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VENNOR'S



WEATHER

BULLETIN

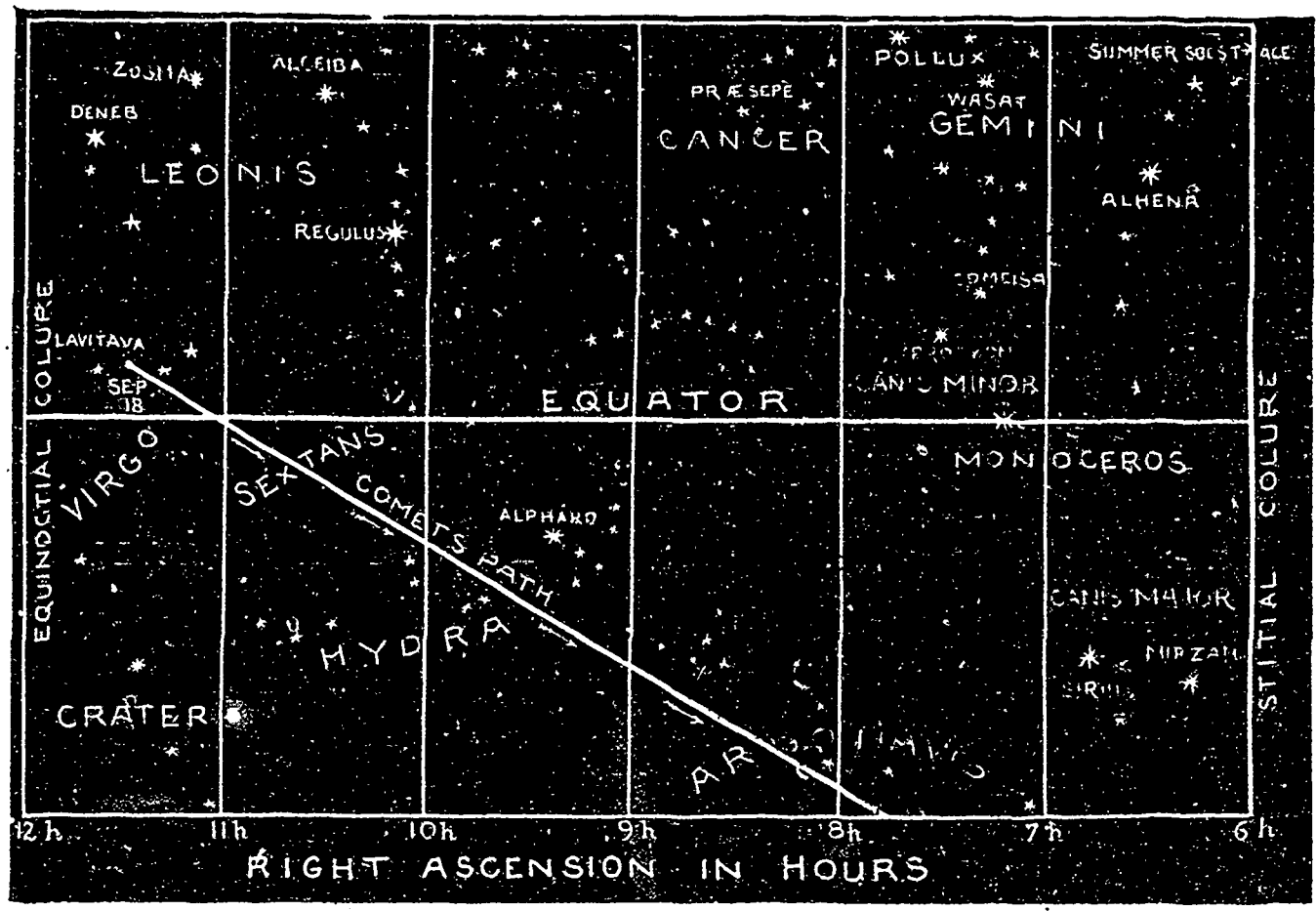
FOR CANADA AND

THE UNITED STATES.

A PAPER DEVOTED EXCLUSIVELY TO THE WEATHER AND ALLIED TOPICS.
 "Study the Past if You would Divine the Future."

Vol. I.—No. 10.

MONTREAL, NOVEMBER, 1882.



"The Path of the Comet."

11th Month.	30 Days.	The Comet.		
NOVEMBER.				
1 to 5—	A good amount of rain probable with a frosty snap about the 3rd or 4th and scattered snow flurries through western and northern sections.	If you could find room for the accompanying diagram of the comet's path among the constellations it would probably interest your readers. Drawn by myself from a reliable star chart, with careful noting of positions, as telegraphed from observations in both Old and New World. Of course it is liable to correction, as I am without instruments for measuring right ascension and declination. The train at present appears to pass near Alphard in Hydra, this is due to its relative position to the sun. The motion is through the constellations Sextans, Hydra and the ship Argo in South Declination. WALTER H. SMITH.	at St. Louis. Cold in North West, cold and stormy Scotland and England. 13th and 19th very stormy weather and snow falls general.	
5 to 12—	The neighborhood of the 7th probably stormy with rain, sleet or snow, also 11th and 12th we. and dreary.		19 to 26—	A wintry week generally. Cold snap due about 20th and 21st. Frosts far to the Southward, neighborhood of 24th and 25th snow storms, and in Newfoundland gulf gales.
12 to 19—	Probably fair in most sections up to 14th or 15th. After these dates very stormy weather, with heavy snow falls, will prevail over a large portion of the United States and Canada. Snow probable in Arkansas and Missouri, storms		26 to 30—	High winds in Northern sections entry of week. Storms Scotch coast and generally on Atlantic. Cold weather in North West, winter weather in Canada. Stormy up to end of month on Atlantic. Prevalent winds North Westerly and Westerly.

The Comet.

COMMENTS ON COMET BY CITIZENS.

The comet is a wonderful show, and it takes a power of faith to believe what the astronomers say about it. My folks wanted to see it, and so I got 'em all up in time yesterday morning, and they wrapped themselves up in shawls and blankets, and I took little Jessie in my arms and we paraded out beyond the grove, where there was a clear sight, perused it to our satisfaction. The little chaps amused us with their questions, for they haven't much idea of infinite distance, and we grown folks got bewildered in trying to take it all in. One hundred and twenty millions of miles away is a right good piece, and when a body is travelling 2,000,000 miles in a day it must make a powerful buzz in the firmament, and it is a wonder we don't here it like we hear these coal-burning locomotives, away off in the dead of night. That comet has some

NO BUSINESS ON HAND

and I would like to know what it is. I see that one learned man says they furnish fuel to the sun, and this one was badly needed right now, for the fires were getting low, and one can see the dark spots where the coal was burnt to cinder, and if more coloric didn't come soon from somewhere our people wouldn't have to go up to the Arctic regions to freeze to death. It is a grand idea to think of some Vulcan standing a way up in the regions of space chucking up the old sun's fires by throwing comets at him, but still I would like to know where the old fireman gets his comets, and where he keeps 'em hid out from mortal eyes. I could ask as many questions, I reckon, as the children asked me, and know as little about it afterwards. Jessie wanted to know if a hundred millions of miles was as far as across the ocean, and how many times further it was than from here to Winnipeg. She wanted to know how much faster it travelled than the cars, and its tail would make

A MIGHTY PRETTY BROOM FOR A GIANT

to sweep the sky with. Carl undertook to enlighten her, and told her that Atlanta was just nowhere to the comet—that the comet was further off than the sky, or the moon, or a rainbow, or a thousand pine trees put on top of one another, and it was going faster than that flying horse that papa told us about. The wise men tell us that it went within 400,000 miles of the sun, and is now getting away from it at the rate of 2,000,000 a day. That's business. That's furnishing fuel in a hurry, and getting away far more with proper alacrity, but it is a wonder to me it didn't get its tail scorched. I wish that all you city folks could see the comet, for it is a show that doesn't come along more than once or twice in a lifetime, and it never advertises its coming in the newspapers. City folks don't know exactly how to go about getting up at four o'clock in the morning, and if they did, they would find somebody's house or their shade trees in the way, and would have to walk out a mile or so to get a fair view of it. I suppose they could get to see it by sitting up all night, and getting on top of the house, but they won't do that for a free show. If old Vulcan had his curtain up, and a doorkeeper was to charge \$5 a night, he would make money, and more folks would turn out than now for nothing. The comet is a wonderful thing to think of; one man says that this whole universe is going to pieces, for it all depends on fire, and the fires are fading for want of fuel, and the sun is growing dim, and the world after world will drop into it until they have all dropped, and after that the sun would flicker out like a dying candle, and

WE WOULD ALL BE IN THE DARK.

if we hadn't been burnt up already before, and so it becomes us to be prepared for the worst, for the catastrophe will shortly happen, about four hundred quintillion years from this date, and no three days of waiver or protest Jesus! This shows that a man should always be fortified with comets. Keep matches on the mantle-piece, and your boots where you can find 'em, for no man knoweth when old Vulcan will wrap a comet's tail around our earth and sling us into the sun for fuel.—*Toronto Mail.*

ROCHESTER, N. Y., Oct. 11.—Professor Swift, of Warner Observatory, says the new comet discovered by Schmitt, at Athens, is unquestionably a fragment of the great comet broken off at its perihelion passage. This proves the great comet must have grazed the sun and passed through a terrible crisis. This is the second instance on record where a comet has been disrupted, the first one being Biella's of 1846.

New York Sun, 12th.—The great comet still shines brilliantly for more than an hour before sunrise, and shows to better advantage now than last week, when the bright moonlight dimmed it. Yesterday morning its tail, which was distinctly forked at the end, was fully eighteen degrees long and astonishingly bright. There is evidently some disturbance going on in the nucleus, as it has several times been seen separated into two or three parts, which afterward closed up again. It is not a new idea to astronomers that the nucleus of a comet may consist of many fragments held together by mutual attraction. The thought becomes almost startling, however, in view of the phenomena presented by the present comet. Think of these huge cometic masses rushing madly toward, whirling round and round, yet held together in the leash of gravitation, plunging through the fiery outer atmosphere of the sun, and then hurled forth again, clashing and crashing, with tremendous smoke and flame and fury, yet unable to burst the bonds that hold them! It is no wonder that the inhabitants of the sun's family of peaceful and steady-going worlds are amazed and terrified by the furious appearance of his queer visitors from the depths of space.

AS SEEN FROM PANAMA—A BRILLIANT SIGHT.

PANAMA, 17th.—Yesterday at 4 a. m. the tail of a great comet was observed over the summit of the Andes. Its great size and silvery brilliancy presented an imposing sight. The angle it formed with the horizon was more than four degrees, its azimuth, twenty five degrees in breadth, moveable with twenty two degrees, right ascension fifteen degrees, and declination northward thirteen degrees. Its longitude could not be measured as the sky became hazy just as the nucleus was observed. It is centering in the constellation Cancer, and very soon will be in that of Gemini. When it enters the constellation Laurus it will appear at midnight. It resembles the comet of 1811.

Professor Parkhurst in *New York Herald*, October 6.—In conversation with the Professor, a reporter inquired the dimensions of the comet.

"The tail," said he, "is at least fifteen degrees long, and would reach between the two most extreme stars of the handle of the Great Dipper—that is, about fifty million miles—more than half the distance from the earth to the sun. In this comet the tail points away from us. The reason that Donati's comet looked so large was that its tail pointed this way."

"Was it more brilliant when it was first discovered?"

"The head was as bright as Sirius when I saw it first, and I thought the tail would lengthen until it reached Alpherd. But it has

not come more than a million miles nearer to us than the sun. It came up from beyond the sun, you see, passed it, and then passed back again. It is fast receding, probably at a rate of two-and-a-half million miles a day. But this rate will gradually be lessened. At the present time it is about seventy million miles from the sun and one hundred and twenty million miles from us."

"Has it been very near the earth?"

"Oh, no. Donati's comet came three times as near us. But it is a remarkable thing that on the 18th, 19th and 20th of September I could see this comet at noonday with my telescope right through a considerable veil of mist, but now the telescope fails to bring it out in daylight, even while the sun is below the horizon."

"Will people who keep respectable hours be able to see the comet after awhile?"

"They will not be able to see it before midnight, that is certain. Every day after this it will be visible in its present place five minutes earlier. The sun is travelling eastward about one degree a day and the comet is moving westward a little less than a degree. You see they are moving in opposite directions, and while the comet rises earlier the sun rises later. So, although the brightness of our phenomenon is decreasing, yet when we see it against a perfectly black sky, as we soon shall it will be viewed to more advantage than at present. The moon is on the wane, too, and when her light is lessened the sky will be in splendid condition for a view of the comet."

"But this is the best time to see it, is it not?"

"By all means. I should advise every one who wishes to see this marvel of our planetary system to rise at 4 o'clock in the morning and watch in the southeastern sky for it. They will have a good hour's look at it before it pales."

No one knows much about it; there has not yet been time enough since the discovery to enable one to make trustworthy calculations. It is not the comet of 1843, 1880, or of any other year, so far as men know, and guesses are useless.

Speaking of the comet of 1843 Newcombe says: "Its orbit did not certainly deviate from a parabola. The most careful investigation of it—that of Professor Hubbard, of Washington—indicated a period of 530 years, but the velocity which would produce this period is so near the parabolic limit, that the difference does not exceed the uncertainty of the observations."

If then an astronomer should say that this is "the comet of 1843, which reappeared in 1880 and in 1882," it is lawful to suggest that he is mixing things too promiscuously. If the orbit of the comet of 1843 is a parabola, the body will never return to this system.

Donati's comet was first seen on the 2nd of June, 1858, and after it had been watched and "set up with," so to speak, by all the principal astronomers in the world for six months, Professor J. D. Runkle, of Boston, published the following as the results of the computations by the most eminent computers in this country and Europe.

PERIOD OF DONATI'S COMET.

Watson.....	2,415 years
Bruhns.....	2,102 years
Lowy.....	2,495 years
Graham.....	1,520 years
Brunnow.....	2,470 years
Newcomb.....	1,554 years

Twenty years afterward, Professor Newcomb gives 1,950 years as the result of G. W. Hill's careful research.

Such being the facts in regard to this celebrated comet. Sensational articles about the comet of 1882 are entirely out of place, and

all statements of its period of revolution, can be nothing more than the rudest kind of guessing, hardly rising to the dignity of a "barren idealism." Had it fallen into the sun, it is not probable that any one would have known it, or that the temperature of the earth would have been increased by the hundredth part of a degree Fahrenheit.

But the disposition to wonder at unusual events is no new thing under the sun. A long time ago Tacitus said "*Omne ignotum pro mirifico*," which may be freely translated: "The less you know about it the louder the racket you make." R. W. M.

The present Comet in the eastern sky, which can be distinctly seen by every one at early morning, is certainly the most remarkable one of all the modern comets. Prof. Lewis Swift, director of the Warner Observatory, Rochester, N. Y., states that the comet grazed the sun so closely as to cause great disturbance, so much so that it has divided into no less than eight separate parts, all of which can be distinctly seen by a good telescope. There is only one other instance on record where a comet has divided, that one being Biella's comet of 1846, which separated into two parts. Applications have been made on Mr. H. H. Warner by parties who have noted these cometary offshoots, claiming the \$200 prize for each one of them. Whether the great comet will continue to produce a brood of smaller comets remains to be seen.

A Washington dispatch says that the following spectroscopic observations of the great comet were made during the past two mornings at the naval observatory, by Commander Sampson. The spectroscope used was a five prism direct vision, one made by Brown and attached by suitable clamps to the comet-seeker, which has a four inch glass of about two feet eight inches focal length. The spectrum consisted of three bands—one, the brightest, was situated in the middle of the green, about corresponding to the small B lines, a second was in the orange yellow, and the third at the middle of the blue. The middle band was very bright and sharply defined on the least refrangible side, and faded gradually on the other side. No band sharply defined on both sides could be made out.

It will be remembered that the first telegraphic reports made the spectrum very bright and continuous, with many bright bands, among which the sodium bands were particularly prominent. The comet was at that time near the sun. The whole appearance of the spectrum is now changed. Although it includes rays of about the same refrangibility, there is no trace of the sodium band. It was found that when the brighter portions of the bands were removed as far as possible from the field of view, the fainter portions were seen to extend themselves into an almost continuous spectrum. When the tail of the comet near the nucleus was examined, it was found to consist of a faint, continuous spectrum without any bright bands. The explanation which suggests itself of this great change in the spectrum is, that when it was first examined, just after it had passed the sun, the continuous spectrum was due to reflected light, while the bright bands were due to the incandescent vapor formed by the intense heat of the sun. The comet has now so changed its position with regard to the sun that the amount of reflected light has greatly diminished, and the comet itself has greatly cooled after its hot bath in the atmosphere of the sun. The beautiful silvery appearance of the comet is due to the preponderance of green light which it emits, as shown by its spectrum.—*Argus, Albany, N. Y. Oct. 18.*

The comet's tail is forked at the end where it has a width of three degrees; this corresponding to an actual diameter of 9,000,000 miles.

The Comet and the Earthquake.

A MONTREAL ASTROLOGER ON THE PROBABLE RELATIONS BETWEEN THEM AND HIS PREDICTIONS OF THE WEATHER.

The science of astrology, a few centuries ago considered superior to astronomy, and universally practiced by learned men, is not half so dead as many people imagine it to be. Though its professors have wofully decreased in number, and become confounded with clairvoyants, mediums, fortune tellers and other charlatans, yet there are a few enthusiasts who firmly believe that the stars and planets in their constantly changing aspects, exercise an influence over all things terrestrial, including even the minds, will and power of human beings, and can cause wars and pestilence, peace or prosperity, according as the evil or good planets are in the ascendant.

A Star reporter called upon a gentleman of this city who is of the opinion that the shock of earthquake felt a few days ago was the result of the proximity to the earth of the comet now visible in the heavens. He said comets boded no good to the earth, whenever they made their appearance disasters were sure to follow; earthquakes, war, pestilence, and individual crimes invariably followed the appearance of comets. The immense magnetic power exercised by the fiery meteors, must affect the earth and its inhabitants unfavorably. Not only the earth, wind and water were affected, but the minds of the people at large and even individually. The astrologer produced an immense horseshoe magnet, which he brandished in an alarming manner while discoursing and after drawing his visitor's attention to its attractive powers, declared that the influence exercised by the planets was altogether magnetic. There was no star in the solar system too far away not to affect the earth. The clouds and water being lighter were, of course, more easily affected. Hence, certain aspects of the planets produced wind and rain. The motions of the planets also affected persons mentally, and in a less degree physically. Human events were also controlled by the constellations as their aspects were either good or evil. An instance of an opposing evil influence would be the sun on one side and Mars on the other, with the earth in the centre, feeling the magnetic influence of both planets. Turning from the subject of the theory of astrology, which is just the same now as it was hundreds of years ago, the sage went on to say that there were not many astrologers at the present day. The more celebrated ones lived in London, Eng., and were known under such *noms de prophete* as Zadkiel, Raphael, Orion, &c., &c. The reason of this concealment of their real appellations was owing to the fact that there was an old law in England which forbids the receiving of money for the casting of nativities. In the large cities in the United States there were several professional astrologers who for money would dive into futurity and give his customer some idea of coming events. These men were not humbugs but intelligent persons, working in a regular astrological system. There were not many astrologers in Canada. For a certain sum of money these professors would give a short judgment on the mental qualities of the enquirer, and predict his future pecuniary status. They could also find things that were lost if the exact time of the loss was furnished them. The answering of any particular question is called horary astrology. If the exact time of the beginning of an illness is noted, the astrologer can predict with certainty whether the result will prove fatal or not. As an example of how many believers in astrology there are at present, it may be remarked that Zadkiel sells 250,000 of his prophetic almanacs every year, and the other seems in proportion. Zadkiel is the most in favor on account of his wonderful prediction concern-

ing the assassination of the Czar, which happened exactly at the time he set it down for.

The amateur astrologer at this point in the conversation relinquished the magnet and took possession of an immense baby, which his wife had deposited upon the floor in a significant manner. Pausing only long enough to remark that it was a fine child for eight months, the sage went on to say that he had turned his attention chiefly to astro-meteorology, or the prediction of the weather by the position of the planets, and he hoped in time to knock the spots out of Vennor. It was a well known fact that when certain planets were in such and such a position a certain condition of weather was sure to follow. For instance, Herschel and Saturn, in any aspect, produced turbulent weather in the fall; in the Spring time a common storm was the result, and in winter snow was sure to follow.

With considerable satisfaction the professor admitted that he had prepared a table of disturbances of the atmosphere for the coming month, which he expected would be the meteorological programme followed by the Clerk of the weather.

The reporter then asked the Professor whether he had made any calculations as to what events were likely to transpire during the next month or so. He replied that he had not, as that would involve a different mode of calculation altogether. In order to divine events he would have to take the exact time of the new moon and calculate the position of the planets in our solar system at the present time, and from their various positions in the heavens draw an inference concerning events in the near future.—*Montreal Star.*

The Comets.

THE FOUR COMETS OF THE YEAR.

In plain fact, there have been but four comets seen thus far in 1882. The first celestial vagrant of the year was discovered by Mr. Wells, of the Dudley Observatory, March 17th, and for a long time it monopolized the attention of astronomers in both the old and the new world, owing to its unique features. Although the period of the Wells comet has not yet been fully calculated, enough is known to show that the comet will not return to view under 1000 years. The second comet of the year was seen but once, and then for only a very short time, by the astronomers who were observing the sun's eclipse from Egypt last spring. It was described in a brief despatch which noted the success of the observation of the eclipse as "a fine, bright comet, close to the sun," and astronomers for a long time watched for its appearance, on the supposition that it would be visible on its return from perihelion, but without success. The third comet of the year was discovered on the morning of September 13, and duly chronicled by Prof. Barnard, of Nashville, Tenn. At first, owing to the place of its discovery, in the constellation of the Twins, it was presumed by some to be the re-appearance of the famous Pons comet of 1812, but this was subsequently shown to be an erroneous supposition, owing to its direction of motion. The Barnard comet, which was, at the time of discovery, a faint telescopic object, about one and one-half seconds of arc in diameter, is now approaching perihelion, which it will attain about the 7th of November. At its brightest it will be but about three times as large as when first seen.—*Albany Argus*

Candor is the seal of a noble mind, the ornament and pride of man, the sweetest charm of woman, the scorn of rascals, and the richest virtue of sociability.—[*Beutzel-Sterann.*]

Celebrated Dark Days.

The strange darkness which overspread Western Ontario on the 6th of last September, and reached New England the following day, is still the object of attention from many, and is certainly the most famous phenomenon of its kind recorded during the present century. It has had parallels, though only one is recorded which approached it in darkness and lurid magnificence. In the year 526, the whole of the Roman Empire is said to have been covered by a reddish shadow, caused by a strange haze in the air. What produced this haze is not known, though it is possible it may have been an unusual accumulation of the red dust which now and then falls over the Mediterranean and which Prof. Ehrenberg, a celebrated scientist, has examined microscopically and found to be dried vegetation, probably borne by the counter trade winds from some tropical region where drought prevailed.

COMETS AND DARK DAYS.

In 1763 a large part of Europe, North America and the western portion of Asia was covered with a dry fog of pale blue color, which dimmed the light of the sun and at times almost extinguished it. It was accompanied by violent electrical disturbances, and lasted for several weeks. It spread alarm everywhere. A writer says, regarding the weeks of this fog.—“It was a time of terror, of tumult and of universal excitement.” In 1831 a fog of long duration prevailed and made the sun look green or blue. Both these fogs seemed slightly phosphorescent at night. The same phosphorescence was noticeable in 1821, when for several days, during which it was supposed the earth was passing through the tail of the great comet of that year, a slight haze pervaded the atmosphere. It is suggestive that at the time of the dry fogs of 1783 and 1831 the earth was also in close proximity to the tail of a comet, if not actually immersed in it, and the fact that the fogs prevailed on the highest summits of the Alps as well as in the lowest valleys, is looked upon as tending to confirm the hypothesis that they were due to the presence of a cometary vapor in the atmosphere. Some of the celebrated observations of solar light are confined to small areas, as London fogs, the cause of which is obvious. In 1873 London was darkened for a week, so that traffic had to be suspended on the Thames, street traffic became difficult, and lives were lost by accidents due to the obscurity. In the spring of 1808, a mysterious darkness covered a portion of Minnesota, ordinary occupations were suspended, and people were obliged to eat their dinners by lamp light.

THE BLACK FRIDAY OF 1780.

More celebrated, however, is the “Black Friday” of New England, May 19, 1780. The coast was shrouded in darkness, which turned away incoming ships. The air was of a brassy color, and pervaded by a sulphurous and sooty smell. Many thought the day of judgment had come. The Connecticut Legislature was in session when the darkness fell and the Senate chamber became enshrouded in gloom. The general alarm spread to the Law makers, and one of them solemnly moved that the Senate adjourn. Col. Abraham Davenport immediately arose and opposed the adjournment. His speech though brief was a remarkable one, and had the effect of restoring composure of mind in the assembly. He said: “I am against the adjournment. Either the day of judgment is come or it is not. If it is not there is no cause for adjournment. If it is I wish to be found in the line of my duty. I ask that candles may be brought.” This terrorizing darkness extended over most of New England, and portions of New York, Pennsylvania, and Can-

ada, and was due to similar causes to those which produced the famous darkness of September. A correspondent of the *Globe* sends the following extract from a letter relating to that darkness, and dated Boston, May 19, 1780. The letter was published in the *Imperial Magazine* for 1789. the extract says:—

“This day has been rendered very remarkable by an extraordinary phenomenon, which demands a particular relation. An unusual darkness came on between the hours of ten and eleven in the morning, and continued to increase. Your friend having been accustomed to dark days in London regarded it with no special attention till called to do it by his neighbours who were much alarmed. He dined by candle light about one. After that it grew much lighter, and he walked about five o'clock to a tavern, a mile distant on the road to Boston, to meet a committee of Roxbury on special business.

“When they had finished about eight o'clock at night he set out for home, not suspecting, but that being fully acquainted with every foot of the road, he should easily return notwithstanding its being extremely dark. There were houses all the way, though at a considerable way from each other. He marked the candle light of one, and with that in his eye went forward till he got up to it; but remarked that the appearance of the place was so different from what was usual, that he could not have believed it to be what it was, had it not been for his certain knowledge of its situation. He caught the light of a second house, which he reached, and thus on. At length the light being removed from the last he had gained a sight of, ere he was up to it, he found himself in such profound darkness as to be incapable of proceeding, and therefore returned to the house he had passed and procured a lantern. Several of the company having further to go were on horse back. The horses could not see to direct themselves, and by the manner in which they took up and put down their feet on the plain ground appeared to be involved in total darkness.

The shifting of the wind put an end to it; and at midnight it was succeeded by a bright moon and starlight. The degree to which it rose was different in different places. In most parts of the country it was so great in the day time that the people could not tell the hour by either watch or clock, nor dine, nor manage their domestic business without the aid of candles.

The extent of this darkness was extraordinary. It was observed as far east as Falmouth. To the westward it reached to the furthest parts of Connecticut and to Albany. To the southward it was observed all along the sea coast, and to the north far as the American settlements extend.

“This phenomenon appears to have been owing to the clouds being highly charged with smoke, which they had been collecting for days in the back country.

The weather being clear, the air weighty, and the wind small and variable for several days, the smoke, instead of disappearing, rose and constantly collected in the air till the atmosphere was loaded with such an immense quantity of it as proved, in combination with other vapors the parent of the preceding darkness.—*Toronto Globe*.

Clearly or partly cloudy weather:—“Mary,” said he, gazing into her bright eyes, “can you tell me why you are like the weather?” “Give it up,” said Mary, quite promptly. “Because,” said Charlie, “you are so changeable, you know.” “Very good,” said Mary; “but can you tell me, Charlie, why you are not like the weather?” Charlie having failed to guess, she added, “because the paper here says the weather is going to clear off.” Charlie looked serious and began searching for his hat.—*Boston Transcript*.

Signal Station.

It is said that it is proposed to establish a station of the Canadian Signal Service at some commanding point on the shores of the St. Lawrence, where each inward bound vessel may be signalled, the date of her arrival—if an ocean going vessel—to be cabled immediately to Great Britain. To this end the Dominion Government recently made a proposal to Lloyd's at London to forward such reports, providing Lloyd's defray one-half the cost of transmission. The proposition was favourably received, but before entering permanently into an arrangement, Lloyd's ask that the reports may be forwarded for three months on trial, when, if satisfactory, they will accept the offer made by the Dominion Government. It is also suggested that in the event of the masters of such vessels desiring to communicate any further information across the Atlantic, the same, on being signalled from the ship to the signal station, will be transmitted at the expense of the owner of such vessel. Owing to the short time that must intervene between this and the closing of navigation of the St. Lawrence, it is not probable that any further steps will be taken before next spring, when the experiment doubtless will be tried.

Hoar Frost and Dew.

Hoar frost is formed under the same circumstances as dew, with the exception of a lower temperature. When the temperature of the surface of plants falls below 32° the moisture of the air is condensed upon them in the solid state and forms a layer of snow-crystals, like spongy ice. Hoar-frost, therefore, is not frozen dew, but the moisture of the air is deposited in the solid form without having passed through the liquid condition. Hoar frost, like dew, is deposited chiefly upon those bodies which radiate best, such as plants and the leaves of vegetables, and the deposit is made principally on those parts which are turned toward the sky. Since plants sometimes become cooled by radiation from 12° to 15° below the temperature of the surrounding air, a frost may occur although a thermometer a few feet above the ground, in an instrument shelter, may not sink to 32°. During a clear and still night, when a thermometer six feet above the ground sinks to 36°, a heavy frost may be expected; a slight frost may occur when the same thermometer sinks only to 47°. Whatever prevents the radiation of heat serves also to check the formation of hoar-frost.—*U. S. Signal Service Paper*.

Power, in its quality and degree, is the measure of manhood. Scholarship, save by accident, is never the measure of a man's power.—*[J. G. Holland]*.

A Song of Autumn.

All through the golden weather
Until the autumn fell,
Our lives went by together
So wildly and so well.

But autumn's wind uncloses
The heart of all your flowers;
I think as with the roses,
So hath it been with ours.

Like some divided river,
Your ways and mine will be,
To drift apart forever,
Forever till the sea.

And yet for one word spoken,
One whisper of regret,
The dream hath not been broken,
And love were with us yet.

—*[Ronald Rodd]*.

The Spectroscope.

London Times.—The spectroscope and its results seem to be coming more and more prominently forward and at every successive meeting of the Association. The instrument is in some respects the most potent and widely useful weapon in all the armory of science. In the hands of the astronomer it can tell us what is going on in the sun and the condition of the most distant stars, and in the hands of the analyst it can detect the adulteration of the commonest articles of food. Thus all the sections are interested in it and its improvement, and the standing Committee on Spectrum Analysis is one of the most important supported by the Association. Dr. Schuster's report this year contains a considerable amount of data bearing on this department of scientific progress, and the Association is doing a great service to science in continuing to support the Committee. No better method could be adopted, not only of improving the instrument, but of collecting and sifting the information obtained by those who work with it. Of the results obtained by the spectroscope at the recent eclipse we have already given a summary, and the account communicated by Dr. Schuster and Captain Abney, contained nothing essentially new. Calcium and hydrogen were detected in the sun's corona, and the spectrum showed lines which the astronomers cannot yet read. In another solar paper by Dr. Schuster, he suggests that the changes which are noticed in the form of the corona may be partly due to the fact that it is of meteoric origin, to some extent a revival of a theory at one time popular, that the sun itself was maintained in fuel by the groups of meteors spread all over the system. One great difficulty in solar spectroscopy is to detect what really belongs to the sun and what originates either in the earth's atmosphere or in the space which separates us from the central light. If Dr. Siemen's hypothesis is correct, it will be no easy matter for the spectroscopist to penetrate the supposed intervening matter, and therefore, Captain Abney's visit to the Riffel (8,500 feet high) was an essential useful service. Although he found the spectrum of the sun at that height the same as in London, still he found a vast diminution of light as well as of aqueous vapour, and curiously an increase in alcohol, which leads him to conclude that that potent spirit is of celestial origin. Although Dr. Glasher, who has been miles higher in a balloon than Captain Abney, doubts the diminution of aqueous vapour, Professor Langley, one of the ablest spectroscopists in the United States, essentially confirms the Captain's conclusions. The long papers read by Professor Langley was one of the most valuable contributed to the meeting, giving as it did, the results of spectroscopic work in the rare and pure atmosphere of Pike's Peak, thirteen thousand feet above sea level. Captain Abney has shown that there are rays (in the red) invisible to our rude eyes (though Sir John Lubbock gives reasons for believing that ants can detect them), and Professor Langley has found under his more favorable conditions that there are rays which even Captain Abney has not been able to detect, but which his barometer has shown. Nearly three fourths of the whole solar energy, he maintains, exists in the invisible portion of the spectrum. Professor Langley insists on the embarrassment introduced in the way of solar spectroscopy by our complicated atmosphere, and he believes that if we could get outside of this the solar spectrum would present a very different aspect. Even the corona of the sun and the solar atmosphere itself must be pierced before we are able to say what is the real composition of the central nucleus. The spectroscope, in the short period since its invention, has done so much for a knowledge of the sun, and our in-

vestigators on both sides of the Atlantic are evidently so fully alive to the difficulties that beset their inquiries, that we cannot but be hopeful that in the near future they will be able to overcome them. Then if we go to the Chemical Section we find Professor Huntington reporting on the use of the spectrum for chemical research, especially in reference to the detection of the exact composition and condition of metals; and here, also, we find the path of accurate and trustworthy spectroscopy beset with difficulties. Intimately associated with this department is the subject of the wave-length of the various kinds of light, and hence the importance of Dr. Marshall Watts' report of the Committee for the Preparation of Tables of Wave-lengths.

The Asia Disaster.

The verdict of the jury in the case of the propeller Asia, which foundered in Georgian Bay during an unprecedentedly severe storm on September 14th, strikes at the root of the cause of the disaster in the following paragraph:—

"From the evidence produced we do not consider the old Welland canal style of propellers suitable for lake navigation, on account of their bluntness, fore and aft, causing them to draw the water after them, thereby rendering the steering of them difficult in bad weather, especially on local routes, where the quantity of freight varies from one to three or four hundred tons. We also condemn them for the slightness of construction and height of upper works."

The construction of the propellers in use on the upper lakes has been the real cause of the great majority of the disasters which have occurred year after year, and no inspection laws, however strictly enforced, no experience on the part of sailing masters, however widely acquired, can provide a remedy. In some cases the laws have doubtless proved defective, either in the scope, or in the administration of them, the loss of life has been rendered greater because of overloading, and because of an inadequate provision of life saving apparatus, but with all these defects remedied, with the most careful precautions against accident which the law can provide, the danger will be mitigated only in a small degree. Many of the defects of inspection will be remedied by the Act passed last session and now in force, and greater care will henceforth be exercised in granting certificates to captains, pilots and engineers, but even then the possibility of disaster is far from removed. A thorough reform in the style of propeller construction is above all things required. The Asia was in good repair and perfectly seaworthy. So far as the evidence went there is no reason to believe that any precautions of the law could have averted the disaster to a vessel of her type. What is demanded is not merely a modification of the present style of propeller, so as to provide a stronger hull, lower upper works and sharper lines, but as near an approach to the style of the ocean steamships as navigation of the canals will permit. The lake vessels ought to be as seaworthy as our lower port steamships. The storms of Lakes Huron, Erie and Superior are quite as dangerous, at times, as those of the Atlantic, and tax the sea-going qualities of a craft quite as severely. There is, of course, a difficulty in constructing vessels on the ocean steamship model for canal navigation, for the reason of the light draft necessary to the passage of the canals, but for vessels plying the upper lakes the season round, and using only the lock at Sault Ste. Marie, there should be, we imagine, no difficulty in adopting the model of the lower port steamships. In any case, it is clear that the chief element of danger in lake navigation will only

be removed by altering the present style of propeller construction so as to give them a firmer hold in the water, and greater resistance to the violence of the storm in future.

—Gazette.

The Weather.

The August number of the *Monthly Weather Review*, just received, is, as usual, full of interest. During that month but few storms were reported, and none of them particularly severe. Professor Loomis has determined that the average velocity of storms in this country for the month of August is 18.2, and for the year 26 miles per hour. In that part of the *Review* referring to International Meteorology and for the month of September, 1880, an extraordinary typhoon, attended in its course by a remarkable depth of the atmospheric depression, is described, a vessel reporting the barometer falling from 29.64 to 27.04 in four hours. Snow squalls were reported during August from Sandusky, Grand Haven, Utah, and Colorado. Some of the specially heavy rainfalls during that month were at St. Augustine, 5.22 inches in five hours; at Bunker Hill, Ill., 3.20 inches in one hour and thirty minutes; at LaCrosse, Ind., 2.05 inches in thirty minutes; at Cincinnati (on the 27th), 1.85 inches in thirty-five minutes. These were tremendous down-pours, but to produce Noah's flood required a steady shower of forty days and forty nights' duration, and at the rate of 5.29 inches per minute.

The Ottawa "Astronomer."

The *Cincinnati Commercial* thus refers to the Ottawa "Astronomer":

"A new weather prophet has arisen. His name is Wiggins, and his home is in Canada. He speaks and prophesies in no uncertain way. He fixes on the time when, and the place where a great meteorological catastrophe will happen. On the 11th March next, says Wiggins, a great storm will sweep over the entire country—such a storm as the oldest inhabitant has never witnessed. Upon the Atlantic none but "huge leviathans whose oak (steel-plated) ribs make monarchs tremble in their capitals" will be able to outride its violence. The great sea itself will arise and "cast itself upon the continent," the low lands along the coast will be submerged, and the very mischief be to pay throughout the Western World.

Wiggins does not pretend to explain why this cataclysm will take place on the 11th of March, but it is not the business of a prophet to assign reasons, as witness those of the Old Testament, the unraveling of whose prognostications has engaged the minds of eminent commentators in all ages without arriving at definite conclusions.

It is sufficient that Wiggins has spoken, and that he claims to have predicted the recent great storm that poured water upon New England by the bucketful to every square inch of soil, doing immeasurable damage. The inhabitants of the low coast land should, therefore, pack up and prepare to migrate to the interior or to the mountain tops; yet we suspect they will not do it. Unbelief is as rank as it was among the Antediluvians. Noah preached the coming great flood for a hundred years or more, and built a vast ark as an evidence of the sincerity of his belief in that aqueous catastrophe, yet he made no converts outside his own family, and the pairs of each living species of bird, beast and insect which he hustled into the ark before the windows of heaven were opened and the storm came, and the foundations of the great deep were broken up. As it was in Noah's day, so it will be now, and Wiggins will survive to shake his head solemnly and say: "Didn't I tell you so?"

CORRESPONDENCE.

"Honest men tell us of our faults. Knaves will not; and fools see neither our faults nor our virtues".

BETHLEHEM CENTRE, N. Y., Oct 9, 1882.

Henry G. Vennor, Esq.,

DEAR SIR,—Allow me to congratulate you on your very accurate forecast of the weather for the months of August and September. You did not miss a single day in either of the two months above mentioned. I think you have found the right key for the weather in this locality, "be careful not to loose it."

Now, sir, I want to ask you a weather question. Is the vapour or moisture that is taken up from the earth, and which produces rain, taken up uniformly (both as to speed and quantity) at all times? If so, Why does it not rain more uniformly and periodically, "and if not why not?"

I will take the liberty of asking you another. What causes the light streak which issues from comets, and is commonly called the tail?

A SUBSCRIBER.

October—The Second Week—The Comet's Progress.

(To the Editor of the Bulletin.)

SIR,—In answer to your request of October 9, viz.: that I watch predictions for week ending Saturday 14 and send you my verdict on final result. I fear you ask a hard thing at my hands, how shall one man judge another's weather predictions, and not fail utterly? How, in fact shall I entertain your exact meaning, which I know from my own experience in prognosticating is so very hard to put into suitable words? Take as an instance the exclamation, "fine day." Now the day might not be very fine, only it would bear favorable comparison with its predecessors, which were very unpleasant indeed. Again, one farmer having finished his fall sowing, would call a small deluge "fine," but his next neighbor, not so far advanced in field operations would declare it to be "bestly weather" and very bad for getting on the land. This, by way of prelude, that your readers may not expect more than I can accomplish. Respecting my observations, they are of course local, and at same time general, I usually make three observations daily, at 6 a.m., 12 noon, and 7 p.m., which you find recorded parallel with your probabilities.

SECOND WEEK, OCT. 8TH TO 14TH.

PROBABILITIES.	RESULTS.
Will probably enter with severe wind storms and heavy rains east and west, marked storm period about 9th and 10th.	8 Sun. Fine warm day throughout, strong wind.
	9 Mon. Morning, fine, close. Noon, stiff breeze. Evening, increased to gale from W.
	10 Tue. Morning, cloudy, continuance of gale. Noon, fine, wind strong. Evening, fine, frosty, (Aurora.)
	11 Wed. Morning, fine, cloudy, cold. Noon, fine, cold wind, keen. Evening, Cloudy, cool
Frosts may occur about the 12th.	12 Thurs. Morning, cool, cloudy. Noon, cloudy, dull, some wind. Evening, calmer, clouds continue.
End of week fine and calmer weather	13 Fri. Morning, warm for season, overcast, calm. Noon, dull, threatening rain. Evening, clouds, scattering, fine and warm 10 p.m., strong wind.
	14 Sat. Morning, warm, steady d. vapour of rain. Noon, clouds rising and dispersing. Evening, fine.

This needs but little comment, the wind calm but not perhaps as severe as the wording of the prediction required, but windy it was without doubt, end of week was fine, but no finer than the beginning, but certainly the weather was calmer.

Now for the failures—Non-appearance of the "heavy rains," and "frosts may occur about 12th," which was a day of change towards warmer weather, which continues until the present date. Weighing the matter impartially, it is impossible to proclaim the "hits" very startling, neither could I declare the failures remarkable. A few words more, is it not possible for all interested in Meteorology, and kindred subjects to work in harmony. Great discredit is brought on our fair science by unseemly wrangling in the public prints. Could not each transmit the other his opinions a month beforehand, and allowing for local differences, have a standard prediction signed by several well known names published in local journals. Let one and all declare against controversy, whenever possible, and all work for the advancement of science and the public good.

WALTER H. SMITH.

Montreal, Oct. 16, 1882.

The Gatineau Valley Railway.

THE GATINEAU VALLEY AND JAMES' BAY.

Concluded.

But Winnipeg exceeds the Fort only eight days. It is interesting to note that the celebrated grain district around Woodstock, Ontario, experienced a temperature lower than 32° on June 6th 1878 and June 7th 1879 or quite as late as the average date at Moose Factory. It will be noticed, too, that while owing to the neighborhood of melting ice and cold water at James' Bay, the last frost of spring is later than in Winnipeg or the Ottawa region, it is no later than in Muskoka, while the first black frost of Autumn on the cold, wet, clayey, soil of Moose Factory not till the end of September, nineteen days later than in Muskoka and eleven days later than at Winnipeg. The long frostless period at Pembroke compared with the shorter season farther south suggests that on warm soils inland from James' Bay the frost less season may be even longer than at Moose Factory.

When the lowest temperatures during the summer months are compared the result is equally favourable to James' Bay. Thus while the average lowest reached between the first of June and first of October at Moose Factory is only 29°.2, is less than three degrees below the freezing point, Beatrice, Muskoka, shows 28° in June and 26° in September. In July and August the average coldest is 40 degrees or quite as high as in many parts of Ontario, and higher than in most parts of the North-West. The absolutely lowest reached in the same months in three years was 27° at Moose Factory, while Truro, N. S., Muskoka, Prince Arthur's Landing, Port Calgary, Dunvegan, and Edmonton, all were decidedly lower. In Muskoka and at Edmonton black frost occurred in August, and at Fort Calgary every month during the season of 1880. Moose Fort had no frost any year before the middle of September. In the central countries of England last August 32°.5 was reached in districts where wheat is a staple crop, while in the north of Scotland hard frosts are sometimes known in midsummer, though oats and barley are grown extensively. The facts stated prove that for at least oats and barley the climate of even the northern part of the vast Moose River Basin is admirably suitable, and they indicate that even wheat cultivation may be found practicable on warmer soils inland.

Hot waves are as frequent and almost as intense as at Toronto. The average highest in May is 75° in July 88°, in October 74°. The average highest in Toronto in July is only 91° and in October is 68, or 5 degrees less than James' Bay. Evidently our supposed hyperboresans have occasion to know the value of ice cream.

If the cold waters of James' Bay retard the Moose Factory spring, they make compensation in autumn by protecting the coast from the cold northern blasts and by prolonging the genial fall weather. In fact the shores of the bay enjoy

A Milder Autumn than Manitoba.

or any part of the North West, excepting Fort McLeod. The first light hoar frost at Moose Factory occurs not till about the 5th of September, and the first genuine frost not till the end of the month, or quite as late as in most parts of Ontario. In October the days are genial, and occasionally decidedly warm, and the night frosts at the end of the month not so severe as at Winnipeg. The beginning of November is usually mild, but as the month wears on towards the middle, winter sets in with snows, sometimes heavy, and the thermometer dips towards zero. Before the month is over the river is generally frozen, and the winter, which is much brighter than in Toronto, fully sets in.

High temperatures in the fall months are not uncommon. The average maximum for October is higher than at Toronto, and in 1879 was actually up to 81°.8, or higher than has been known in a Toronto October in forty years.

The following table shows the mean temperature of Autumn:

	Sept	Oct	Nov
	deg	deg	deg
Moose Fort - 3 years	58.9	41.3	21.5
Winnipeg - 3 years	50.8	38.9	21.3
Battleford - 2 years	46.9	22.1	10.8
Fort McLeod - 3 years	54.6	40.9	27.2
Fort Calgary - 1880	47.2	36.1	
Fort Edmonton - 1880	43	41.3	29.5
Dunvegan	46.	39.3	19.0
Truro - 3 years	59.1	41.7	31.1
Windsor - 3 years	62.0	53.6	39.0

The figures presented furnish unequivocal testimony to the suitability of the climate of much of the James' Bay district for barley, oats, and various other staple crops.

If casual experiments at some points have failed, the cause may be found in ignorance or carelessness in conducting them. Of several hundred farmers at Edmonton, only a few took the precaution to sow their wheat early in the spring of 1881; these reaped good crops in good condition and comparatively early, although the summer was cold, wet and backward; the others; (not practical farmers) who allowed their opportunities to slip by unimproved had a late harvest and poor crops. Similar ignorance or neglect will produce similar results in all northern climates, where the season while amply repaying proper farming leaves little spare time in the warmer months to those who postpone plowing or sowing a fortnight or so later than it can first be done.

GRAIN AND ALL THE VEGETABLES GROWN.

The evidence of the agricultural capacity of the James' Bay country, derived from actual cultivation, is necessarily very meagre, but is on the whole encouraging. Wheat succeeds at Lake Temiscamingue, near the south-eastern borders. Prof. Bell, when three hundred miles north of Lake Nipissing, was surprised by finding a Scotch farmer settled there for several years, installed comfortably in the midst of a forty-acre clearing, and cultivating oats, barley,

turnips, potatoes and other vegetables to sell to Hudson Bay traders and Indians. The farmer had sowed wheat one year for an experiment, and it ripened well. As there was no mill he had not attempted wheat as a regular crop. This farm is about 100 miles from James' Bay.

Mr. George Gladman, who resided at Moose Fort for fifteen years says the climate and soil there are good; potatoes and vegetables were raised in abundance, barley ripened well, currants, gooseberries, strawberries and raspberries are plentiful, wheat had not been tried; horned cattle, horses, pigs and sheep thrive. Last century Mr. Fryat who resided at the Fort for many years stated in a book published by him, that barley, peas and beans succeeded well, "although exposed to the chilling winds which came from the ice on the bay." In another book he says:—"Oats wheat has stood the winter frosts and grown very well the summer following, and black cherries also have grown and borne fruit." Mr. Edward Thompson, for three years surgeon at Moose Fort, says he has seen fur

BETTER BARLEY AND OATS AT MOOSE RIVER

than he ever saw in the Orkneys, but the quantity sown was small. "There was ground enough broke for corn (grain), but never any encouragement given, for sowing it, but the reverse, the governor forbidding it for no other reason than that if corn (grain) had been sown a colony would soon have been erected there." Prof. Bell in the latest of his reports which has come to hand, speaks very highly of the country for grazing and dairying. Besides is cultivated grasses it produces in some parts, particularly on the south-west and western shores of the bay, near Fort Albany, 60 miles further north than Moose Factory, immense quantities of wild hay. At Moose Factory oats, barley, bean, peas, turnips, beets, carrots, cabbages, and onions are cultivated with perfect ease, while even the tropical tomato succeeds. As the soil and peculiar exposure of Moose Factory are unfavorable, the fact of this success augurs well for the future agricultural development of the more southern country inland. That all the flora is the same as that around Quebec is cited by Prof. Bell as a proof of the mildness of the climate.

Newfoundland.

Correspondence Montreal Gazette.

THE FISHERIES.

The month of September has been the finest remembered during the last twenty years. The weather was perfectly delightful, bright, sunny days, sometimes unpleasantly warm, westerly winds and very little rain or fog. Of course, such weather has been most valuable for curing fish and prosecuting the fisheries; also in ripening the crops, all of which are unusually fine. October has set in with cooler weather, but still bright and fine. Such a fine season will enable our fishermen to pursue their avocations much later than usual, and to make up for past deficiencies. Vessels arriving from Labrador do not bring good accounts; and the impression at present is that the Labrador fishery will be considerably below an average. The high price, however, will go far to cover deficiencies. The shore fishery, on the whole, may be reckoned moderately good as to quantity, while the fine weather has secured a superior cure. The price (26s 6d for the best merchantable codfish) is higher than ever before known, for a continuance. On the whole, this will be a prosperous year in Newfoundland, both as regards the working classes and the mercantile portion of the community. The importation of goods for the fall trade has been very large, and of course this will tell favorably on the revenue.

THE LADY FRANKLIN BAY EXPEDITION.

It is, of course, well known, that the Americans are following up the attempt to reach the North Pole by way of Smith's Sound. Their plan is to station a party at Lady Franklin Bay, who are to make that their base of operations, and gradually push on, year after year, towards the Pole, making depots of provisions at different points, until at length, at some favorable moment, a rush is to be made for the goal. It is a bold project, and perhaps after all, the most feasible plan yet devised for reaching the Pole. The enterprise requires that each year reinforcements and supplies should be forwarded to Lady Franklin Bay. This was done successfully, last year, by despatching the Proteus, one of our sealing steamers. This year the steamer Neptune, a fine sealing steamer, was chartered for the same purpose, and reinforcements and provisions were despatched in charge of Major Beeby. The Neptune left St. John's on the 8th of July, reached Disco on the 17th, where dog and fur clothing were procured. Steaming north till the 25th July, they met heavy ice, through which the Neptune slowly and with great difficulty wended her way, and on the 29th she reached Cape Alexander and Pandora Harbor. On the 8th August the vessel reached Victoria Head, where an impenetrable barrier of ice 12 to 15 feet thick was met, covering the whole of Smith's Sound. Here the Neptune remained till the 17th August, vainly trying to penetrate the solid wall of ice. All hope of further progress was now abandoned, and a cache of provisions for the Greely party was made at this point, so that if in need of food the party could come down the coast in search of such deposits. Another cache was made at Cape Sabine and a third at Littleton Island. At Cape Isabel a boat was left. On the 4th of September the Neptune's head was turned homeward; on the 8th, Disco was reached, on the 24th she arrived at St. John's. No fears are entertained of the Greely party suffering for want of food, as they are known to have enough for another year, and in any extremity they can fall back on the depots left by the Neptune, regarding which there was an understanding.

London Daily Telegraph.

Display of Northern Lights.

A fine, and, in some respects, a remarkable display of the Aurora Borealis was visible last night. Between half-past six and a quarter to seven, or about an hour after sunset, an arc of greyish white light was formed over the northern horizon, from the centre of which a series of bright ribbon like streamers darted southward, converging towards the zenith—the point straight overhead. These fleecy streamers were not specially brilliant nor of any great variety of color, but they were large and well marked. Toward the north-east of the sky they were somewhat dense and of a greyish hue, but on the north west horizon, tending towards that part of the heavens from which the last rays of the sun had scarcely disappeared, the aurora was of a dull red color. Both the arc and the streamers varied considerably after the first ten minutes, nearly disappearing and then bursting forth again.

More remarkable than the arc and the rays darting across the sky was a series of electric clouds, formed from ten to twenty degrees south of the celestial equator, and stretching across the heavens from east to west. That these were not vapor clouds was evident from these facts: 1st. They were self-luminous; as simple clouds they would have been invisible. 2nd. They vanished and re-appeared with the aurora, although at a short interval after it. 3rd. They were too symmetrical in form and arrangement to be mere condensations of

vapor. Each cloud was of a greyish or opal color, and egg shaped, the longer axis turned east and west; between them was a dark interval of about the length of the cloud, while the brightest and most permanent of the series were those at the eastern and western extremities. These clouds remained in sight for probably ten to fifteen minutes after the aurora had sunk to a mere effluence over the northern horizon scarcely sufficient to attract attention.

We have spoken of the bow of detached clouds as electric, because it has long been recognized by men of science that the Aurora Borealis is a phenomenon connected with electric or magnetic currents, passing through the upper regions of the atmosphere; and an appearance greatly resembling that observed last night can be produced artificially by passing electric currents through what are known as Gassiot's or Geissler's tubes, containing rarefied air or gases. Mr. Balfour Stewart has suggested that aurora arc currents, corresponding to earth currents, both being effective to changes in the magnetism of the globe. As the mariner's needle tells us the world is a huge magnet, with poles that do not quite coincide with the north and south of the earth's axis, and there is abundant evidence that its surface is from time to time swept by magnetic storms as marked as the atmospheric disturbances that produce cyclones and hurricanes.

It is confirmatory of the electrical nature of the aurora discharge that they constantly interfere with the working of the telegraph wires. During a good part of yesterday the transmission of messages was interfered with by air currents. Curiously enough, those lines appear to have been most affected which ran north and south, while east and west wires suffered little interruption. It may be mentioned as a moot point whether a strained electrical condition of the atmosphere produces perceptible effects on the nerves. There seems some reason to believe that this is the case, and that a highly susceptible nervous organisation may be considerably affected in this way.

Our Bude correspondent telegraphs that a fine display of aurora was seen there.

Cape Race, near which the steamship Herder was wrecked on Monday morning, is at the southeastern extremity of Newfoundland, latitude 46 deg. 39 min. north, longitude 53 deg. 4 min. It is a lofty and precipitous headland extending into the Atlantic from the southernmost point of the division of that island called Ferryland. It forms a prominent point for navigators in the north Atlantic, lying near the ordinary route of vessels between the eastern ports of the United States and England, and being the last point of American land sighted or passed in the eastward passage. It is a point very dangerous to ships sailing in foggy weather between the United States and Europe. On it is a revolving light 180 feet above the sea. It was established by the British government, and is sustained by a tax upon all ships sailing from or to Great Britain, to or from Canada and the Northeastern part of the United States.—Montreal Gazette.

We were recently shown a pair of woolen gaiters worn by "great-grandfather" in Montreal, between the year 1840 and '50, and at once came to the conclusion, that, if such a build was really required by foot passengers of those days, we had yet to see one of the "olden time" Canadian winters—we know nothing about a winter—absolutely nothing. And "ye rubbers!!"—but we will desist and spare the feelings of our readers. We haven't any rubbers now—they became extinct with the gaiters between the years '50 and '60.

The Weather Bulletin.

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ADVERTISING RATES.

The last two pages of this paper will be used for advertising purposes, but no cards will be permitted in the body of the text.

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Editorials.

Now stitch your papers for the year together make out a table of the contents, and note what a nice little pile of information you have at your finger ends—and all, just for ONE DOLLAR. Try another year.

We do not think of ourselves more highly than we ought to think. Our failures keep us in a healthful humility; but we do think we are some little way ahead of the *Weather Almanacs* the people have so long pinned their faith to.

We are informed that Dr. Wiggins, of Ottawa, is thinking of publishing an Almanac. He has thought of this before but as yet the thought has not borne fruit. We are anxious to see an astronomical WEATHER ALMANAC and do not think we can express any better wish than that the work may prove as great a success as has the "VENNOR ALMANAC."

Most of the journals who think it fashionable to rail at our predictions only display their utter ignorance of the subject. We are perfectly accustomed to this feature now and pay no more attention to it than we do to the buzzing of a bumble bee on the cool side of a closed window pane. Tacitus wrote a long time ago something to the following effect: "The less we know about a thing the more noise we make about it."

As we have ready our forecasts for December as well as November, we give both in this issue of the BULLETIN, which will probably be the last this year. All further details will be found in the Almanac, which must now be out in a few days. It is possible, however, that a special BULLETIN will be sent to our subscribers prior to CHRISTMAS week.

We are very sanguine as to the success of our 1882 '83 (winter) predictions.

We have no room in the BULLETIN for controversy, both our space and time are too valuable. Consequently those individuals who must ever wrangle will have to find some other conveyance for their wranglings. We do not pretend to be always right and we know we are not always wrong, therefore we shall continue to do our best with the difficult subject we have in hand. To those individuals who assert that they "can do much better themselves," we would reply once and for all—then by all means go and do so.—*Adieu*

Briefs—November.

An earthquake in Canada during November is not improbable.

Changes in November are likely to occur upon or close to same dates as in 1881.

There will be fair sleighing in November in Province of Quebec, (Canada) and New York State, if not also in adjoining States.

Bad storms in majority of sections in Canada and United States, (northern) about 25th, 26th and 27th November.

Lower Canadian winters used to commence by the 15th November.

The month will terminate severely.

The Weather Subject, Our Plan.

We do not suppose there is another topic of conversation or subject of study in which such ignorance is displayed as on the weather question. Men who never wrote before write on this; modest souls who never contradicted any person or thing in their lives—contradict this. People who have a very humble opinion of their attainments and who do not pretend to know any more than their neighbors in other matters—when the weather is referred to, become arrant boasters. In the hearing of the "oldest inhabitant" a young man must not dare venture an opinion. Hence, the abuse and ribaldry drawn forth by our attempts at forecasting the weather—but, as the old proverb puts it, "curses, like chickens come home to roost." This result, so far, has been that the laughter has turned upon those who laughed loudest, and scoffers have discovered the truth in the old saying "silence is golden." Our views and the nature of our attempts at forecasting ought to be well known by this time. As we have elsewhere stated we make no dogmatic pretensions. We give it as our opinion that such a month, winter or year, will be of such and such a character, we are sometimes wrong, sometimes right—often the latter we are happy to be able to assert as the general tenor of our extensive correspondence clearly demonstrates.

The one great point aimed at in our whole effort is to be able to anticipate the general characters of an approaching season—Fall, winter or summer as well as the year as a whole. To effect this a thorough knowledge of past weather in all of the sections for which the attempt is to be made, becomes an absolute necessity, and the task of collecting this is no light one. The present monthly review of the Signal Office, Washington, however, has of late rendered this department of our work much lighter than heretofore, and we get in a brief and clear form what the weather has been generally over the whole northern hemisphere.

Going as we do upon the undoubted truth that seasons recur again and again, in which the weather is of a very similar kind, we are bound to keep full details of what the weather has been in—not in one section alone, but in all. For example it is not enough to know what the weather was in 1880, in the St. Lawrence Valley, Canada—if we judge that the general characters of that year are likely to be repeated—but we must learn what happened at the same time in the Atlantic Central and Western United States, in our Maritime Provinces and North West Territories. In gathering this information and arranging it, we observe, when we have studied the facts before us, a feature that promises to be of some importance in meteorological enquiry and one that has not received much attention from meteorologists. It may and undoubtedly has been observed, but has been passed over as a mere coincidence, we refer to

WEATHER RELATIONSHIPS.

which we maintain are not "mere coincidences," but actual truths of weighty import. Does an observer mean to affirm there is no

thing in the fact that midsummer frosts in Canada and Northern States, are almost invariably accompanied by storms and hurricanes through many portions of the Western and South Western United States; that a wet spring or fall in Canada does not give some indications of other—perhaps diverse but contemporaneously recurring conditions in other sections; that persistently recurring dry easterly winds during the spring months in St. Lawrence Valley and Gulf, do not warn of cold, northerly winds and frosty weather late on in the season; that other like conditions have not something to do with the general character of the summer season over much of the American continent. But we have already, elsewhere dwelt upon the feature in the weather study, and will not further enlarge upon it, suffice it to say, that certain severe periods of storm do recur about the same dates at fixed intervals of time, in different portions of the continent, and that during our winter there are certain dates upon which "cold dips" and snow storms are of more probable occurrence than others. Such we endeavor to anticipate and hold forth to view in sufficient time to be of service to those concerned. In doing so we do not attempt to outdo the Signal service "Bulletins," which are of such great service to the country, but merely to put on record our opinion as to the general probabilities for a longer period in advance. Sometimes these predictions have resulted beneficially to many, and we have yet to learn of their having done harm.

Replies to Correspondents.

THE COMET'S TAIL.

A subscriber wants to know what a comet's tail consists of. So would a thousand astronomers and leading scientists of the world. No time, money or thought is wasted in finding the proper solution to the question. It is even a question, whether or not the real nucleus has ever been observed by any astronomer. From the fact that comets produce no appreciable effect on the motions of the planets, although they have passed through their systems, it is evident their density is very small. The comet of 1770 passed so near the earth that if it had the earth's density our year would have increased but two minutes less than two hours and a half, according to Laplace's calculation, but on the contrary it had not the slightest appreciable effect, therefore its mass must have been one five thousandth part of the earth or less. According to Newton the great comet of 1670 passed so near the sun as to be exposed to heat above 200 times greater than red hot iron—a temperature, that no substance we are acquainted with could resist. The spectroscope has given no decided word on this subject, but the spectra of the tails of large comets are said to resemble that of the Aurora. The connection between meteors and Bielas' comets is treated of in an interesting manner in Vennor's Almanac for 1883.

Since writing the foregoing I have taken the following from the *London Daily Telegraph* as bearing upon the *Comet's Tail*:

What is the feeling which should be uppermost with regard to this awful, but still problematical event? Ought we to be filled with mortal dread, or to rejoice at the near approach of a celestial crisis of which we may be privileged to be witnesses? Nobody can tell us with any certainty. The wisest astronomers fail to return any satisfactory answer to the query. Such a thing as a comet falling into the sun has never been known before, and the results are therefore quite unguessable. Everything depends upon the real nature and constitution of these extraordinary objects. There is no doubt that their habit is to fly