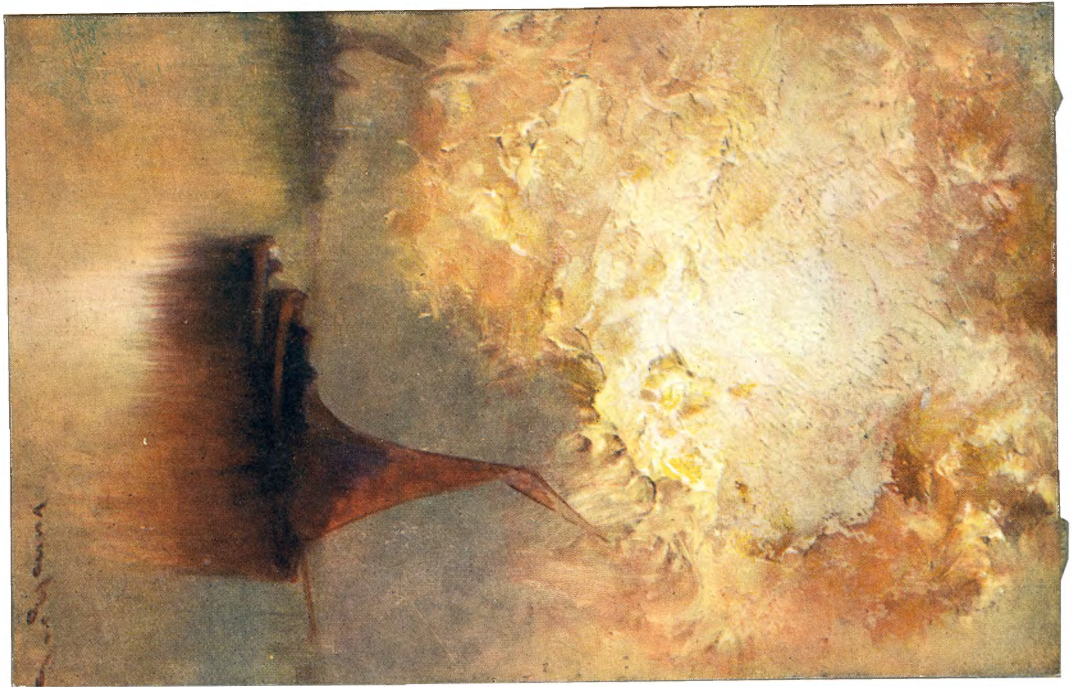
QUÉBEC. SOUS-LE-CAP.

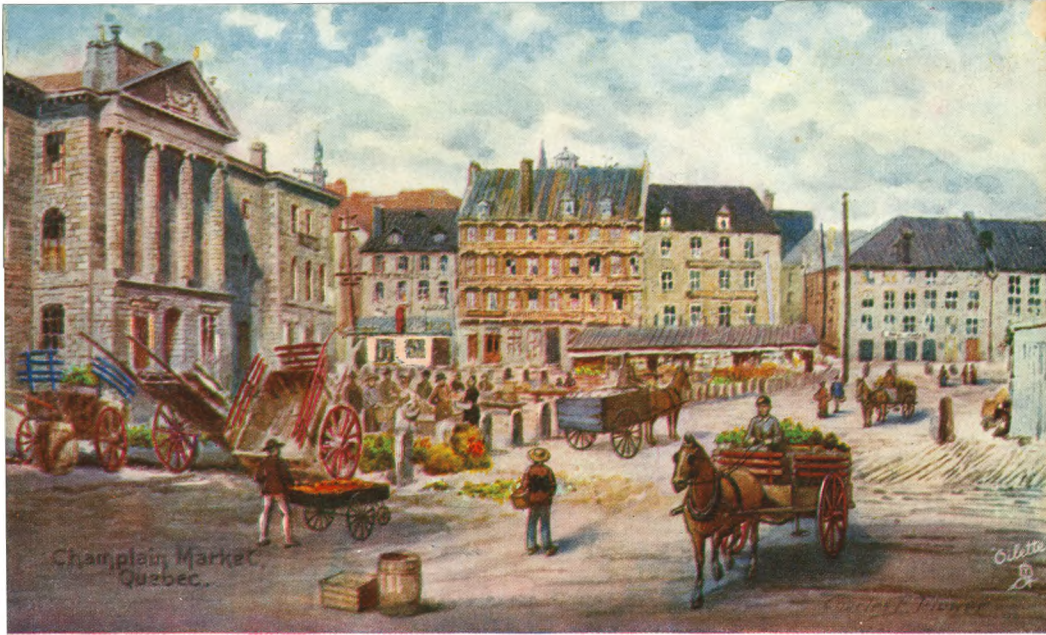
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QUÉBEC. LITTLE CHAMPLAIN STREET.

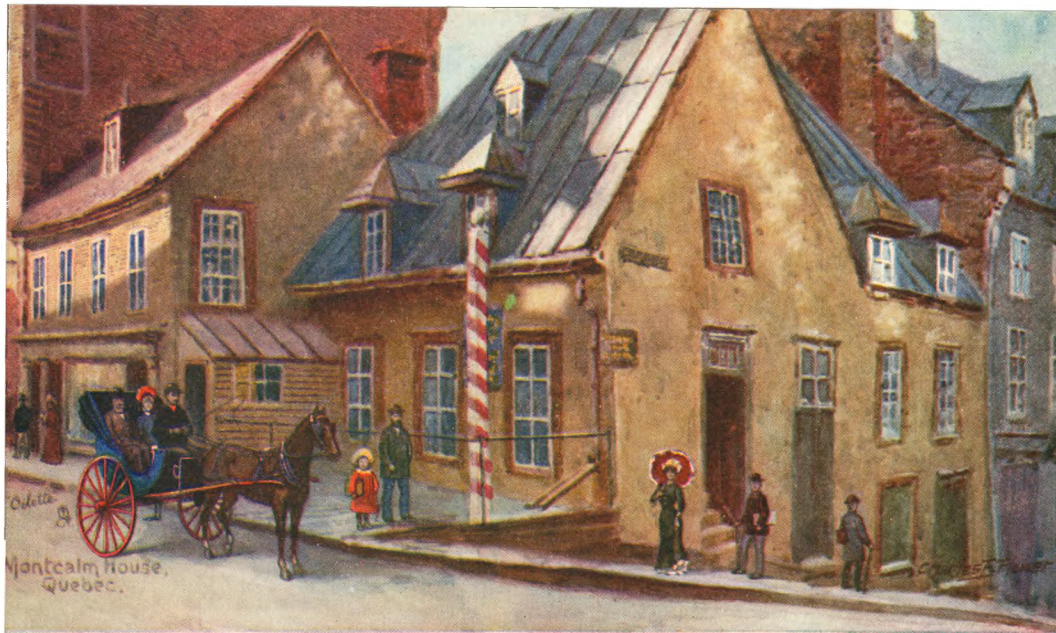
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"IT IS AN EVIL COAST"



"AT INDIAN HARBOR"



"MACKENZIE AND A GROUP OF SWARTHY NATIVES GATHERED \*\*\* TO SEE US OFF"





"WE SHALL CALL IT LAKE HOPE"



"THE LABRADOR 'LIVERY'"

























