

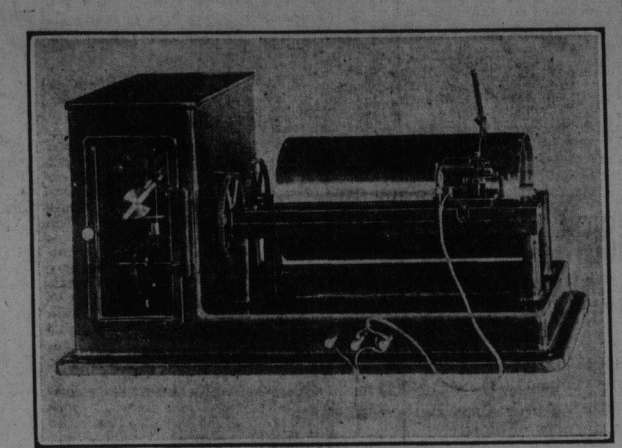
HOW MARITIME PROVINCES ARE GIVEN STANDARD TIME BY ST. JOHN OBSERVATORY

Continued From Page Nine.

It is known for this purpose. When the director requires a new line or two he invokes the help of a friendly spider, gets him on a card with a hole in the centre and as the spider drops from the card and spins his web the card is turned until the necessary amount of web has been secured to renew the lines in the instrument.

Vibrations of the Earth.

Explaining the extreme sensitiveness of the transit instrument under notice Mr. Hutchinson stated that it was affected by changes of temperature and by vibrations of the earth's surface which were not sensibly felt by an individual. "Of course," he added, "the amount of disturbance is not large but still it is enough to vitiate the observations. Thus in timing the transit of a star, the ideal condition would be a telescope exactly in the meridian, that is, pointing due North and South. Should it deviate to the East and West ever so little the correct time would not be registered. The axis also has to be perfectly level and the centre of gravity exactly in the optical centre of the telescope. These conditions, no matter how solidly the instrument is mounted and how perfectly it has been adjusted, can never be maintained for any length of time owing to the above mentioned cause of disturbance."



THE CHRONOGRAPH.

To overcome these little disturbing elements he went on to explain that it was necessary to observe the transit not only of one star, but of a number, from ten to twenty, suitably chosen from their position in the sky, and that from mathematical calculations and combinations of different results the proper allowance was made for each star was obtained. The work which this involves may be estimated from the fact that a good determination of the various instrumental corrections required necessitated two or three hours continuous observations.

The Skill Required

"A skilled observer," he continued, "with the modern instruments can determine the time of a star's transit within a small fraction of a second, but it requires a clear head and years of constant practice to become expert and able to judge to the hundredth part of a second when the bisection of the wires are made, and to that degree of nicety is the time observed. Our transit telescope in the observatory here is specially designed for this purpose and has many devices to insure accuracy of results."

In proceeding to explain how this accuracy is guaranteed Mr. Hutchinson stated that for the purpose of exactly comparing the Standard Sideral Clock with the time of the Chronograph is used. "This instrument," he continued, "has a cylinder which is revolved approximately once a minute by clock work. A sheet of plain paper is wrapped on the cylinder and a pen, attached to the armature of an electro-magnet, is arranged to bear on the cylinder as it revolves. The sideral clock, being fitted with a break circuit attachment, lateral marks are made on the paper as it revolves. By this means the 60th second being omitted to determine where the minute commences."

Taking the Record.

"During a star's passage across the field, the transit micrometer, which is fitted to the eye end of the telescope, is used in preference to the key, fifteen records are made on the chronograph along with the seconds from the sideral clock. The chronograph sheets being afterwards read, the precise error of the clock is computed from the recorded observations and the errors and rates of the sideral clocks determined."

The two sideral clocks, illustrations of which are given, are installed in a small room in the basement of the Custom House, where constant temperature is maintained. One of these clocks was made by Dr. S. Riefler and is run under constant barometric pressure, which is obtained by sealing the glass case and exhausting a portion of the air by means of a foot pump. This clock is electrically wound.

THE TIME SERVICE

Less technical in description and of equal interest is the method by which Time is distributed from the Observatory at St. John throughout the Maritime Provinces. The outward and view time signals of the time service are the Time Balls.

The time ball became an institution at St. John forty five years ago. In 1868 a time ball was erected on the building which still crowns the top of Fort Howe. This site was selected as the most conspicuous point in view from the harbor, the ball being principally designed for the use of navigators to time their chronometers.

At the time that the city was devastated by the fire of 1877 the ball had been removed to the old Custom House building. When the present Custom House was erected the ball

was placed on the North tower and that has been its official place ever since, with the exception of the period, extending over more than a year, while the Custom House was being rebuilt after the fire of 1892. During that interval a temporary time ball, placed on the top of the Post Office building, was used.

Every week day in the year, this city's time ball is raised to half mast at 12:45 p.m., and to the top at 12:59 p.m. At one o'clock, Atlantic Standard Time, the ball is dropped electrically direct from the Standard Mean Time clock in the Observatory.

The time ball on the citadel at Halifax, which was established nine years ago on October 1st, 1904, is dropped at the same instant, a special time signal being telegraphed by the Western Union service from the St. John Observatory, each day for this purpose.

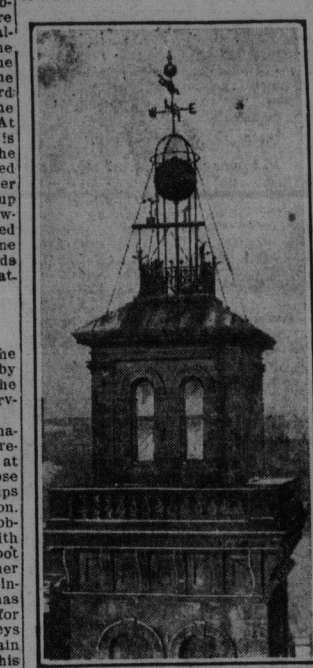
clock hands are hourly controlled by electric wire from the Master Clock at the observatory. Thus all the clocks connected with the Master Clock are accurately set to the second every hour, securing absolutely uniform and correct time throughout the entire system. Once an hour, Mr. Hutchinson stated, had been found to be ample and so long as the clock was going it might be relied upon for correctness.

Where the Clocks Are.

So far clocks have been installed in the Post Office lobby, many of the banks, the Public Library, the Western Union Telegraph office, the New Brunswick Telephone Company's office, Ferguson & Page, the Royal Hotel, and the lower clock of the Fairville Post Office. Clocks are also installed in some of the manufacturing establishments in and around the city. The latest addition to the list is the handsome illuminated post clock maintained by T. McAvity & Sons on the curb near the foot of King St. Frequent callers at the Post Office, Mr. Davidson, of the Bank of Nova Scotia staff, spent the holiday with friends in Fredericton.

A Question Answered.

Why this great exactness of scientific time keeping? Possibly some of the readers of The Standard, having perused this article, will ask that question. The answer is that the country needs a standard of time as much, or even more, than a standard of weights and measures. The time balls are welcome signals to navigators, for they know by them that they can accurately determine the errors and rates of their chronometers. They are none the less acceptable to the general public. The transmission of the exact time throughout the Maritime Provinces is a convenience which could not well be dispensed with. Telegraph signals from the St. John Observatory also reach every part of the Intercolonial Railway, the correct time being an element of safety in conducting the operations of the road. The Meteorological Service is one of the branches of the Marine and Fisheries Department. St. John is indebted to Hon. J. D. Hazen, the Minister of the Department, for the fine building now being erected on Douglas Avenue by the British American Construction Company, under the supervision of Garnet W. Wilson, architect.



THE TIME BALL, ST. JOHN.

for the building. It is an ideal site for an observatory for the Maritime Provinces and the new building will prove a noteworthy addition to the many fine structures in the North End.

As the word "Meteorological" has appeared in this article it may be well to explain that the object of Meteorology is the study of atmospheric phenomena and the investigations of weather and climate. The Standard's representative during his visits to the Observatory saw many other instruments of interest connected with the Meteorological Service, but it was decided not to lengthen this article by giving a description of them and the methods used in the weather department of the Service. This subject will be dealt with in another article to follow.



The office of the observatory, transmitting clock on the left, Master Clock on the right, with Chronograph in foreground.

COLD IN THE CHEST

RUB WELL WITH ZAM-BUK!

For bad colds on the chest, rub the chest and between the shoulders well with Zam-Buk at night.

For colds on the chest or cold in the head, just insert a little Zam-Buk at the base of the nostril, and as the balm becomes warm, inhale the healing essences which vaporize.

Sores in the nostril, which are sometimes set up by catarrh, will yield to Zam-Buk treatment. Mrs. N. S. Babcock, of Matawatsch, Ont., says: "For a long time I had a very disagreeable sore on the inside of the nostril, which gave me great pain and caused much annoyance. I feared it would turn to cancer, and all I tried proved unavailing. I was ordered to try Zam-Buk, and I am glad to say that the sore that defied all other remedies was overcome by the use of Zam-Buk and is now quite healed."

Zam-Buk will also be found a sure cure for cold sores, itchy nose, itchy throat, ulcers, eczema, blood-poison, piles, cuts, and skin injuries generally. All druggists and stores, 50c box. Try Zam-Buk Co., Toronto. Try Zam-Buk Soap 25c. tablet!

GAGETOWN NOTES.

Gagetown, Oct. 23.—Kingsley Shields, D. Moore, Fred Corey and Fred Dineen, of St. John, spent Thanksgiving at their homes here. Mr. Davidson, of the Bank of Nova Scotia staff, spent the holiday with friends in Fredericton.

K. M. Fluke, B. S. A., Commissioner of Conservation, Ottawa, is investigating agricultural conditions here. He has been carrying out similar investigations in different sections of the Maritime provinces and it is quite probable that more demonstration farms will be established as a result of this work.

E. S. Brodie has been confined to his house on account of illness. Mr. Jacobus, of Pittsburg, Pa., spent the weekend at Gray Gables.

Kenneth Gillis, of St. John, who has

been spending a few days with friends here, returned home Monday. Miss B. McIntyre, of St. John, is visiting friends here. Wm. Brooks is visiting in St. John. As a result of a gale a scow loaded with 400 bags of cement sank at Hart's Lake, where Contractor Corbett is preparing foundations for the erection of the Valley Railway bridge at this place.

Preparations are being made for the erection of the Valley Railway station in this town. Weather conditions of late have interfered with the harvesting of crops and much grain has been damaged in consequence.

The Thanksgiving ball given by the young ladies of the town in the assembly rooms was a brilliant success.

Who Moses Was.

"Now, Albert," said the Sunday school teacher, "Can you tell me who Moses was?" "Yes, namam," replied the little fellow. "He was the only man who ever broke all the ten commandments at once."

Just Apply This Paste And the Hairs Vanish

(Beauty Notes.)

It is no longer necessary for a woman to go through life with a face disfigured by a fuzzy growth, for if she will apply a plain delatone paste to the objectionable hairs for 2 minutes, she will rub it off every trace of hair will vanish. To make the paste, mix some water with powdered delatone. After the paste is removed, the skin should be washed to free it from the remaining delatone. Better results are obtained if the delatone is purchased in an original package.



DEPARTMENT OF RAILWAYS AND CANALS, CANADA—CANADIAN GOVERNMENT RAILWAYS.

Halifax Ocean Terminal Railway, Halifax, N. S.

Sealed tenders addressed to the undersigned and endorsed "Tender for Docks, First Unit, Contract No. 3," will be received at this office until twelve o'clock noon, Saturday, the twenty-fifth day of October, 1913, for the construction of about 6,500 lineal feet of quay wall, foundations for buildings, sewers, dredging of harbour to a depth of 45 ft. of low water and filling reclaimed areas.

Plans and specifications and form of tender may be seen and full information obtained at the office of the General Manager, Moncton, N. B., at the office of the Chief Engineer of the Department of Railways and Canals, Ottawa, and at the office of the Superintendent Engineer, Halifax, N. S.

The right is reserved to reject any or all tenders.

By order,
L. K. JONES,
Assistant Deputy Minister
and Secretary,
Department of Railways and Canals,
Ottawa, September 2nd, 1913.



SYNOPSIS OF CANADIAN NORTH-WEST LAND REGULATIONS.

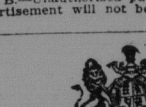
The sole head of a family, or any male over 18 years old, may homestead a quarter section of available Dominion land in Manitoba, Saskatchewan or Alberta. The applicant must apply to the Dominion Lands Agency or Sub-Agent of the District. Entry by the Dominion Lands Agency or Sub-Agent of the District is made at the office of any Local Agent of the Dominion Lands (not sub-agent) on certain conditions.

Duties—Six months residence upon and cultivation of the land in each of three years. A homesteader may live within the limits of his homestead on a full or part time basis, or he may reside at least 80 acres, on certain conditions. A habitable house is required in each of the three years.

In certain districts a homesteader in good standing may pre-empt a quarter section of land in each of three years. A homesteader may live within the limits of his homestead on a full or part time basis, or he may reside at least 80 acres, on certain conditions. A habitable house is required in each of the three years.

A homesteader who has exhausted his homestead may obtain a pre-emption in certain districts. Pre-emption must be made within six months of the expiration of the first year of the three years, cultivate 80 acres and erect a house worth \$200.

W. W. COREY,
Deputy Minister of the Interior,
N. B.—Unauthorized publication of this advertisement will not be paid for.



SYNOPSIS OF CANADIAN NORTH-WEST MINING REGULATIONS.

COAL.—Coal mining rights may be leased for twenty-one years, renewable at an annual rental of \$1 an acre. Not less than 2500 feet of the tract must be staked out by the applicant in person, and personal application to the agent or sub-agent of the Dominion Lands for the district, must in all cases be made and the rental for the first year must be paid to the agent within thirty days after his acceptance of the lease.

QUARTZ.—A person eighteen years of age and over, having made a discovery of gold, or any other mineral, may lease a tract of land of not less than 1000 feet by 1500 feet. At least \$100 must be expended on the claim each year, or paid to the Mining Recorder. When \$500.00 has been expended on the claim, or other requirements complied with the claim may be purchased at \$1 an acre and for the City and County of Saint John, at the Probate Court Room in the Pugsley Building in the City of Saint John, on Monday the twenty-sixth day of January next at eleven o'clock in the forenoon then and there to attend at the passing and allowing of the said accounts and at the making of the order for the distribution of the said estate as prayed for and as by Law directed.

Given under my hand and the Seal of the said Probate (L.S.) Court, this thirtieth day of October, A. D. 1913.
(Sgd.) J. R. ARMSTRONG,
Judge of Probate,
(Sgd.) H. O. McNEENEY,
BAXTER & LOGAN,
Proctors.

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PRICE LOW.

Gandy & Allison.

9 and 4 North Wharf.

SURPRISE SOAP.

A PURE HARD SOAP.

Makes Childs Play of Wash Day

Classified Advertising

One cent per word each insertion. Discount of 33 1-3 per cent on advertisements running one week or longer if paid in advance. Minimum charge 25 cents.

WANTED.

WANTED—Woman to do general housework around office, 5 days each week. Position permanent. Apply Standard Office, 82 Prince William street.

Pin boys wanted at once. Apply at Black's Bowling Alley.

WANTED—Two first-class harness makers.

Apply Edward Hogan, 47 Waterloo street.

AGENTS WANTED—Agents \$3 a day selling Mendets, which mends Granite, Hot Water Bags, Rubber Boots, Reservoirs, Boilers, Metal Tubes and Fins without cement or solder. Sample ten cents. Collette Mfg. Company, Collingwood, Ontario.

MALE HELP WANTED

BUILDERS' COURSE BY MAIL.—Construction, Plan Reading, Estimating, Architectural Drawing, Contracting, etc., especially prepared for contractors, builders, bricklayers, carpenters, plasterers, apprentices. Students study plans of buildings and machinery being actually constructed in Chicago. Home study work the same as in our college classes. Mention which is desired when writing for catalogue. Chicago Technical College Room 1035, Lake View Building, Chicago, Ill., U. S. A.

AGENTS—Salary and commission. To sell Red Tag Stock. Complete exclusive lines. Specially hardy. Grown only by us—sold only by our agents. Agents must have \$250.00. Write now to Dominion Nurseries, Montreal.

SITUATIONS VACANT.

WANTED—Leads Barber Trade. Few weeks required, tools free. Positions secured. Professors of 15 to 20 years' experience. Write, Modern Barber School, 632 St. Lawrence Blvd., Montreal.

FOR SALE

SEWING MACHINE NEEDLES—All kinds. Half dozen 10c by mail. New House and other machines, \$5 to \$40. Domestic and all machines repaired. I have no travellers. Buy from me and save money. William Crawford, 105 Princess street, St. John.

FOR SALE—Pool table 4 1/2 x 9, and Box Ball Alley, 49 ft. long. Apply to Robert Welch, Queen street, Woodstock, N. B.

FOR SALE—Second hand steel radiators. Apply to H. Chestnut & Sons, Fredericton.

MOTOR TRUCK FOR SALE.

Fenders will be received until Nov. 1st next, for the undersigned, for 1 early motor truck, capacity 1 to 1 1/2 tons, suitable for either passenger or freight business. New July, 1912. For further particulars inquire of H. Westmore, 141 Union St., St. John.

FOR SALE—Tugboat, 65 ft. over all, 14 ft. 3 in. beam, 8 ft. deep, fully equipped with winches, 10 and 20 compound engines, surface condenser, pumps, oil connections and pipes and copper. Address T. N. A. Grath, Tusket, N. S.

EDGEcombe CARRIAGE BARGAINS

FOR SALE—One Trotting Cart, \$45. Four Wagons, five rubber tire horse wagons, latest designs. Four harness wagons. 1900 Covered Wagon. One rubber tire horse carriage, seats nine to twelve people. Family Carriages, six horse wagons. One cheap Farm horse. Send for prices. EDGEcombe's, 115 City Road. Phone Main 647.

FOR SALE—Second hand safe for sale. Large Herring-Hall-Marvin safe. Nearly new. For full particulars address Box 421, care of Standard.

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FIRE AND LIGHTNING PROOF, can be laid over old roofs. Also Steel Ceilings, artistic designs; Steel Beams Metal Lathing, Expanded Metal, and Covered Bars.

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Selling Agents for Manufacturers,
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JAMES PATTERSON,
19 and 20 South Market Wharf,
St. John, N. B.

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ELECTRIC MOTOR and Generator repairs, including rewinding. We try to keep your plant running while making repairs. E. S. Stephenson & Co., Nelson street, St. John, N. B.

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F. C. WISLEY & CO., Artists, Engravers and Electrotypers, 59 Water street, St. John, N. B. Telephone 982.

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Phones, M. 229, Residence M. 1724-11.

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11 & 15 WATER STREET. TEL. 578.

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ing the practices of the
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and might others;
how the friendship of
one may induce the character
position of an individual; how
the most obstinate diseases
are without drugs or medicines;
the complex subject of project
lights (telepathy) is explained;
Josephine Davis, the popular
vortice, whose portrait appears
on the cover of the book, de-
clares that Prof. Knowles has
discovered principles which, if
adopted, will revolutionize
the status of the human race.
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Forces" and mention The St. John
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Use it for both internal
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Make the Liver
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The new Vaginal Spray,
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