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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. 2.

MONTREAL, MARCH, 1882.

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VENNOR'S WEATHER BULLETIN

MARCH, 1882.

This little monthly is issued with a view to the revision of my predictions for the months as these approach, and for the addition of further details. It has been for some time demanded of me by the thousands now interested in the great weather subject. It is not intended to perplex the reader with a mass of figures relative to Barometric and Thermometric readings for the days, weeks or months, direction or force of the wind, snow or rain-falls, etc.—all these may be had from other sources,—but rather to present in a readable and simple form, occasionally with a diagram, what have been the more marked features of the closing month, and endeavor to sketch out the probable outline of the weather for that just entering. Thus, having to deal with but thirty or thirty-one days in advance, a closer fulfilment of these predictions may be looked for, and my system of forecasting tested from a fairer standpoint on both sides. The BULLETIN will also be used as a medium for weather correspondence, and will enable me to reply briefly to the thousands of enquiries which are daily pouring in from every quarter of the North American Continent.

In future my predictions will be confined to this monthly paper, and every endeavor will be made to ensure its regular issue on the last week of each month of the year.—Ed.

SPECIAL NOTICE.

Vennor's original and complete predictions appear only in this paper, and Editors of Newspapers and Journalists generally are requested not to quote from these too copiously.—Ed. BULLETIN.

Snow, "the beautiful," is condemned to thaw, water she is, to water she returns—only it really is a pity it is not always clean.

Climate is, in the general acceptance of the word, a settled condition; while weather is the most uncertain, the most fluctuating of our surroundings. Climate rests on certain recognized bases; weather shifts about with accidents. Climate depends on distance from the equator, on height, on the formation and exposition of the soil, on the degree of purity of the atmosphere, on proximity to or distance from the sea, in the action of man through cultivation; but weather is, to a great extent, at least, independent of all these influences.

MARCH ALMANAC.

REVISED PREDICTION.

Wednesday	1	The month may enter quietly in
Thursday	2	many sections, but will speedily
Friday	3	give place to a—
Saturday	4	} Storm period. Cold and snow
Sunday	5	
Monday	6	A generally fair and mild week
Tuesday	7	in the majority of sections, with
Wednesday	8	rains in Southern and Western,
Thursday	9	and snowfalls in northern localities
Friday	10	towards the end of the week.
Saturday	11	} Second storm period of month,
Sunday	12	
Monday	13	Mild to warm weather, with
Tuesday	14	showers. Waters opening in most
Wednesday	15	sections. Week ending in—
Thursday	16	
Friday	17	ST. PATRICK'S DAY.
		General and heavy rainfalls, and
Saturday	18	snowfalls in western sections.
Sunday	19	Heavy rains at New York and
		along Atlantic seaboard probable.
Monday	20	
Tuesday	21	A rather unsettled week in most
Wednesday	22	sections, with occasional snowfalls,
Thursday	23	and colder weather towards latter
Friday	24	end.
Saturday	25	} Generally colder and blustery
Sunday	26	
Monday	27	Fair and frosty weather along
Tuesday	28	St. Lawrence, snowfalls probable
Wednesday	29	in Lower Provinces and West.
Thursday	30	Rains at New York and Atlantic
Friday	31	seaboard, with high winds.

Two-thirds of this month are likely to prove stormy. There will probably be brief periods of unusual warmth.

H. G. V.

Dated, February 20th, 1882.

MONTREAL WINTERS.

Canada excels in her winter sports and their utility in hardening our young men—and maidens too, for that matter—and their attractiveness to strangers especially, have been frequently acknowledged, and in this latter connection we note a good suggestion made by Mr R. D. McGibbon at the dinner of the Montreal Snowshoe Club. The idea is, we believe, to arrange a grand carnival week of winter sports, in which our skating, snowshoeing, tobogganing and driving clubs should take part. Such a scheme, if carried out properly, would undoubtedly attract large numbers of American visitors, and would conduce to the profit of the city in no small degree. It is too late to carry out such an idea this winter, but it should not be lost sight of for next season.—Gazette.

[Yes! ask a crowd up here and then have "a thaw." What fun!—Ed.]

MARCH.

"March, the 'old buster,'
Comes in with a bluster."

Or goes out with a bluster, as the case may be, and not unfrequently he begins his tantrums in the closing days of February—as is likely to be the case this year. An old adage respecting this month is that "February makes a bridge and March breaks it." To this might be added, from our experience of the past: "But if February breaks the bridge (ice) March will probably make it again," or try hard to do so, and this time February has, indeed, broken "the bridge" nearly everywhere with mildness and rains. Lake Huron being open again on the 13th, and ice shaky at most points. "The people" are all talking of spring, "gentle spring" and the opening of navigation generally as we go to press with this issue of the BULLETIN; and yet they have talked, just in the same manner, many and many a time before and have been as often quite as wide of the mark as they will again be this year. But "one swallow does not make a summer," nor, we would add, does a February "break up" bring on Spring. As we look at it, "the bag" is yet pretty fat with snow storms, and we intend to shake these out and distribute them, in the following

PREDICTIONS FOR MARCH.

ENTRY OF MONTH.

The entry of a month does not necessarily imply its first nor yet second day, but rather its first week. I make this explanation because I see it is required by some of my exquisitely accurate readers and critics. The month then, this year (1882) is likely to enter with storms on both sides of the Atlantic probably about the 3rd, 4th or 5th, accompanied by heavy snowfalls. In western Ontario, Western, Northwestern and Southwestern States, the indications are that storms will rage with great severity, and that in Northwestern and Southwestern sections an intensely cold snap will be experienced. A sudden and rapid thaw is then likely to reduce all to slush and water again, and floods, as a consequence, will occur over several areas. But further details and dates will be found below among the items relative to the month. I may just add that the end of March is likely to be frosty and cold according to location, generally, bringing in a cold *chute* April in Canada, Northern, New England and Middle States.

IN DETAIL.

Snow storms and generally, stormy weather will prevail in Great Britain, as well as on this side of the Atlantic, during the first week of March.

Snow blockades likely to occur from Chicago and

Millwaukee, westward, (as in 1881,) about the 4th and 5th of March.

Storms throughout Western Ontario, likely on same dates as just mentioned.

A general thaw after the 5th of the month, in most sections, with spring like weather and waters opening.

Heavy and continuous rains in Nova Scotia, about 11th and 12th of month, and snow storms, New Brunswick.

The 14th and 15th days of March, again stormy in most sections. "Blizzards" are likely to occur at western points, and heavy snows.

Ice on Hudson river likely to break up about same date as last year, close to the 15th of month.

About the 15th, unusually heavy rains in North and South Carolina, and Georgia. Floods, probable in Georgia and Tennessee.

Heavy rains, New York, in proximity to Troy and snowfalls in western sections. Possibly blockades again on North Western and St. Paul Railroads.

A late and heavy fall of snow probable in St. Lawrence Valley about the 25th or 26th of March.

Lower temperatures are likely to take place, after the 25th of the month, from New England, westward to the Missouri Valley. Some unusually low temperatures for the month.

There is said to be but little or no snow to the westward of Kingston, Ont. So was it in 1878. But March gave it them to the extent of three feet and more, and will probably do so again.

This paper will not reach western farmers in time to warn them of the great SNOW-FALLS at the entry of March. But it will reach them prior to the "Storm Periods," of the later dates given.

There are indications of isolated areas of droughts, similar to last season, in the early part of the summer, but it is yet rather early to name these areas definitely.

Late snow-falls will be recorded at southern and south-western points.

Snowfalls and rain storms, likely to be generally experienced on closing two or three days of month. The snow-falls occurring in portions of the New England States and westward.

APRIL will come in frosty in the majority of sections of Canada and U. States.

APRIL SNOW STORMS will probably be a particularly marked feature this year, in northern, western and south western sections. Whilst the latter and more southern points will come in for tremendous rains with sudden, and in localities, severe frosts.

(For April, see next "Bulletin.")

HOW ITS

Whilst no man had the means of knowing anything about the weather, beyond his sight, or the "feeling of his own instruments," it was scarcely possible to foretell changes of importance at a distance, as well as on the spot; but now the case is exceedingly different. A daily glance at the published "Weather Reports," a recollection of their principal features during the few previous days, a look at the "glasses" at home, and an eye turned occasionally to the heavens, enables anyone, who pleases, to take trouble, to foresee and foretell accurately, after a little practice, the principal changes of our very variable, though regularly varying climate.

—MILWAUKEE.

THE WEATHER REPEATS ITSELF.

That the weather repeats itself, is now, amongst intelligent weather observers, an acknowledged fact; but comparatively few persons have any idea of the closeness of the similarity between many of these recurring periods. By long and continuous attention to this subject, I have on several occasions anticipated the approach and extent of a period of disturbance, from six to ten days in advance of either the Washington or Toronto weather departments. This has been accomplished on two different occasions during the months of January and February just passed, on both of which notice was given by telegraph to the different sections of Canada and the United States that were subsequently struck by the storms predicted. It is to this great and important point, that I am, and for some time have been closely experimenting upon. The minor and petty details connected with the movements of the weather during these periods of recurrence, about which so many quibble, such as the dates for a snow-storm, rain-fall or cold snaps, are but of comparative insignificance, when compared with the great benefits to be derived by the community from the correct forecasting of an approaching general storm period over certain named sections of country. But, as these recurring periods, as a matter of course, vary greatly in different sections, it becomes absolutely necessary that we should be in possession of

ALL THE DATA POSSIBLE,

and have this arranged and classified at one common center. On this principle, assisted by personal experience, and with some knowledge of weather relationships in general, I see no reason why we should not be able from any one central point to give accurate forecasts of the general weather conditions for the whole Northern Hemisphere, and occasionally, even be enabled to predict for Great Britain and portions of Europe. As an example of this last, I may allude to the recent prediction published relative to gales and snow-storms along the New York and Middle States' sea-board for the last week of January, in which distinct mention was also made of snow-falls in Great Britain. These actually occurred on the 28th and 29th days, and notices of the storms appeared in all of our daily newspapers.

The duration of these periods of recurrence are irregular, and herein lies a difficulty—but not an insurmountable one. I find that 7, or some multiple of this number, in most instances, is a very safe base to work upon. And, here, in connection with this numeral, I would further remark that it is surprising to note how often it has, in past cycles of time, been the "mystic number," upon which the weather changes have appeared to hang. We find closely corresponding weather periods have frequently occurred in seven, fourteen and twenty-one year divisions of time, and most of us are familiar with the every seven days storm day of our winter and summer months. Only as recently as last autumn, (1881,) the general remark was, "that every Saturday stormed," and it will be of further interest to the public to learn that these "stormy Saturdays," lasted through a period of just about seven weeks. In a future issue, we hope to illustrate this rather remarkable feature in the weather at greater length.

Ice-Bear Kroeger will not issue an almanac this year. He announces, however, that forty days from to day will see plenty of snow and cold weather. He thinks that the regular winter weather will set in this week—MILWAUKEE.

Prognosticating the Weather from the Moon's Age.

It has been very generally supposed that at the change of the moon, or at some other fixed period of the Moon's age, the weather has a tendency to undergo an alteration. This popular belief appears to have no solid foundation in truth. It seems to have originated and to have been perpetrated principally in consequence of the moon known to be the chief agent in the production of TIDES in the OCEAN; and partly perhaps to the word 'change' being applied not only to the weather, but to that period of the moon's revolution when it comes most directly between the EARTH and the SUN. Thus a change of MOON and a change of WEATHER, are phrases in equally common use. (This subject will be continued in future numbers of the BULLETIN.)

Notice to Readers.

In our next issue we commence a series of articles on "Weather Prognostications," under such headings as the following:

1. Prognostications Founded on past Experience
2. " by the Barometer.
3. " by the Hygrometer.
4. " from Appearance of Clouds
5. " from the Color of Sky.
6. " from the Winds.
7. " from the Moon's Age.
8. " from the Rainbow.
9. " on Cold or Mild Winters.
10. " by Cycles.

SPRING OF 1882.

We know men who would to-day be prepared and happy to pay \$1000, and more too, to any one who could furnish them with a to-be-depended upon forecast of the Spring approaching. Thousands of farmers likewise would give much to know just what the weather is going to be during the next two months. Hundreds of river and boatmen sit awaiting the departure of "Old Boreas" and the return of "Gentle Spring." In fact we all want to know about Spring, and who can tell us? Perhaps no one, with any degree of certainty. The close weather observer, however, can give hints that may prove useful, and may be able to paint in general colors its probable outline. Our own humble impression at present is that early and unusual warmth may be expected during portions of both March and April; but that these will be separated by returns to wintry weather. What we most fear is too premature warmth, and after relapses a start given to vegetation and crops generally, and then buds and blossoms blasted by late frosts and cold rains. Alternate waves of heat with mugginess and cold. Such is likely to be the character of, not only the spring, but likewise the summer months of 1882.

Three red-head ducks were shot last week in the St. Lawrence river, below Ogdensburg. The red-heads migrate from the Potomac to Labrador in the spring and return in the fall, stopping in the St. Lawrence both ways, but it is said to be a very unusual thing for them to remain through the winter.

SNOWFLAKES.

A hill ; a sled all painted red,
The name in yellow ;
A boy in cap and mits and wrap—
A happy fellow.

The track like ice—that's very nice ;
A scrape and rumble ;
A little swerve ; a tricky curve—
And such a tumble !

A whirl ; a stop ; the sled on top,
Snow all this hiding ;
A merry laugh ;—yet this is not half
The fun of sliding.
—(Wallace E. Mather, in February Wide-Awake.

Snow blockades New Brunswick R. Roads, 10th and 11th.

There was ten inches of snow at Concord, N. H., on the 11th February.

On the 12th of February the ice floes in the Bay at Toronto were covered with sea gulls.

Fine weather and a scarcity of snow, in the interior, is reported from British Columbia.

It is said that 1,500,000 tons of ice have already been harvested along the Hudson, N. Y.

The snow fall in Ottawa, has been so great, that in many places the drifts reached the telegraph wires.

Dense fog and almost total darkness, in London, Eng., on the 4th of February ; whilst we had cold weather in Canada.

When a dog stands in the middle of the street, and howls at the New Moon, it is a sure sign of—a want of better employment.

Let railroad men beware the first week of March, and last few days of February, in Western and extreme eastern sections.

Tremendous break in the weather, at Montreal, Ottawa and Quebec, with heavy rains on 12th and 13th of month of February.

At the south, wild geese are flying northward, which is regarded as a token of an early Spring—but they may stop half way.

Those who think or state that my predictions read better *reversely*, had better read them that way. There's no accounting for tastes.

A correspondent in the Manitoulin Island, Lake Huron, reports a mild winter up to the entry of the new year, since when it has experienced several cold snaps.

The 11th of February saw severe blockades of snow in Nova Scotia and floods in Texas, while along the St. Lawrence Valley the weather was mild and bright.

Lake Simcoe, (Ont.) ice is in great demand. The Northern and North Western Railways are transporting large quantities to towns and cities of Western Ontario.

There was an unusually severe snap at Battleford, in Oct., (1891,) since when the weather has been open and fine. Live stock grazing on the open prairie as in summer.

There were general snowfalls on the night of the 18th and all day on the 19th. Quebec boasts of 20 to 30 feet drifts of snow. Depth of snow increases as one journeys eastward from Montreal—very like the year 1878.

The local astrologer says : "I think the great storm which Mr. Vennor predicts for the 16th to the 19th inst., will prove to be a great blow, and probably will reach us between the 20th and 25th inst.,—nearly a week later than he calculates."—*Wis.*

RANGE OF TEMPERATURE IN A DECADE.

During a period of eight years, the lowest readings of corrected thermometers at the Montreal observatory were, in

1879—December 21st—25 °.2

1882—January 24th—20 °.0

and the warmest days in the same period, were—

August 6th—1876—92 °.2

July 2nd — 1878—91 °.8

July 10th — 1881—93 °.3

At Toronto, Ont., during the past ten years, the highest temperature recorded was, on July 1st, 1872, —96 °.0 ; and the lowest, January 29th, 1873—18 °.4.—*Toronto Observatory Report.*

MONTHLY STATEMENT OF TEMPERATURE IN SHADE AT OTTAWA, FOR 1881.

1881.	Maximum.	Minimum.
January.....	30 ° above zero	19 ° below zero
February	52 ° "	19 ° "
March	53 ° "	8 ° above zero
April.....	72 ° "	6 ° "
May.....	90 ° "	27 ° "
June.....	87 ° "	33 ° "
July.....	90 ° "	46 ° "
August	99 ° "	50 ° "
September....	89 ° "	41 ° "
October.....	76 ° "	23 ° "
November...	58 ° "	6 ° below zero
December....	46 ° "	3 ° "

WHAT THE PEOPLE SAY AND THEN FORGET IT.

In the December of the year 1875, the papers said "such an open season has not been experienced since the year 1837, when, &c., &c.

At the close of the year, 1877, the same papers again said, "the oldest inhabitant cannot recall to mind such another open season, unless 1837."

And again in December of the year just past, 1881, forgetting what had surprised them already twice, within but a few years, the same or similar paragraphs were repeated.

And so it has ever been, and so, probably, it will be always, until the end of time. "The people," as a general rule, forget all about the weather of the past, know very little about the weather of the present, and still less respecting that of the future.

"The heaviest snow-fall of the season, so far occurred, &c.," is another paragraph which we have often clipped from the same papers, repeatedly, during the one winter ; and "the hottest day of the season" is recorded each summer, at least a score of times.

Then, that "oldest inhabitant" business is another stale paragraph. In our wanderings through the country, we have not found one old citizen or settler out of a hundred, who had ever paid any attention to the weather, whatsoever, of by-gone years, but met with hundreds who remembered the market fluctuations of a half century, or more, ago. Occasionally, one of these "old inhabitants," could call to mind some particularly marked feature, such as, a particularly cold or stormy winter, or, hot summer, low or high state of the rivers, &c., &c., but such invariably were exceptions to the general rule.

The genuine and respected "oldest inhabitant," we have met and conversed with, but he is cautious and reserved, and is not the individual so often trotted out before the public.

The BULLETIN is fast finding out both the *old inhabitants* and the *oldest weather records* in the Dominion and the United States.

Don't waste your time asking whether "Vennor" is right or wrong, but get the MONTHLY BULLETIN and judge for yourself.

DON'T DO IT.

HOW TO KEEP WELL AND LIVE LONG BY NOT DOING THINGS.

Don't sleep in a draught.
Don't go to bed with cold feet.
Don't stand over hot-air registers.
Don't eat what you do not need just to save it.

Don't try to get cool too quickly after exercising.

Don't start the day's work without a good breakfast.

Don't sleep in a room without ventilation of some kind.

Don't stuff a cold lest you be next obliged to starve a fever.

Don't try to get along without flannel under-clothing in winter.

Don't use your voice for loud speaking or singing when hoarse.

Don't try to get along with less than eight or nine hours sleep.

Don't sleep in the same undergarment you wear during the day.

Don't toast your feet by the fire, but try light friction instead.

Don't neglect to have at least one movement of the bowels each day.

Don't try to keep up on coffee and alcohol when you ought to go to bed.

Don't drink ice-water by the glass ; take it in sips, a swallow at a time.

Don't eat snow to quench thirst, it brings on inflammation of the throat.

Don't strain your eyes by reading or working with insufficient or flickering light.

Don't use the eyes for reading or fine work in the twilight of evening or early morning.

Don't try to lengthen your days by cutting short your night's rest ; it is poor economy.

Don't wear close, heavy fur or rubber caps or hats if your hair is thin or falls out easily.

Don't eat anything between meals, excepting fruit or a glass of hot milk if you feel faint.

Don't take some other person's medicine because you are troubled somewhat as they were.

Don't take off your fur cap and overcoat just to spite "Vennor."

QUERIES AND ANSWERS.

WISE AND OTHERWISE.

"What's the surest indication of rain you know of, Mr. V.?" A spoiled silk hat, Sir, and an umbrella lost.

"Why does the mercury contract and descend in a thermometer?" Why, to get down into the *bulb*, of course.

"What do you mean by a *church steeple*?" The very opposite to a cold "dip".

"Why does it always rain or snow, just 100 days after a heavy fog?" Does it! I never counted. That must be why it rains nearly every day in London, Eng.

"Some cold mornings I can't brush my hair, and it crackles like an electric machine. What does this signify?" Not very certain, but probably your wife has had a hand in the matter.

"When ears have been frost-bitten, what is the best treatment to be adopted?" If you mean some time after, keep them well covered and apply pure olive oil frequently, until not sore to the feel. Then don't do it again, or they may drop off.

GET HIS REVENGE.—Vennor has often been laughed at because his predictions did not come true to a day in certain localities. Now, however, the greatest skeptics believe him, and if he would only "let up," on this nuisance of a thaw they would promise never to disbelieve him. On this occasion pedestrians consider that he has been too utterly too true.

A PLEA FOR NATURAL HISTORY MUSEUMS.

BY PROF. S. H. TROWBRIDGE.

To the increasing number of those who give especial attention to the study of science, the effort to impress the importance of natural history collections may seem superfluous. Not so, however, to those who teach it. And while there is a more or less vague idea in the minds of many that the study of nature has in it somewhat of interest and a little of profit, something more is needed to give its value greater prominence and make more real and tangible its interest. There are too much pleasure and profit in it to be lost for the mere lack of a little appreciation, when this can be so readily acquired. The fact that the State of Massachusetts and the friends of the Museum of Comparative Zoology have contributed over a million dollars to this means of popular instruction, that a vast amount has been devoted to the Museum of Natural History in Central Park, New York, and also to the National Museum at Washington; that museums of varying size and value are accessible to the public in all the best universities and colleges of the land; and that zoological gardens, at great expense, are founded, maintained and well patronized, in most of our large cities, shows that there is some popular appreciation of such collections. Showmen, like Barnum and others, know, from the popular interest in animals, how profitable paid exhibitions of them in museums and menageries are. And even circus managers are shrewd enough to anticipate the public taste and provide for its gratification by attaching menageries to their performances, in order to attract those who crave something more profitable and instructive than mere amusements, as well as to give moral weight to a business sadly in need of it.

The safety of our land is in the education of its people. But interest and attention must first be excited before the mind can receive and comprehend valuable information. One's interest in any object is just in proportion to what he knows of it and does for it. Ancient Rome had her baths and gymnasia for the benefit of her people, and the national games of the Greeks were instituted for a similar purpose. Heathen culture of past ages ought not to shame the intelligence of the present day. The committee appointed to establish a memorial to the late Prof. Louis Agassiz decided that "The most fitting memorial must be the completion of his life's work. The completion of the museum in accordance with his plans and its liberal endowment, would be of infinite value to the educational interests of the whole country." Dr. Newberry, State Geologist of Ohio and Professor in Columbia College, New York, says in regard to natural history collections: "To the public at large they arrest attention and excite interest, the first step toward scientific education in the individual or community." The late Joseph Henry, of the Smithsonian Institution, also says: "They are well calculated to arrest attention and give definite impressions." Dr. Winchell, of Michigan University, says: "A donation of natural history specimens is a monument not only *aere perennius* but *aere utilius*. Would that our people might learn, like the Germans, to place less faith in brick and mortar, and more in books and the materials of science." Seeing a thing impresses the mind more forcibly than reading or hearing about it.

Ward's gigantic restored mammoth, as large as a house of moderate size, and his casts of monstrous animals of ages past, are grand educators because they call attention to natural objects and excite a desire to know their history. None can look upon them without astonishment and increased mental activity. Less striking specimens are, in their degree,

equally potent in the same direction. A complete series of natural history specimens gives an ordinarily thoughtful spectator, or even a casual observer, many ideas in regard to the classification and relations or affinities of past and present organisms, their geographical distribution and grouping in different localities, and many other facts which can hardly be obtained in any other way. In short, it gives ample illustration of all that science has thus far deciphered of the plan of creation. The Agassiz memorial committee say: "The Museum he labored for is a presentation of the animal kingdom—fossil and living—arranged so as to picture the creative thought. The study of such a subject is the highest to which the human mind can aspire." A good museum should show, first, as full a representation as practicable of all the quadrupeds, birds, fishes, insects, plants and fossils which together constitute the complete fauna and flora of the vicinity in which it stands, and then, as soon as possible, of the whole territory represented by its friends and patrons. Its collections in botany should illustrate every obtainable peculiarity of vegetable structure, in wood, bark, root, leaf, flower and fruit. In the line of zoology there should be a full showing of the whole animal kingdom. In agricultural sections especial attention should be given to entomology, than which nothing can be of more interest to grain, fruit and vegetable cultivators, who lose millions of dollars annually by the ravages of insects. The cabinet should associate with the various noxious and beneficial insects, in their several stages, the food on which they live, their parasites and victims, so as to present to the eye an instructive history of each, such as every farmer's son to say the least, should be familiar with. The mineral and fossil collections should show the characteristics of every group of rocks in that section of the country, so one could hardly fail to see the plan in the order of creation, could see where coal may or may not be found, and also determine the probable presence or absence of iron, lead, zinc, baryta, ochres, clays, etc. A complete museum would also show the plants, animals, fruits, and other products from every quarter of the globe, so one in reading about different countries, or who has a special interest in some one, can see what organisms belong there and can get a good idea of the country without going to see it.

The wanton destruction or waste of valuable scientific material is a matter for very serious consideration. This unintentional, though not less impoverishing vandalism, is lamentably frequent and prevailing. Skeletons, pottery, stone and flint implements, and other remains of our prehistoric inhabitants are frequently plowed up in the fields. They attract a moment's notice, perhaps, are picked up then laid away and forgotten, or more frequently are crushed and scattered by the plow till they are rendered utterly worthless. Mastodon and other remains often share the same fate. It is exceedingly trying to the sensibilities of a lover of nature to see the almost criminal carelessness of the unappreciating possessors of these instructive objects. Sometimes they are held, from some indefinable fancy, with a tenacity which might argue a love of nature, and yet the way the precious things are abused and ruined dispels at once this charitable delusion, and is often enough to stir up the righteous indignation of a saint. May not the lover of science under these circumstances obey the command of Scripture, "be ye angry and sin not." Among several somewhat similar experiences, the writer distinctly remembers one in which a student solicited a valuable specimen for him as a curator of a growing museum, and was indignantly refused with the statement that the owner thought more of the specimen than of the curator. Yet its beautiful angles and faces were destroyed and the

whole ruined by the nocks and kicks it received by being tumbled about in a dingy out-building. In nearly every home, or about it, objects of scientific value are to be found lying about where they are liable to be injured and lost. They are doing nobody any good, yet they could readily command valuable returns to those possessing them, and at the same time would contribute very greatly to the interest of people in science and, hence, to its rapid advancement. These are held as curiosities or given to children for their amusement; and whether held by young or old, if they elicit no thought or study, and create no knowledge or inquiry concerning their history, they are merely children's toys, affording no profit—simply idle amusement. A child can be amused with either a watch or a jumping-jack to play with, but the latter is more economical and equally effectual. These valuable historic objects, as mere curiosities, in the hands of old or young, are virtually watches for children's playthings, instead of jumping-jacks. It may be of interest to such delighted owners to know that all scientific material has a certain money value—"a value which," says a dealer in this material, "can be as surely and as speedily realized as that of any description of property." Holders of such specimens can also exchange them, with any well-stocked museum, to mutual advantage, for others not so easily obtained in their vicinity and thus, in time, form a collection, while not less amusing and attractive, much more varied and instructive. Material thus received can easily be accompanied with instructive facts concerning its position, relations, habits, etc., which will be doubly valuable because they stimulate thought as well as furnish pastime and amusement.

National and State governments make laws to protect fish, birds, etc., at certain seasons of the year for a greater public benefit at other seasons. They should also provide some way of preventing the destruction and misapplication of archaeological and other scientific material, so it may be legitimately employed for the advancement of science and for the increase of popular intelligence. The Danish government requires that scientific collections made on its territory shall be deposited in the national museums. A scientific commission in England is intended to accomplish a similar end there, and such a commission or department in our government is a consummation devoutly to be wished, and one which the growing intelligence of our people will doubtless, at no far distant day, demand and then supply. May friends of science and of national progress speed the day.

Museums are also of great advantage for encouraging and fostering original investigation. As the question of evolution or of creation is racking the whole scientific and religious world, and is so largely to be settled by having an unbroken series of all life in chronological order for examination, the vast importance of extensive collections of fossils can hardly be overestimated. A writer in the *Advance*, some time ago, said: "The science of geology, dealing as it does with the only visible record of any considerable age, in regard to the history of life upon our planet, must settle the vexed questions—if they are ever to be settled—of the origin of species, the antiquity and perhaps the unity of man. To many, the acceptance of the new theories on these points is equivalent to legislating God out of the universe. If so many are wrecked upon these questions, the correct understanding of them is a matter of no little importance." Mr. Agassiz has said: "The question of the geographical distribution of animals lies at the very bottom of the question as to their origin." This must be shown by complete faunal collections from all localities, which can be seen only in large museums. Museums are valuable, too, for studying the life history of various animals,

when a large series of allied forms, showing the variations of life, habit and characters, are accessible for comparative study. Here the investigation often learns that forms which were supposed, from their lack of resemblance, to represent different species, are connected by a regular gradation of similar forms and are really the same. A large series is often necessary to enable the investigator, who is studying new or rare forms of which perfect specimens are seldom seen, to determine the species, relation of parts, size, shape, etc., of the complete animal. One fragment will supplement another, throwing new light in various ways, and thus furnish material for the restoration of the complete animal.

Questions of practical importance are continually arising in regard to one or another of nature's products which for lack of sufficient data at home, have to be sent at considerable expense of time and money, to distant museums for investigation. Because of this necessity many facts of vast financial importance are never gained. Men will not take the trouble to send to a distance for knowledge whose value is not adequately comprehended on account of its very distance. Dr. Dana, of St. Paul, says: "It is utterly chimerical to think that Western men can look to Eastern institutions for higher education. The latter is the vital function of every commonwealth, and can no more be transferred than its political responsibilities. For the West to rely upon the East for liberal education, would put her, according to Dr. Post, 'in the attitude of France in relation to Paris; of vast and inert provinces feebly feeling the pulse of the distant and intellectual capital.'" So far as possible, each State should have so complete a museum that no student of nature would be compelled, for anything but the most exhaustive study of unique specimens, to seek facilities for study in a distant college or museum, but could find at home collections which would attract students of science, practical scientists, and unscientific men needing scientific information, from every quarter. A collection of specimens from Kansas was recently taken to Agassiz's museum, in Cambridge, Mass., to be identified and classified, for want of facilities at home. To the same place also were shipped, for a similar purpose, materials by the ton from the Kentucky Geological survey. Material of like character and amount is stored within the limits of Missouri, with little knowledge of its value, from lack of facilities for determining it here. Other material from this State is now in the Archaeological Department of the Smithsonian Institution, by request of authorities there, because of the peculiar richness and value of the objects which this State affords. And this is by no means the first time that scientific material from Missouri has been solicited for study in Washington, Boston and other favored cities of the East. Not, unfortunately, vast supplies of all such material throughout the State are allowed to "lie here ungathered and waste upon the plains." Much of this material is new to science, and is rich in suggestive questions that have never been answered, but which might and should be solved by her own citizens and upon her own soil.

Again, museums are of vast importance in giving us increased knowledge of God and his works, as does the Bible. Nature, not less than scripture, is a revelation from God. Each was designed to supplement and complement the other. Neither can be understood in all its fullness without illumination from the other. Mr. Agassiz has said: "Collections of natural history present the plan and mind of God in creation." "If I mistake not, the great object of our museums should be to exhibit the whole animal kingdom as a manifestation of the Supreme Intellect. The time is passed when men expressed their deepest convictions by wonderful and beautiful religious edifices; but it is

my hope to see, with the progress of intellectual culture, a structure arise among us which may be a temple of the revelations written in the material universe. If this be so, our buildings for such an object can never be too comprehensive, for they are to embrace the infinite work of Infinite Wisdom. They can never be too costly, so far as cost secures permanence and solidity, for they are to contain the most instructive documents of Omnipotence." The late Prof. Orton says: "A cabinet unfolds the great idea of God as it marched on to realization. To the theologian, philosopher and student, it is a vast repository of thoughts and suggestions to which the Astor Library is no thing." In a notice of the Ward Cabinets, we read: "No one can enter this truly cosmological museum without believing that he has before him, in one volume, God's narrative of creation. For he who classifies the results of those six days of labor by the erection of a complete repository of natural objects in natural order, is a translator of the Creator's thoughts." A well selected and arranged museum presents to the eye, in physical form and in minutest detail, the panoramic view of creation which Moses expressed in words. In one of his talks to his students, at Penikese, Mr. Agassiz said: "The study of nature is direct intercourse with the Highest Mind. It is unworthy an intellect being to trifle with the works of the Creator. A laboratory of natural history is a sanctuary, in which nothing improper should be exhibited. I would tolerate improprieties in a church sooner than in a scientific laboratory."

Since nature is another revelation from God, why should not facilities for studying her in good museums be as worthy an object of Christian liberality and the use of consecrated funds as the erection of churches and the distribution of Bibles? Christ commonly impressed his truths by illustrations from some phenomena of nature. And religious teachers would do well to pattern after their exalted Model and know better for increased power in their work. The time is doubtless not far distant when theological seminaries, as well as colleges and universities, will be required, by the demands of the times, to have collections specially adapted to teach the order of creation and to illustrate the vast number of scientific allusions in the Bible, and also to have competent professors who are especially qualified to bring out in full relief the scientific phases of Bible truths and the Scripture phases of scientific truths.

In a Missouri publication, it is not inappropriate that this article should have somewhat of local application. The State of Missouri, the geographical centre of the Union, than which no State has been endowed by nature with vaster and more varied stores of animal, vegetable and mineral wealth; with fertile fields of science ripe for the harvest in all the adjoining States, with ready access to the Rocky Mountains regions containing the richest stores of scientific material in the world, to the Mexican Gulf rich in recent animal life, and to Texas equally rich in remains of ancient life; and midway between the two great oceans that wash our shores, is peculiarly favorable for the seat of a large museum. There is no apparent good reason why in Missouri may not be accumulated collections, in all lines of popular, practical, and scientific interest, which shall afford every desirable facility for improvement, instruction and original research, be a credit to friends and a source of profit to our citizens, an honor to the State, and a valuable contribution to the advancement of science everywhere.

That the formation of such collections, both living, in zoological and botanical gardens, and dry, in cabinets and cases, is practicable is capable of easy demonstration. As has already been intimated, this State abounds in specimens which are prized and solicited by cura-

tors of museums, collectors, and students in all parts of the United States. Many private collections of great value have been accumulated here, almost entirely by the efforts of the individual owners, with but little expense and less outside assistance. The richest of these have been in the line of Indian relics, in which this state is remarkably rich, yet its wealth has been but very imperfectly explored; also of fossils, minerals and plants. Unfortunately for the credit and welfare of our state, some of the most valuable collections found here have gone to enrich eastern museums on both sides of the Atlantic. They should have been kept here and could have been, had they been properly appreciated. With a full supply of home material, and sufficient assistance in preparing it for scientific use, duplicates can easily be exchanged for valuable material in abundance from other collections from distant localities representing forms which are not to be found here. Untilled applications for specimens from this locality, with tempting offers in exchange, are constantly in possession of both professional and amateur collectors here. Systematic collections and cabinets, labeled and arranged with care, are always to be purchased for a reasonable sum. These range in price from that of Ward's magnificent collection of casts, representing most of the extinct animals and plants that have inhabited the earth, costing thousands of dollars, to choice cabinets of birds at a cost of fifty to three hundred dollars, even to fine suites of shells, minerals, plants, etc., for a dollar or more. Expeditions can also be fitted out at a moderate expense which will rapidly increase the material needed.

Friends of such a museum and of science can readily be induced to present collections of large or small amount, obtained by purchase or otherwise. This will vastly augment the pleasure and profit they derive from the museum, and their pride and interest in it, as facilities for contributing to the pleasure and profit of the community at large. It is interesting to see how contagious is the spirit and practice of contributing to a good cause. One can easily provoke others to good works. And the possession of a considerable nucleus is almost sure to attract donations in greater number, illustrating the doctrine of Scripture—and of human nature as well—that "to him that hath shall be given," and demonstrating the trite maxim that "nothing succeeds like success."—*Kansas Review*.

LONDON TIMES ON WEATHER FORECASTS.

The weather is by no means a subject which should be regarded merely as a matter of conversation for the multitudes of people who find it difficult to talk about anything else. The subject, in reality, one of great national importance, of far more importance than many others which occupy the time and the thoughts of the public: and it is only neglected on account of the obscurity behind which the causes of weather changes have been hitherto concealed, and of the consequent apparent futility of discussing them. If any scientific investigation could bring the subject of weather changes within the region of actual knowledge, so that reasonable forecast might be made concerning them, it would at once become manifest that scarcely any other subject could vie with them in universality of interest. The power of foreseeing the weather of the next few days would do much, the power of foreseeing the weather of the next season would do almost everything, to take away from agriculture the uncertainty which is now its greatest hindrance, and a bad harvest season would then no longer, as at present, entail upon the nation a loss which must be estimated by millions.

CORRESPONDENCE.

HENRY G. VENNOR:

DEAR SIR,—I got hold of one of your almanacs last night, and in reading, some ideas about seasons or "recurring periods" within my own experience came up, and I concluded to communicate them to you. My theory is that one year in seven, we have a dry season; from the dry year, we run up to the third or fourth year, which are excessively wet; then, down again three and a half years to drought again. My reasons for the theory is based on the following facts, viz: In 1854, there was a drouth of great severity in the Northern States, forest fires in Ohio and Pennsylvania and other States, creeks dried up, &c. Seven years afterwards, in 1860-61, it was very dry in some States, and that was the period of drouth in Kansas, where car loads of provisions were sent to the sufferers from the drouth. They also had grasshoppers that year in Kansas. Starved out in the mountains from short picking, they emigrated east on the plains of Kansas.

I emigrated to Kansas in 1867, seven years after the drouth of 1860-61. The year was very dry, no corn was raised, scarcely any rain from April 1867 to April 1868. Another grasshopper raid. In April, 1868, I dug post holes on my farms, in the S. E. corner of Kansas, 18 inches deep, and there were cracks in the ground, an inch wide.

In 1874 I was still in Kansas, when we had just such a drouth as in 1867-68, together with grasshoppers. Here were four periods, seven years apart—1854, 1860-61, 1867-68, 1874, with drouth. On that theory, I told some of my neighbors, in Kansas, and also in Ohio, that 1881 would be a dry year; which has been verified. On the same theory, I predict a drouth in 1888.

These dry years are followed by wet seasons. For instance, 1867 was very dry in Kansas, while 1869 was excessively wet.

These observations are within my own experience, and I give them to you, for what they are worth. What do you think of them?

Yours, Respectfully, E. K. M.

I think you are perfectly correct.—Ed.

SIGNAL SERVICE REPORTS.

SIR,—I received your Almanac of last year, but not until late in the season. I am much interested in your weather predictions, and agree with you in some descriptions of your methods. The U. S. Signal Service predictions are, as at present managed unusually unreliable. It is impossible they should be otherwise if the system I have had described to me is followed out, and I find their predictions for the "Lake Region" more applicable to this city, than the "Middle States," in which we are situated. It is, however, excepting in a general way, useless for them to predict for such large districts, as it very often rains or storms in New York City on the sea coast, when it is perfectly fine here—144 miles distant. The sun shines here many days when it is cloudy there.

Albany is out of the track of general storms. We have in summer severe local storms, sometimes, but not very often. I have amused myself with weather predictions and often succeed, in this locality. The United States Signal Service reports, by the time they are published in our papers, are practically 12 hours old, and useless generally for localities.

Yours truly, R. L. B.

Albany, N. Y., February 5th, 1882.

The following letter is addressed to me as an "Astrologer," but as I do not claim to be of this family, I publish it for the benefit of whom it may concern. Besides, I have no money to spare at present.

MR. VENNOR, Astrologer.

Having been a long time troubled with the gross absurdities of the age, theologians predicting the speedy dissolution of this globe; and astronomer, theorizing upon one planet swallowing up another in order to keep itself alive, so that in the course of ages, nought but one planet would remain, and that one would of itself die out in the course of time, of the want of other planets to feed on. Geologists trying to find out the age of this globe, have spent millions of pounds in digging holes on the surface of the globe, trying to find out its age; each having published books purchased by the public at the cost of many millions of pounds more; each twitting the other for the want of knowledge, yet all leaving us destitute of a system, whereby we could test them in order to prove, whether either one of them has really any sound knowledge or no—which always vexed me. So I conceived the idea of trying to find out, what might probably be the length of one day, in the work of creation, by finding the Perihelion of the four great planets of our polar system, including the sun and the moon—at the least. In such finding, I find they are all as destitute of anything like the true knowledge, as the ancients of old they so often ridicule. This system is so simple that any school boy, understanding the use of figures, can with care, work out the problems, and can thereby test the mouth-givings of any man on that subject.

Now, sir, I have wrote to the publishers of Zadkiel Almanac, England, and to some in the States. I have it in contemplation to write to France, Germany, &c., to offer this secret for sale. I most respectfully make you an offer, the first offer I got will be received, that will give me three thousand dollars. It will throw great light on the first chapter of Genesis. There is money to be made in the publishing of that work; it will not be very voluminous, and you can charge a good price for it, and get it. Of course, I do not expect to get the money until I have done my work. I want the money placed in a bank of this town, Truro, in charge of two respectable citizens, so that I can get my money, when I have done my work; for I have no intention of showing any body anything in regard to it. It has cost me some years of hard labor to find it out.

Please answer this, whether you purchase or no.

I am yours very truly, J. W.

Truro, Dec. 28th, 1881, Colchester County.

FROM AN "OLD INHABITANT."

SIR, It is very gratifying to me to see that the weather subject has of late years received the attention of a large number of close observers, than it did in Canada when I began my records. So that I can step off the stage, without any apprehension of its abandonment. I shall look forward to the advent of your MONTHLY, with much interest.

Truly yours, W.

Toronto, Feb'y, 11th.

A LETTER TO THE POINT.

SIR,—I have made a square \$150 by watching and following your predictions. You may send me the paper for a year.

Yours truly, D. W.

Marysville, Ohio.

PRICE CYCLES.

CHICAGO.

Prices of different commodities move up and down in well defined cycles. I believe there are cycles in every staple commercial article and in financial securities.

Real Estate has its regular years of advancing and declining prices. Its cycles are slower than those of other articles, and extend over a period of about 18 years, from one high price to the next. It is now on the up grade, and will continue so until about 1891 before it reaches a culminating point. During the succeeding 8 or 9 years, prices will advance, speculation will be active, and everybody happy.

Iron also advances and declines in well-defined periods, and has recently turned its up cycle of prosperity. It will be unremunerative to handle or manufacture until 1887 or 1888, when it will again start up and advance to about 1891. Pig Iron ranges from \$18 to \$50 per ton.

Corn, Hogs and Hog products, have their cycles in prices. In December, 1878, Pork sold at \$6.00 per bbl., in the Chicago market. For about three years prices have irregularly advanced, until March, 1881, when it sold at \$19.00 per bbl.

General mercantile business, appears to be in hand with Iron, and works in its channels. The years in which the Iron Industry is good, and prices advancing, general business will be prosperous, and on the ascending scale.

As I am a Chicago Commission Merchant, dealing in Grain and Produce, I have paid most attention to Grain, Provision and Real Estate cycles, and after several years of steady application of this theory to my own affairs, which has proved highly satisfactory, I am well satisfied I am working on the right track.

I should be pleased to hear from any, who are interested in the matter, or can throw any light on the subject.

G. W. R.

BULLETIN.

THE WEATHER TO BE DANGEROUS FOR CROPS

ABOUT MARCH 1ST.

Editors Express:

SAN ANTONIA, February 16, 1882.

Prof. Vennor sends me the latest information as to the probable weather, which for the benefit of Texas you should publish. It is very possible that the extremely cold weather, which he foresees for the northern latitudes, may not strike Texas. But in the forward condition of everything vegetable, a cold spell of one or two days would bring serious disaster. Precautions now might bring very valuable results. And especially in regard to fruits, of which nearly every kind is fast progressing to bud and bloom. To set these back a few days without injury, would, perhaps, save the crop. And digging around the roots and mulching them would probably produce that effect.

The vegetable gardeners would act wisely by looking after their hot or cold beds, and be prepared to cover them completely from frost, and especially to postpone plauting out for a few days anything which frost would injure. The securing of newspapers, and old cloths to cover over many kinds of vegetables would much more than repay the trouble if this frost comes. If intense cold is to prevail in Chicago or St. Louis, it is scarcely probable that the greater portion of Texas will escape the blighting effects from a norther. Prof. Vennor says of February:

"Copious rains and floods in the United States. Some heavy storms in the western and northwestern states. One decidedly cold 'dip.'

A windy and stormy ending of the month nearly everywhere, with a return to winter in March.

So far, the reports from the whole United States show a terribly disastrous fall of rain and consequent deluges and overflows. The Mississippi is devastating vast territories, and the water is higher than it has been since 1862. Just as in Texas the continuous rains for 35 to 45 days are rendering impossible any preparations for the crops, or are seriously injuring everything that was planted previous to January 1st. Mr. Vennor thinks there will be in the more northern latitudes on the 17th and 18th general snow falls.

The 19th will probably usher in a terrible week of rain storms (snow in some quarters) and floods, with days of very high winds and gales. These will be more marked in western and southern sections of country, and will terminate in generally colder weather and heavy snowfalls towards 25th and 26th days and entry of March. "Old Boreas" will assert his reign with and through gales the fore part of March.

Prof. Vennor has commenced the publication of a "Weather Bulletin" at Montreal, giving in advance a forecast of each month in full detail. The subscription is \$1 a year. Thousands of farmers might save thousands each day by having the information as to change of weather.

COL. B. DUNOAN.

Umbrellas Seventy Years Ago.

A large umbrella was usually kept hanging in the hall at good houses, to keep visitors dry as they passed to or from their carriages. Coffee house keepers provided in this way for their frequenters; but men disdained to carry such a convenience through the streets. It was held effeminate, indeed, to shirk a wetting. "Take that thing away," said Lord Cornwallis to the servant about to hold the house umbrella over him. "I am not sugar or salt in a shower." The marquis would have enjoyed the scene at Metz review, when an officer, offering his umbrella to his unprotected emperor, Joseph II., exclaimed, "I heed not a shower, it hurts nothing of a man but his clothes." Whereupon ensued a closing movement all round. There certainly is something unsoldierly about our subject, and it is hard to imagine the Guards under fire and umbrella at the same time. Such a thing, however, was seen once. During the action at the Mayor's House, near Bayonne, in 1813, Grenadiers, under Col. Tynling, occupied an unfinished redoubt near the high road. Wellington happening to ride that way, beheld the officers of the household regiment protecting themselves from the pelting rain with their umbrellas. This was too much for the great chief's equanimity, and he sent off Lord A. Hill instanter, with the message, "Lord Wellington does not approve of the use of umbrellas under fire, and cannot allow the gentlemen's sons to make themselves ridiculous in the eyes of the army." He afterward gave the colonel a good wiggling himself, telling him, "The Guards may carry umbrellas when on duty at St. James', but in the field it is not only ridiculous, but unmilitary." Sainte-Beuve saw nothing ridiculous in standing fire under an umbrella. When he appeared as a duellist for the first and last time in his life, the critic took his place, armed with an ancient flintlock and umbrella. His adversary protested against the gingham, the seconds remonstrated, but in vain. Sainte-Beuve declared he had no objection to being shot, but preferred to die a dry death, so the duel proceeded, until each combatant had fired four times without effect, Sainte-Beuve keeping his umbrella hoisted to the end. Wolf, no feather-bed soldier, did not think there was any unmanliness in keeping one's coat dry. Writing home from France, in 1752, he expressed his surprise that the Parisian fashion of using umbrellas in sunshine, and something of the same kind in wet weather, had not been adopted in England.—[All the Year Round.

The BEAR looked out on *Candlemas* day, and after a solemn shake of his head and deep sigh, returned to his repose, until the storm of March shall have blown over.

COME AND SEE US.

Montreal may truly be said to be in the full height of her Winter glory! There is ample snow in the streets and suburbs to allow of pleasant and rapid sleighing, without the heavy blockade of that element which so afflicts Halifax, Quebec and New Brunswick, as well as even United States cities, south of Canada. Snow-shoe clubs and Tobogganing parties meet for daily and nightly recreation, whilst nearly a dozen public and private skating rinks are crowded by energetic participants in that invigorating enjoyment, many of whom, as at last night's carnival, at the Victoria Rink, don the masquerader's costume and depict the quaint attitudes of old time fashions, or the gaudy trappings of oriental and Indians! Our citizens have done full justice to the opportunities for enjoyment and display which the pleasant weather of the past week has so largely afforded them. Bright sun-bine and bracing atmosphere have filled our streets with handsome equippages, well got up, with gorgeous robes and fast horses. Pedestrians are numerous, and our well filled stores appear cheerful and full of business—the attractive stocks of valentines, with devices too numerous to name, drawing the admiration of the youthful disseminators of these innocent mediums of fun and flirtation! Montreal too has other attractions which may well induce visitors from a distance to come amongst us and enjoy our winter attractions. There are now hotels for their reception which compare well with the "Palaces" of Chicago and San Francisco. Military, national and political dancing assemblies are of weekly occurrence, as well as private reunions of a similar character. There are numerous points of interest in and around the city—the elevated Mountain park with extensive views of the surrounding country; the Lachine Rapids, rendered grander by Winter's icy fringes. There are the tastefully arranged treasures of our Art Association Rooms to survey and admire; the excellence of the many vocal and instrumental concerts, the interesting lectures, the Young Men's Association meetings and lectures, and on Sundays the many places of worship for all denominations, where Divine service is conducted with all solemnity, aided by suitable music and adorned by winning pulpit eloquence. The name of Winter may sound dreary, but it is only in name that it really is so; for with our exhilarating atmosphere and our many appliances to make the season agreeable and pleasant, there is everything here to promote both health and enjoyment. Our favored city affords all sorts of opportunities to our own people and inducements to strangers to share in those many pleasures and innocent amusements which are so easily obtainable within its limits and in its neighbourhood, whereby the otherwise dreaded time of storm and rigorous weather can be employed with both delight and profit whilst health and vigour are eminently promoted.—*Montreal Star.*

A POSTSCRIPT TO MOTHER SHIPTON'S PROPHECY.

In eighteen hundred and eighty-one
A plague of "Art" on the world shall come;
The air of a great western nation
Shall reek with over-decoration.
An imitation "Renaissance,"
When pasteboard plaque and plated scone,
When clothes-horse screens and drain pipe vases
Shall vaunt their horrors in high places,
And flimsy satins and cheap plushes
Fall victims to the "artist's brushes."
"Genius" shall be a common trait,
Proved by a painted wooden plate—
Or sprawling sunflowers on a curtain,
Or tottering storks with legs uncertain,
Or gaudy bands of ticking stripes,
Or gilt horse-shoes and penny pipes.
Then in shop windows you may read—
"Who buys a paper of turnip seed
Receives a 'circular, silk, fur-lined,
High-toned, aesthetic and refined."
Or, "With every pound of sausage sold,
Walt Whitman's poems in black and gold."
The plague shall be heavy on the land,
Many shall fall and few shall stand.
But those who live shall say when it passes,
"How in the world could we all be such asses?"
Waterbury American.

SOME PREVIOUS COLD WAVES.

The following are quotations from an old weather record of the Island of Montreal:—

1857, January 18th.....	31 below zero.
" " 23rd.....	20 " "
" " 24th.....	23 " "
February 12th.....	20 " "
1859, January 9th.....	32 " "
" " 10th.....	43 " "
" " 11th.....	37 " "
" " 12th.....	13 " "
February 13th.....	23 " "
1861, January 12th.....	31 " "
" February 9th.....	21 " "

It will be noticed that on nearly all of these dates the temperature was lower than it ever was during the cold wave just past, in which the lowest registration of the thermometer was 26 degrees below zero.

STORMS ON THE 17th OR 18th.

Under date of Montreal, February 9th, Henry G. Vennor, the weather prophet, writes as follows: "Railroad men and others whom it may concern, had better take precautions against a portion of the February (5th and 6th) 'storm period' about the 17th, 18th and 19th of the present month. There are likely to be general 'blizzards' in the north-west and western states, with very heavy snowfalls in many sections. The closing week of the month is also likely to give a continuation of the same. I would ask you to refer to the probable recurrence of the storm periods, as my bulletin is not likely to reach all sections of the country in time to be of service to the people."—*Evening Wisconsin, Milwaukee, Wis.*

THE EARTH DRYING UP.

There is abundant evidence that the amount of water on the surface of the earth has been steadily diminishing for many thousands of years. No one doubts that there was a time when the Caspian Sea communicated with the Black Sea, and when the Mediterranean covered the greater part of the Desert of Sahara. In fact, geologists tell us that at one period the whole of the earth was covered by water, and the fact that continents of dry land now exist is proof that there is less water on our globe now than there was in its infancy. This diminution of our supply of water is going on at the present day at a rate so rapid as to be clearly appreciable. The rivers and smaller streams of our Atlantic States are visibly smaller than they were twenty-five years ago. Country brooks in which men now living were accustomed to fish and bathe in their boyhood have in many cases totally disappeared, not through an act of man, but solely in consequence of the failure of the springs and rains which once fed them. The level of the great lakes is falling year by year. There are many piers on the shores of lake-side cities which vessels once approached with ease, but which now hardly reach to the edge of the water. Harbors are everywhere growing shallower. This is not due to the gradual deposit of earth brought down by rivers or of refuse from city sewers. The harbor of Toronto has grown shallow in spite of the fact that it has been dredged out so that the bottom rock has been reached, and all the dredging which can be done to the harbor of New York will not permanently deepen it. The growing shallowness of the Hudson is more evident above Albany than it is in the tide-water region, and, like the outlet of Lake Champlain, which was once navigable by Indian canoes at all seasons, the upper Hudson is now almost bare of water in many places during the summer. In all parts of the world there is the same steady decrease of water in rivers and lakes, and the rainfall in Europe, where scientific observations are made, is manifestly less than it was at a period within man's memory.

What is becoming of our water? Obviously it is not disappearing through evaporation, for in that case rains would give back whatever water the atmosphere might absorb. We must accept the theory that, like the water of the moon, our water is sinking into the earth's interior.—*From the New York World.*

THE WEATHER BULLETIN,

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HENRY G. VENNOR, F. G. S

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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.

EDITOR'S DRAWER.

Thanks for kind notices of the BULLETIN by the PRESS generally.

A great number of correspondents forget all about the Stamp necessary for a reply.

A specimen copy of the BULLETIN will be sent on application *once*, for a THREE CENT STAMP.

Give address in full, please, naming State, County, Province and POST OFFICE and "all will be well."

Only brief correspondence can be inserted, but all letters are welcome and will receive personal attention.

We wish much to hear from practical farmers, relative to the weather, in every section of country, and during all seasons.

The next number of THE BULLETIN will contain a diagram or plan showing how the weather may be mapped by any person with but little trouble and accuracy.

The Sparrow question cannot be permitted to enter our limited columns. Larger papers have already been nearly swamped by it. The bird is undoubtedly becoming a nuisance.

The Editor of the BULLETIN is now prepared to prove, by extracts from the daily newspapers of all sections of the country, that the predictions published for the year 1881, were verified to the extent of a little over seventy-five per cent.

Our February Prediction in last issue of the BULLETIN was, generally, a happy one, but as the news papers of the day have already given full credit for the same, we refrain from inflicting upon our readers the usual "I told you so" — May the present number prove as correct in its "stormy" forecast.

The Editor of the BULLETIN, will only hold himself responsible for the predictions therein contained. These will always be first published through this medium, and though as a matter of course, the newspapers and journals of the day will copy copiously, parties interested will find it to their advantage to glean their information from the true source.

We must state positively, that the price of the BULLETIN, will not be lowered. We have increased its size, illustrating it with charts and diagrams of weather. To those persons who are really interested in the subject, and who desire a reliable and first-class paper, ten cents a month is but a trifle; and as we see clearly, that this class is a numerous one, we feel confident of a large circulation and hearty support.

While the weather was brilliant, mild and balmy at Ottawa, Montreal and Quebec, during the 9th and 10th of February, upon these dates there were heavy rains along the Hudson River, between Albany and Poughkeepsie, N. Y., and blockades of snow in Halifax, N. S., and in New Brunswick.

FEBRUARY ITEMS.

Floods in Louisiana February 4th.

COLD DIP.

19° below zero, Ottawa, February 4th.
8° " " Montreal "
17° " " Quebec "
14° " " Farther Point "
14° " " Winnipeg "

Heavy snow storm in Quebec on 3rd, and not at Montreal. †

Beautiful ice bridge formed at Niagara Falls in the early part of February.

A tremendous flight of crows was observed on the 3rd of February, at Montreal.

Very mild winter in the Missouri Valley; ploughing has been engaged in.

On the 1st February, 30,000 sleighs passed through the gates of Central Park, New York.

The storm of the last day of January, along the New England coast, was the severest known for years.

Predictions Verified.

Vennor's BULLETIN predicts for the close of the present week storms of great severity from Toronto westward to Chicago, Milwaukee and other parts of Illinois, Wisconsin, Iowa, and adjacent States. In the St. Lawrence Valley, below Kingston, similar snow storms, but less severe, may extend to Montreal and Quebec; whilst in a southerly direction snow, sleet and rain is likely to extend to Washington, D. C. There are likely to be serious blockades of snow in Western and North-Western sections and possibly Northern and Middle United States. Should these storms occur in the sections mentioned, on the 17th, 18th or 19th, it is likely that March will enter exceedingly rough, with further heavy snow falls from the St. Lawrence Valley to extreme southerly and westerly points.

February 12th, 1882.

Vennor's big storm which he predicted for the 20th to 22nd, came on time. In spite of the daily criticisms to which he is subject, Vennor still lives. It should be remembered that being stationed at Montreal, he predicts chiefly for Canada and the bordering States; hence, we in the south-eastern section of Pennsylvania, are not in the ring. But when he predicts a general storm, be sure to follow Paul Pry's example and always carry an umbrella.—Springtown, Pa

THE FEBRUARY "BREAK-UP."

NAVIGATION OPEN.

POUGHKEEPSIE, N. Y., February 14 — Two tugs are coming north through the Highlands. All the ice south of Fort Montgomery is moving.

PITTSBURGH, February 12.—The Susquehanna River is twenty-one feet above low water mark; the ice is broken and passing down quietly.

CHICAGO, February 13.—The earliest opening of navigation ever made on the Lake here was made last night, when a steamer was sent to Muskegon, bringing back a cargo of lumber. This is the first departure since the close of navigation last fall.

The thaw at Montreal, Quebec and Ottawa may be said to have lasted from the 8th to the 17th of the month, when colder weather set in and a decided "dip," on the 18th and 19th, this, terminating in the general snowstorms predicted. Within very little over six hours the mercury ranged from 46° to within a few degrees of zero at both Montreal and Ottawa.

The general feeling among those who are best posted in the lumber trade is that the present thaw will not hurt the operations in the shanties. It may cause momentary inconvenience, but as soon as frost sets in again, the hardness of the newly frozen roads

will greatly facilitate hauling and teaming. All accounts from up the river indicate that the present thaw extends over the whole district, and that in several places it has caused somewhat heavy floods — Ottawa.

STATIONERS.—The sudden disappearance of the snow in many parts of the town has considerably interfered with sleighing. A team of horses attached to a sleigh laden with lumber, on Wellington street, yesterday afternoon, were unable to proceed with the load, and the driver was consequently put to some inconvenience by having to remove the greater part of it.—Ottawa.

The Predicted Storm Period of February.

On the 12th of February the Editor of the BULLETIN issued a special bulletin through the daily papers and by means of the telegraph, predicting a general and severe storm for the week commencing Sunday the 19th. This has been fully verified.

At Albany, N. Y., 21st:—

THE SNOW STORM.

At an early hour yesterday morning, one of the heaviest snow storms of the season, accompanied with rain and sleet, set in; and continued throughout the day. The day was one of the most disagreeable yet experienced, the snow was rapidly converted into slush, and pedestrianism was found to be as fully disagreeable as the fickle weather that prevailed. Considerable difficulty was experienced by the various horse car lines, in the running of cars, and the heavy snow plows that were brought into requisition, performed duty from morning until night. The storm continued almost unabated until shortly before midnight, at which hour heavy black clouds still threatened to discharge their contents. Along the various railways centering in this city, the storm was of such a character as to greatly delay trains, and from reports it is learned that the storm extended south within a short distance of New York, along the Mohawk valley to Utica, for some miles northward, and for quite a distance over the Boston and Albany railroad. The Niagara Falls express from New York, due at eleven p.m., arrived two hours and twenty minutes behind time, the special mail from the metropolis was fifteen minutes late, while on the Boston road the St. Albans express for the north was forty minutes late. On the Central road the Pacific express, due at 1:50 a.m., was fifteen minutes late, and the second Atlantic express, due at 1:45 a.m., was ten minutes behind time. Over the lines of the Delaware and Hudson company trains were from ten to fifteen minutes late.

A dispatch from Poughkeepsie, received last night, stated that the sleet and rain storm had been succeeded by snow, and the telegraph poles between Millerton and Boston Corners were broken down by the heavy loads of ice.

"The Register's compliments Mr. V., your blizzard arrived in time." Hudson, N.Y.

THE SNOW STORM AT MONTREAL.

THE DOWNFALL IN THE VICINITY OF THE CITY AND ELSEWHERE—ALL OF THE TRAINS DELAYED.

The snow storm of the past two days is generally acknowledged to have been the heaviest which has visited the city for the past two years. It is impossible to judge exactly of the depth of the downfall, owing to its drifting, but across the roads in some of the municipalities, for instance St. Joseph street, near Atwater Avenue, at Ste. Cunegonde, and Bonaventure street, near the Williams' tannery, at St. Henri, as well as at the corner of Greene Avenue and Derchester street, at Cote St. Antoine, the snow drifted as high as from five to seven feet. This morning most of the roads in the various suburban towns were almost impassable, and

(For continuation see tenth page.)

Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
1	1	1	1	1	1	1	1	1	1	1	1
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28	28	28	28	28	28	28	28	28	28	28	28
29	29	29	29	29	29	29	29	29	29	29	29
30	30	30	30	30	30	30	30	30	30	30	30

TABLE OF NEW & OLD MOONS

The days of New Moon and the days of Full Moon with the moon signs with the moon signs.

TABLE OF NEW & OLD MOONS

The days of New Moon and the days of Full Moon with the moon signs with the moon signs.

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VENNOR'S WEATHER BULLETIN

the Corporation snow ploughs, which have not been used in some instances for three years had to be called into requisition. All the trains arriving in the city this morning were more or less late through delays caused by the storm. No. 3 G. T. R. express from Chicago due at 8:30 a. m. was three hours late. The Central Vermont and Delaware Hudson trains due at 3:40 were each four hours and thirty minutes late. The G. T. R. train from the east which should have arrived here at 9:15 was two hours late, and the Q. M. O. & O. train from Quebec due at six a. m. was six hours and a half late. The latter train made good time until St. Martin's Junction was reached, from which station, until it reached Hochelaga, it had to cut its way through continuous banks of snow ten feet high. The express from Ottawa was also stopped by this blockade. All of the trains mentioned carried mails, and through their delay no mails except the local ones arrived at the post office until late in the morning and no letters from the United States or the West were delivered until nearly two o'clock. The local trains from all points were also more or less delayed by the snow, and both the G. T. R. and Q. M., O. & O. roads were closed for freight traffic until mid-day.

The storm which yesterday morning was central over Michigan has almost completely dispersed, while a disturbance which was then forming over the middle Atlantic States has developed into a severe storm, which is now central to the south-west of Nova Scotia. Heavy snow is falling in the Maritime Provinces accompanied by a north-east gale. No reports have been received at the Meteorological office, Toronto, from the United States this morning 21st and 22nd of February.

—At Boston the streets were pretty well blocked up with the snowfall.

—At Toronto, Feb. 21.—The severest storm of the season last night and to day, throughout Canada. The snow is from six inches to two feet deep, and the roads are blocked.

—A *Milwaukee* paper says:—"Vennor, you may take the cake. It is yours."

—Vennor's prediction of a marked change in the weather on the 17th and after, has received ample verification. Indeed, taking the North-west as a whole, his warning of the 9th has been verified in every particular.

A FEBRUARY BLOCKADE

IN NOVA SCOTIA.

LEGISLATORS BLOCKADED—A GALLANT TRAMP THROUGH THE SNOW.

HALIFAX, February 13.—The Halifax and Cape Breton Company Railway line, extending from New Glasgow to Strait of Canso, is still largely blockaded by snow drifts. On Friday morning a train left Antigonish for New Glasgow with a good number of passengers on board, including Mr. McDonald, M. P. for Cape Breton, Mr. McDonald, M. P. for Victoria, Mr. McIsaac, M. P. for Antigonish, and Senator McInnes, of British Columbia. The train had three locomotives attached to it, but could not succeed in getting through. They got as far as Merrigomish, within fourteen miles of New Glasgow, on Saturday. On Sunday morning the passengers, including the M. P.'s, started for New Glasgow on foot, where they arrived late on Sunday night, some of them much exhausted. The passengers for Ottawa expected to catch the train to-night for Quebec.

HALIFAX, N. S., February 12.—The mails have been received here very irregularly for the past fortnight, owing to the very severe snowstorms. The latest mail received from Canso was on the 30th ult., from Arichat, Baddock, Sydney, North Sydney, and Sydney Mines, on the 30th and 31st ult. A telegram from the postmaster at Antigonish says it took five days for the Halifax mails to be conveyed from New Glasgow to Antigonish. They had to be carried by

men on snowshoes. The snowdrifts in that direction are from twenty-five to thirty feet high. It is reported that the recent storm has been the severest throughout the country known for forty years. In many places the roads are completely blockaded. A coach left here on Monday last with the mails for the Eastern part of Halifax county, and got no further than Musquodoboit harbor. The mails had to be forwarded by some other means. The last mail received from the East was on the 30th ultimo. Postmasters throughout the country have been notified to have mails forwarded by men on snowshoes where other means of conveyance are impossible.

AND THE FLOODS CAME.

DAMAGRS BY FLOODS.

Officers on every boat arriving in Helena, Ark., from above or below, bring news of widespread devastation. In the bottoms contiguous to the Mississippi River, thousands of horses, mules and cattle are drowned; miles of fencing swept away, houses destroyed and corn cribs floated off with contents, in many instances leaving people without actual necessities. Relief will be needed or many persons will die of starvation.

There is no serious damage by floods in St. Louis. The Railways, however, suffered greatly in all directions. At Cave Cliff, on the Iron Mountain Road, a freight train caught in a land slide. One hundred men are digging it out, nobody hurt.

The water is rising in Helena, Ark. All mills and workshops in the lower part of the city have suspended. Business is at a standstill.

Laurenceburg, Ind., is entirely surrounded by water. All communication with neighboring towns and cities is cut off except by water. The town is in a high state of excitement. Many families have been forced to move from along the water's edge. Several hundred people flocked to the Court House for safety. Railways badly washed out.

The lower portions of Marietta are flooded, and it is feared the principal streets will be under water before many hours.

RAINS AND FLOODS.

INUNDATIONS AT CINCINNATI, LOUISVILLE, AND ARKANSAS CITY.

CINCINNATI, Feb. 18.—The river has been rising rapidly to-day, and 52 feet above low water mark. The water is in the second storey of houses on Rat row and Sausage row, which are houses built at the extremes of the landing. It is also in the cellars of some houses on Front street. The rise was caused by rains between Cincinnati and Pittsburg.

LOUISVILLE, Feb. 17.—The river rose all day at the rate of an inch per hour, and all business on the levee from Fourth street down is suspended, as the water is up to and in many houses. It is probable the river will be upon the floors of all the houses around the corner of Fourth street and the levee by morning.

PINE BLUFF, Ark., Feb. 18.—Arkansas City is inundated and the trains have discontinued their trips here.

HELENA, Ark., Feb. 19.—For three weeks it has rained almost daily, until now there is but a dreary watery waste between Memphis and Vicksburg, extending fifteen miles inland from either bank. The destruction to dwellings, stock, and lands cannot be estimated. There have been innumerable breaks in the levees, and the outlook for the future is anything but hopeful. Cattle and hogs have been drowned by hundreds, barns swept away, and their contents wasted. Mules and horses are suffering, and the loss to planters by these mishaps will cramp their facilities for putting in the crop for the year. This condition of affairs exists to an alarming extent in the largest cotton-growing counties of the Mississippi valley. Starvation threatens many poor people whose homes line the banks of the overflowed streams. In some instances negroes, hogs, and mules are all

gathered in cabins awaiting the receding of the waters. The latest break occurred on Friday night above Austin, Miss. This will overflow the country for a distance of thirty-five miles.

MEMPHIS, Feb. 19.—Late advices from Downey river are that the break in the levee above Austin extends nearly up to Mahoney's Landing, a distance of three miles. The levee which protects the Laconia circle, Arkansas, broke on Thursday night and all the circle is under water. The break occurred in the rear, and is fifty yards wide. There are eighteen large plantations—the circle, several being owned by Governor Blackburn, of Kentucky, and his relatives. The planters are all trying to save their stock, which is being boated away to the ridges. Great fear exists that the rise now coming down the Ohio will check the decline that has set in and add to the disaster that overwhelms the inundated sections. At Helena, Ark., the water was backed up into the city until the largest portion of it is covered to a depth of four feet, and it is rising a foot a day. The citizens are conveyed to their dwellings by skiffs.

CINCINNATI, Feb. 19.—There has been heavy rain along the Ohio river to-day. At seven to-night the river is fifty-three feet and stationary, which is within nine feet ten inches of the rise of 1832, and within nine feet of the rise of 1847. Some cellars along the river front are flooded, and the water is over the sidewalk in Covington. The rain appears to be general and gives apprehension of a destructive flood. Carrollton and Wilton, Ky., at the mouth of the Kentucky river, are several feet of water in the streets. A steamer landed in the streets of Carrollton to-day.

LOUISVILLE, Ky., Feb. 19.—The river rose two feet during the past twenty-four hours, and is still rising. The foot of Fourth street is cut off. The water extends some distance up the street, and the cellars as far up as Gray's alley are filling. All the first floors of the houses around the corner of Fourth street and the river are covered with water, and all the houses along the wharf from Fourth street are in water. Teams are busy hauling stuff off the levee, and many people are moving.

NOT SO MILD A WINTER AFTER ALL.

The following from the *Toronto Globe*, is of value and interest, in view of future comparisons:

The monthly weather review issued by the Meteorological service shows that the current impression that last January was exceptionally mild is not founded on fact. The first part of the month was mild, but the cold of the second lowered the mean at Toronto to 23.17, or only one-sixth of a degree above the usual. In the past forty-one years there have been twenty-one warmer Januaries and twenty colder. In Western Ontario the month was from one to two degrees warmer than usual, in Northern Ontario and in Quebec it was two degrees colder than the average, and in the Maritime Provinces slightly below the average.

A TASTE OF ARCTIC WEATHER.

Ontario showed minimum temperatures in January lower than any recorded in the North-West or at any of the eastern stations. At Huntsville, Muskoka the extraordinary temperature of 47° 4 below zero was reached. Rockliff, on the Ottawa, showed, —43° 4. Lindsay, 35° 6. Stratford, —31°. Cornwall, 29° 3. Hamilton, —11° 3, and Port Stanley, —9° 7. At Rapid city, N. W. T., the mercury was down to —37°.

A DRY MONTH.

The drought characteristic of the past eleven months still prevailed, the rainfall in the western and south-western counties of Ontario being less than usual, and also the snowfall, not quite an inch and a half of the former falling, and less than ten inches of the latter. In the rest of Ontario and in Quebec the rain fall was a little greater than usual; and in north eastern and eastern Ontario, and all the country eastward to the Atlantic, greater than usual, the excess in Prince Edward Island amounting to over 16 inches.

FIVE FEET OF SNOW.

While some parts of Ontario had little or no snow the neighborhood of Lake Huron and the Georgian

Bay and also the Ottawa Valley had a considerable quantity. In Toronto less than eight inches fell, but Lucan had 38 inches, Owen Sound 32, Stratford 27, Penetanguishene 26, Orillia 27, Beatrice 20, Rockliff 24. At Montreal 28 inches fell, at Quebec 5 feet and 1 inch, and at Charlottetown, P. E. I., 52 inches.

SUNSHINE.

Toronto actually rivalled Winnipeg in January in the amount of sunshine, the difference being only one per cent. Fredericton was the largest of all the sunshine stations. Winnipeg usually is.

YOUNG PROBS.

Young Probs didn't do as well as usual last month, being wrong 14 times out of every hundred in the Lake Region. In the Maritime Provinces, 96 per cent. of his predictions were fully or partly verified.

EXTRAORDINARY WIND STORMS.

January had a few famous blows. At Toronto Observatory the average velocity of the wind on the 22nd was 26½ miles an hour. Up till 1820 the windiest day in 40 years was only 32 1-6 miles an hour, but on November 7, 1830, the average was 41:67 miles. Many will remember the heavy night wind on the 27th when a perpetual din from flying shingles, cracking and breaking signboards was kept up in Toronto. The wind at the Observatory blew 46 miles an hour from 3 and 4 a. m. of that night, and the gusts recorded by the Island anemometer blew with the hurricane velocity of 70 miles an hour. On November 7, 1830, between 3 and 4 a. m., the average velocity was 55½ miles at the Observatory. On January 26th, 1879, the average from 1 to 2 a. m. was 43 miles an hour, but previous to that, no hour in 36 years was as windy as that from 3 to 4 a. m. on the 27th of January.

THE WEATHER IN OSCEOLA CO., IOWA.

NOTES FROM THE WEST.—The following notes are from a letter written from Ocheyedan, Osceola county, Iowa, under date of January 5th, 1882. He says: "Help in this section of the country is very scarce and wages high. Crops of all kinds for the past season were only middling, owing mainly to the wet weather. While with you of the East it was very dry, the season with us was unusually wet. Since the first of November, however, we have had splendid weather—very light fall of snow, and the past week colder and more blustery. We have scarcely any rain, and very little if any, mud here in the winter. Emigration is coming in rapidly, and thousands of acres of land were broken up last year. Five different railroads are on the tapis from the East, built to a point thirty-three miles east of us, and destined north-west and west of us to Dakota and the Hills. Land and property are on the rise (boom they call it here), in some cases as high as 500 per cent." Mr. Raudall is a native of Buks county, served three years in the 104th regiment and reinstated as a veteran in Hancock's corps. We hope the boom may benefit him, and that he may do well in his new home in the far West.

A few days ago the proprietor of the Parkhill Gazette returned from Winnipeg, and this is his experience with the weather:—While in Winnipeg the temperature ranged from a few degrees above to twenty-six degrees below. We were not able to discover that twenty-six degrees below zero there was any more comfortable than the same degree of cold would be here. Notwithstanding, it is impossible to fully appreciate how easily one becomes accustomed to the more severe weather, and how the bracing of one's self for the ordeal enables one to be very comfortable and contented with life at many degrees below zero. A few weeks' experiences of this severe cold dispels nearly all discomfort from it.

FORT McLEOD, Feb. 1.

The winter, so far, has been an unusually mild one, chinooks following each other in rapid succession, until the 23rd ult., when the thermometer dropped to 23° below zero. This cold snap only lasted for three or four days, and we again have a mild temperature. The pleasant winter weather has had a beneficial effect on the cattle belonging to Mr. Cochran and others, which arrived in the territory late last fall. At the time of their arrival they were in very poor condition, and had the winter been a severe one the loss of stock would probably have been heavy. As it is they have rapidly picked up in flesh, and are now looking well.

WEATHER-CYCLES.

Nine years, or some multiple of nine years, has been generally fixed upon as the period of such a cycle. It does not appear, however, that there is any satisfactory evidence that such is the case, while my own observations and comparisons tend to show that the recurring periods of similar weather come around at irregular intervals of time. According to Toaldo, the cycle consisted of nineteen years, and upon this supposition a table was at one time made out illustrative of the weather for several centuries. This table, however, itself very soon demonstrated glaringly the utter fallacy of the conjecture. In like manner, the eighteen-year cycle has been proved untenable, as has also that of the nine years.

A cycle of fifty-four years was some time ago advanced by one George Mackenzie, who at the time issued annually "a small quack-looking publication, entitled a *Manual of the Weather*, in which he pretended to foretell the character of the weather for every month of the succeeding year." This manual, however, was short-lived, owing to the frequent and glaring inaccuracies it contained.

According to Humboldt, the years in which the greatest amount of rain fell in Mexico (as an example) were 1553, 1580, 1604, 1607, 1629, 1648, 1675, 1707, 1732, 1748, 1772, 1795. Now, not only are the intervals between these years irregular, but they are as well at variance with any of the periods assigned for the duration of the cycle. It has been further suggested that as in every eighteen years or a little more the sun, moon, and the moon's node arrive at the same relative positions, therefore the eighteen-year cycle is the one more worthy of consideration. But even this plausible-looking conjecture has failed to bring about a recurrence of the same kind of weather at the proper periods.

My own opinion, after a number of years of painstaking observation in Canada and study of American weather-records stretching over a great number of years, is, that no definite number of years can be given as representing the duration of the intervals of time between recurrences of the same kind of weather. Or, to put it in the words of Graham Hutchison, who about half a century ago wrote upon the same question, "it is obvious that as changes are continually going on with unequal degrees of rapidity on different parts of the earth's surface, the causes which disturb the uniformity of the weather in different years must be ever varying. Hence, cycles, or an exact periodical recurrence of the same kind of weather after any given number of years, need never be expected to take place. And as the unusual magnitude of any particular wave is occasioned by the union or coalescing of smaller undulations, so summers and winters remarkable for heat or cold or any other peculiarity may result at irregular intervals from the accidental co-operation of a favorable combination of antecedent and existing circumstances for producing the effect."

Weather Wise or Otherwise.

Among weather prophets the goose-bone more than holds its own. In some of the back counties of Kentucky it is held in such esteem that farmers are said to be governed by its predictions. The goose in order to show (by means of spots and colors of different degrees of shade upon its breast-bone) the character of the coming winter weather, must be hatched in the preceding spring. It is, therefore, a spring goose. By some mysterious process the coming weather then gradually unfolds itself upon the translucent breast-bone of the historic bird. A pectoral and pictorial presentment of the periods of wet and dry, of warm and cold is disclosed when the fowl is fowly dealt with for Thanksgiving purposes, and it only remains to read correctly this hand writing on the bone. The hieroglyphics deciphered, the bone is labeled with the year and carefully filed away with previous ones, like so many scientific papers of the Weather Bureau.

Alongside of the goose VENNOR *et id omne genus* appear to be spring-chickens. The goose, perhaps unfortunately, has no publisher of its vaticinations except the farmer, who also has become the vaticide.

There may be an advantage in this, for should the prognostications of the prophetic bone fall short of the mark, that goose is cooked. The same, more's the pity, can not be said of other prophets. The goose

does not, like its brother prophets, attempt to forecast weather in detail. It grasps the character, as a whole, of the approaching season. It is claimed for the goose-bone that it never yet was mistaken in the weather. Can VENNOR *et al*, lay this flattering unction to their prophetic souls? It must be admitted its indications for the present winter have so far been fairly verified, and it has rendered signal service. Lumping the business, it gave signs that the winter would be a motley one, but with no protracted cold weather. There was to have been no very cold weather in December in these latitudes, and there was not. January was to have a few cold days, sandwiched between much rain and snow, and it had. With the prophecies of the other members of the family, and how they agreed with subsequent facts, all are familiar. But it is the little month of February, that has just entered, that is now of interest. The goose-bone foreshadows more genuine winter weather in February than in December and January combined, but with no intense cold. With that it rests its case. VENNOR, more ambitious, declares this month will give a good deal of mild and open weather, and that it will be a somewhat exceptional month, with some very sudden transitions from frost to mildness, specifying dates for the various changes. As if all this warning were not enough, here comes a New York prophet who predicts that February will be a month long to be remembered. Rubber boot dealers are encouraged and ladies are warned in respect to their Gainsboroughs. Coal dealers are informed that the river will be frozen up so tight that steamboating will be suspended until late in the spring. The prophet, however, neglects to say which river, whether the Ohio, the Hudson or the Saskatchewan. The only definite portion of this New York seer's prediction is that snows are to be especially deep in the Ohio Valley.

So wrote the Editor of the *Cincinnati Commercial*, but "Goose VENNOR" was right, and the "Goose bone" quite astray, notwithstanding for February.

A GOOD OUTLOOK FOR WESTERN FARMERS.

CHICAGO, Feb. 10.—Despatches to the *Times* from many points in the corn and wheat producing States of the Northwest show that the winter has been remarkable for its mildness, and that spring work among the farmers is about six weeks advanced. In many localities there is not enough frost in the ground to prevent ploughing and seeding now, but farmers will wait two or three weeks before putting in their crops. In Minnesota and Dakota it is asserted that the acreage of wheat will be increased twenty-five per cent. Farmers have very generally sold out last year's crop, and it is thought that in Dakota especially there is not now on hand more than enough to supply the demand for seed. In Minnesota there is a considerable stock on hand, which will be held for higher prices. Farmers in Iowa, Illinois, Michigan, Kansas and Indiana, are universally hopeful. They have had good prices all the winter, and have disposed of their produce and hogs at remunerative rates. It is evident that there are at present comparatively few hogs fit for the market. Winter wheat is generally looking very fine.

THE JANUARY WEATHER.—It appears now, from the report of the meteorological service, that the generally entertained opinion that January was a mild month, was wrong. The first part of the month was mild, but the cold of the second lowered the mean at Toronto to 23.17, or only one-sixth of a degree above the usual. In the past forty-one years there have been twenty-one warmer Januaries and twenty colder. In western Ontario the month was from one to two degrees warmer than usual, in northern Ontario and in Quebec it was two degrees colder than the average, and in the Maritime Provinces slightly below the average.

One of the most amusing sights is afforded by the man who walks carelessly and quite unconcerned along until he reaches the thermometer which is exposed to view on the street. He looks at it a moment, sees that the mercury is very low, pulls his collar up to his ears, slinks up in his coat, walks frigidly away, and exclaims, "gracious how cold it is!"

THE STORY OF THE TIDES.

WHAT THEY TELL OF THE GROWING LENGTH OF THE DAY AND OF THE BIRTH OF THE MOON.

From a scientific point of view the work done by the tides is of unspeakable importance. Whence is this energy derived with which the tides do their work? If the tides are caused by the moon, the energy they possess must also be derived from the moon. This looks plain enough, but unfortunately it is not true. Would it be true to assert that the finger of the rifleman that pulls the trigger supplies the energy with which the rifle-bullet is animated? Of course it would not. The energy is derived from the explosion of the gunpowder, and the pulling of the trigger is merely the means by which that energy is liberated. In a somewhat similar manner the tidal wave produced by the moon is the means whereby a part of the energy stored in the earth is compelled to expend itself in work. Let me illustrate this by a comparison between the earth rotating on its axis and the fly-wheel of an engine. The fly-wheel is a sort of reservoir, into which the engine pours its power at each stroke of the piston. The various machines in the mill merely draw off the power from the store accumulated in the fly-wheel. The earth is like a gigantic fly-wheel detached from the engine, though still connected with the machines in the mill. In that mighty fly-wheel a stupendous quantity of energy is stored up, and a stupendous quantity of energy would be given out before that fly-wheel would come to rest. The earth's rotation as the reservoir from whence the tides draw the energy they require for doing work. Hence it is that though the tides are caused by the moon, yet whenever they require energy they draw on the supply ready to hand in the rotation of the earth. The earth differs from the fly-wheel of the engine in a very important point. As the energy is withdrawn from the fly-wheel by the machines in the mill, so it is restored thereto by the power of the steam-engine, and the fly-wheel runs uniformly. But the earth is the fly-wheel without the engine. When the work done by the tides withdraws energy from the earth, that energy is never restored. It, therefore, follows that the earth's rotation must be decreasing. This leads to a consequence of the most wonderful importance. It tells us that the speed with which the earth rotates on its axis is diminishing. We can state the result in a manner which has the merits of simplicity and brevity. The tides are increasing the length of the day. At present no doubt the effect of the tides in changing the length of the day is very small. A day now is not appreciably longer than a day a hundred years ago. Even in a thousand years the change in the length of the day is only the fraction of a second. But the importance arises from the fact that the change, slow though it is, lies always in one direction. The day is continually increasing. In millions of years the accumulated effect becomes not only appreciable, but even of startling magnitude.

The change in the length of the day must involve a corresponding change in the motion of the moon. If the moon acts on the earth and retards the rotation of the earth, so, conversely, does the earth react upon the moon. The earth is tormented by the moon, so it strives to drive away its persecutor. At present the moon revolves round the earth at a distance of about 240,000 miles. The reaction of the earth tends to increase the distance, and to force the moon to revolve in an orbit which is continually getting larger and larger. As thousands of years roll on, the length of the day increases second by second, and the distance of the moon increases mile by mile. A million years ago the day, probably, contained some minutes less than our present day of twenty-four hours. Our retrospect does not halt here; we at once project our view back to an incredibly remote epoch which was a crisis in the history of our system. It must have been at least 50,000,000 years ago. It may have been very much earlier. This crisis was the interesting occasion when the moon was born. The length of the day was only a very few hours. If we call it three hours we shall not be far from the truth. Perhaps you may think that if we looked back to a still earlier epoch, the day would become still less and finally disappear altogether. This is, however, not the case. The day can never have been much less than three hours in the present order of things. Everybody knows that

the earth is not sphere, but there is a protuberance at the equator, so that as our school-books tell us, the earth is shaped like an orange. It is well known that the protuberance is due to the rotation of the earth on its axis, by which the equatorial parts bulge out by centrifugal force. The quicker the earth rotates the greater is the protuberance. If, however, the rate of rotation exceeds a certain limit, the equatorial portions of the earth could no longer cling together. The attraction which unites them would be overcome by centrifugal force, and a general break-up would occur. It can be shown that the rotation of the earth when on the point of rupture corresponds to a length of the day somewhere about the critical value of three hours, which we have already adopted. It is therefore impossible for us to suppose a day much shorter than three hours.

Let us leave the earth for a few minutes and examine the past history of the moon. We have seen the moon revolves around the earth in an ever-widening orbit, and consequently the moon must in ancient times have been nearer the earth than it is now. No doubt the change is slow. There is not much difference between the orbit of the moon a thousand years ago and the orbit in which the moon is now moving. But when we rise to millions of years the difference becomes very appreciable. Thirty or forty millions of years ago the moon was much closer to the earth than it is at present, very possibly the moon was then only half its present distance. We must, however, look still earlier, to a certain epoch not less than fifty millions of years ago. At that epoch the moon must have been so close to the earth that the two bodies were almost touching. Everybody knows that the moon revolves now around the earth in a period of twenty-seven days. The period depends upon the distance between the earth and the moon. In earlier times the month must have been shorter than our present month. Some millions of years ago the moon completed its journey in a week, instead of taking twenty-eight days, as at present. Looking back earlier still, we find the month has dwindled down to a day, then down to a few hours, until at that wonderful epoch, when the moon was almost touching the earth, the moon spun round the earth every three hours.

In those ancient times I see our earth to be a noble globe, as it is at present. Yet it is not partly covered with oceans and partly clothed with verdure. The primeval earth seems rather a fiery and half-molten mass, where no organic life can dwell. Instead of the atmosphere which we now have, I see a dense mass of vapors, in which, perhaps, all the oceans of the earth are suspended as clouds. I see that the sun still rises and sets to give the succession of day and of night, but the day and the night together only amount to three hours, instead of twenty-four. Almost touching the chaotic body. Around the earth I see this small body rapidly rotating. The two revolve together, as if they were bound by invisible bands. The smaller body is the moon.—*Am. Paper.*

THEORY OF THUNDER STORMS.

Thunder storms are eminently a summer arrangement. They seldom occur except in intensely warm weather. And they are the result of a combination of forces produced by the sun's heat. By the power of this heat aqueous vapors are elevated from every part of the earth's surface and the waters, and float freely in the atmosphere until they fall in dew or rain.

During the night the upper strata of these vapors are congealed, and becoming lighter by this process than watery vapors, they rise to an elevation of several miles into the atmosphere, thus forming what are called the "cirrus cloud." These clouds ("cirri") are distinguished by their feathery forms and fleecy whiteness; and are to be seen during a bright night, or at an early hour in the morning. On the appearance of the sun these icy crystals are by his early rays reduced to watery vapors again, and gradually descend to an altitude of not more than one two or miles above the earth, when they are met by the ascending vapors, and uniting with them, form the great piles of clouds of hemispherical shapes, called "cumuli clouds." These will be readily recognized by their grotesque and massive forms, their marginal protuberances often shining with a strong silvery or golden light, and contrasting finely with the darker and denser portions of the cloud. As the heat of the day increases, these piles of clouds increase in height

and density; and, as they float eastward, are frequently resolved into the "Nimbus," or rain cloud. This change usually occurs soon after noon, or in the hottest hours of the day.

The process of transformation presents a phenomena as surprising as it is grand, and inspires in the intelligent observer sentiments of profound admiration and awe. Floating majestically onward in their course, and every moment gathering new volume in the immense supplies carried upward on the rising columns of heated air, their progress would be unmarked by any extraordinary phase but for the varying or opposing currents of the atmosphere on which they are borne. These opposing currents have the effect of condensing the vapors or clouds, by which the "nucleus" of a rain-cloud is established. And this condensation produces the two-fold result of surcharging the cloud with both rain and electricity. Now this is the initial movement in the formation of the "thunder cloud."

It must be remembered that clouds float higher or lower according to their specific gravity, and in no event discharge their waters in the form of rain till by rapid condensation their specific gravity exceeds that of the atmosphere by which they are supported.

When the equilibrium is overcome by condensation rain will begin to fall. Now the first drop of rain that vacates itself in the cloud for a descent to the earth makes room for the surrounding vapors to flow in and occupy the place it vacated, precisely as a raging fire on the earth's surface produces a rush of air towards it from every point of the surface to fill the vacuum formed by the rising air and flame, only that with the cloud the action is reversed. And as this motion of the wind renders the flame more intense, so long as there is fuel to feed it, so the influx of the surrounding clouds toward a central point augments the force and magnitude of the storm cloud. This centralizing movement among the clouds, extend at length to all that lie within the sphere of its influence in its progress through the heavens; for when the storm is over, the sky is entirely cleared of this cumuli.

But on the first appearance of the thundercloud, which is usually in the higher or mountainous sections of the country where they commonly have their origin, it happens that a very small portion of the cloud will at first assume a darker aspect, indicating a condensation of the vapors at that point, and the presence there of positive electricity, or lightning. And while the vapors are flowing toward this central point, the varying currents of wind, producing an ever varying density of the cloud, promote the passage of the electric fluid from one section of the cloud to another. This occasions the rolling thunder so constantly heard during the prevalence of a thunder-storm. And it is from these denser parts of the cloud that the lightning darts in zig-zag lines to the earth, producing the most appalling effects upon the objects that lie in its course.

In this connection it is worthy of note that the earth is the great reservoir of electricity; that every particle of water is highly impregnated with this fluid, that it rises into the air with the ascent of the vapors, and that it strikes objects on the earth only in its descent from the cloud; hence, when the cloud is in a positively electrified condition in respect to the earth the electricity will pass from the cloud to the earth. It passes silently in the vapor upward into the atmosphere. It returns to the earth often in sensible volumes and with crashing power,—igniting by friction in its rapid flight the gases of the atmosphere with which it comes in contact, and thus for the instant leaping from its native obscurity into a most luminous and brilliant existence, rivaling even the brightness of the sun.

A. B. C.

Ice Out-look.

Ice in insufficient supply looks not unlikely next summer, unless a cold snap fills the houses in the remaining half of this month, or in March, as has sometimes happened. The ice houses on the Hudson are not more than half filled, and the river has already began to break up. In Maine, the ice harvest has been smaller than usual, and of poor quality. Higher prices for ice next summer appear extremely probable.—*Philadelphia Press.*

—In Canada the story is about the same.

THE MYSTERY OF THE GREAT LAKES.

On Lake Superior, in 1879, when Alexander Mackenzie was at the Grand Portage, on the north shore, opposite Isle Royal, "he saw the sudden fall of the water, equal to four feet, which soon returned with a rush, and continued to vibrate several hours." Whitney and Foster, in their geological report of the Upper Peninsula of Michigan, record that in the summer of 1834, the water above the falls at the Sault St. Mary, in a calm day, suddenly fell two and one-half feet, and in half an hour came surging back with great velocity. The same thing happened at the same place in 1842, below the falls; the current of the river rushing rapidly up stream toward the cataract.

The most remarkable rise of water was recorded by Dr. Foster to have been seen by him in August, 1845. He says that on that day, when he was coasting in an open boat, between Copper Harbor, and Eagle River, he "observed the water to rise up a fourth of a mile to the northwest, to the height of twenty feet. It curled over like an immense surge, crested with foam, and swept toward the shore, diminishing as it advanced. The voyageurs paused on their oars, having first headed the boat so as to cut the wave. It passed without doing us any injury, succeeded by two or three swells, spent its force on the shore, and the lake resumed its wonted tranquillity." The lake was calm, with clouds at the northwest, indicating that different currents of air were moving in opposite directions.

In November, 1851, at Copper Harbor, the water rose suddenly, in a perfect calm, one foot three inches, and at another time two and one-half feet. At the Sault Canal, July 16, 1855, there was a series of fluctuations during the day, until a maximum fall of two feet ten inches was reached. Then the upward movement commenced, until the previous level was reached towards evening. The wind changed during these fluctuations from northwest to southeast. At Superior City, September 17, 1865, the water of the lake fell twenty-five inches within one hour, and within fifteen minutes rose twenty-five inches above the ordinary level, making fifty inches change in fifteen minutes. The wind was blowing strong from the northwest.

At Milwaukee, in April, 1858, a large wave rushed into the river from the lake, and retired as suddenly. Twenty minutes later the water returned in two waves, and in a few minutes returned to its old level. The difference in half or three quarters of an hour was full six feet,

A number of sudden fluctuations of level are recorded on Lake Erie. Mr. Taylor, an old settler of Rockport, is quoted by Col. Whittlesey, as stating that, in 1811, during a calm, hot summer day, he saw a white-crested wave approach rapidly toward the beach. It carried a barrel of salt several rods, over what had been a dry ground into a ravine.

Col. Whittlesey says he has never seen an instance of perfect quiescence in the waters of North American lakes. On a shelving sandy beach there is always a slight wave-like ripple, even when the atmosphere appears to be perfectly tranquil, but there never can be a thoroughly quiet atmosphere over a large area of water. Until a better theory is found he adopts that of atmospheric movement as the cause of the undulations under consideration. There is a source of perpetual motion in the atmosphere in the perpetual presence of unequally heated areas. Water is so sensitive to aerial currents that they cannot take place without producing an effect upon the equilibrium of its surface. He shows that all movements of flowing water are in a wave-like or undulatory form, and deduces by analogy, that movements of the atmosphere take the same form, producing pulsations in the waters over

which they move. On all shores there is a daily land and water breeze, arising from the unequal effect of solar heat for that day, upon the land and the water. As these movements are almost incessant, and the cause ever present, if it is granted that they follow the general law of undulations he thinks we have in them an explanation of those low but regular pulsations, which take place in the waters of all seas and lakes.

Taking the oscillations together, small and great, Col. Whittlesey says the cause cannot be said to be demonstrated, but the best hypothesis is that of unequal atmospheric or barometric pressure, sometimes in storms of wind and at others by unequal heat.

It may add something to the sum of information on the general subject of barometric connection with water levels to say that after the foregoing was in type, the London Telegraph, of January 18, brought the intelligence that on the 10th, the mercury on the barometer, in London, stood close upon thirty-one inches, the highest recorded in England, since 1849, and that on the same day tide in the Thames rose a foot less at high water, as a consequence of the unusual pressure of the atmosphere which forced up the mercury one inch in the tube of the barometer.—*Cleveland Herald.*

The Comet and Its Tail.

The celestial sphere, dotted with its myriads of far distant suns and at times adorned by the silvery crescent of the moon, but seldom appeals to our sense of ideality, long familiarity with the scene having rendered us unmindful of its real magnificence and sublimity, so that hundreds go out on a beautiful night and scarcely notice the scene, but let an unusual phenomenon occur and sleeping identity shakes off her drowsiness and compels us to take an interest in it. So when a comet rushes into our midst, and as if by magic spreads out its tail upon the sky, every eye is eagerly turned toward it, and every one, from the astronomer to the unlettered rustic, feels his own peculiar interest in the celestial visitor.

The only thing about a comet that makes it generally interesting is its tail, and to the thoughtful, when they see such a comet as the one which appeared last summer, three naturally comes the question, "How do comets get their tails and what are they made of?"

Various answers have been given to this question, some of which may prove interesting to those of our readers not already acquainted with them.

A good many plausible theories concerning their physical constitution, have been put forth, but as yet none of them completely satisfy all the known phenomena connected with comets.

It has long been known that comets do not carry their tails with them through the whole of their orbits, but that these appendages are developed as they approach the sun, and their development is somewhat as follows: whatever may be the exact composition of the comets, it is evident that they contain matter capable of vaporization, and when they begin to approach tolerably near the sun, they are exposed to his heat, and, as the pressure on the surface of the comet is very small, liquids will boil at a very low temperature, and vapours are thrown off in large quantities, forming the tails that attract so much attention.

The matter in the tails of comets is, therefore, gaseous, and not only gaseous, but also very highly attenuated,—so very rare, indeed, that faint stars which would be put out by the thinnest haze that can be detected in our atmosphere have been clearly seen through some of the most imposing. Matter so greatly rarified possesses but little power of cohesion, and in consequence it is known that the tail of a comet does not follow it, but that it is con-

stantly being dissipated into space, and appears to follow only because a new one is being constantly developed. This is known to be true from the observed fact that the tails of comets when passing around the sun at or near the time of perihelion, have changed their positions from one side to the other so quickly that the velocity with which the particles must necessarily have moved, would have thrown them entirely out of the comet's orbit, had the tail in the latter positions been composed of the same molecules as that in the former.

The theory that the appendages are thus formed by the evaporation of matter in the nucleus, is a very plausible one, and satisfies most of the observed phenomena. There is, however, a peculiarity about comets which this theory alone does not satisfy. It is known that their tails always point away from the sun so that, although it is easy to see how they are developed from vapors caused by the sun's heat, some other force must cause their known position.

Perhaps the earliest theory that attempted to explain this was that as the renowned Kepler, who thought that the tail was formed by the impact of the solar rays upon the nucleus from which they carried particles of matter as they proceeded outward into space, but as that was based on Newton's emission theory of light, it has lost its plausibility since the advent of the undulatory theory. Newton explained the phenomenon by assuming a cosmic atmosphere or a very rare medium in space, which he supposed to be warmed by contact with the warmed atmosphere of the comet, and to cause a draft outward by it, much in the same way that a draft is caused in a chimney when the air in it is made warmer than that outside.

There is still a good deal of mystery connected with the physical constitution of comets, but the theory which is now most believed in, and which is probably in the neighborhood of the truth, is that comets are masses of meteoroids, and that, when they approach the sun, its heat generates vapor, whose molecules are at the same time charged with positive electricity. The sun is also supposed to be positively electrified, and as similar electricities repel one another, the highly attenuated vapors are driven back with great velocity in an opposite direction to the sun, forming beautiful cimeter-like appendages, extending off into space for millions of miles.

MOTHER SHIPTON'S SUCCESSOR.

PREDICTIONS REGARDING THE END OF THE WORLD

FOR THE NEXT DECADE.

Mother Shipton's successor has commenced business, and these are her prophecies so far.

The world shall come to an end—'tis true,
In 1882.

The world itself shall no longer be,
In 1883.

The world itself shall be no more,
In 1884.

The world itself shall not survive,
In 1885.

The world shall vanish into nix,
In 1886.

The world shall burn in fires from heaven,
In 1887.

The world shall end as sure as fate,
In 1888.

The world shall end, if rhyme is a sign,
In 1889

The world can't possibly come to an end in 1890 for there is no rhyme to let it die on:—

But certainly to an end 'twill run,
In 1891.

M. S. L.

SLEIGHING MONTREAL TO WASHINGTON.

WASHINGTON, D.C., February 6.—Sleighting is so rare a diversion in this latitude that the ground is no sooner whitened with snow than the fun begins, and by the time it has reached the depth of a few inches it becomes fast and furious, and the avenue is as gay as a wild revel of the carnival. This broad avenue, which gradually inclines from the Treasury to the Capitol, is as smooth as a billiard table, and over a mile in length, making a splendid drive. Elegant shell-shaped sleighs, heaped with costly furs and drawn by spirited horses, dash along, carrying parties whose faces are radiant with enjoyment, and whose merriment mingles with the rhythm of merry bells.

SLEIGHING IN WASHINGTON.

Old-fashioned pungs, drawn by veteran horse flesh known as "plugs" to young America; sleighs improvised from dry goods boxes, crockery crates and hogshells sawed into the shape of huge chairs set upon clumsy runners, have the oddest kind of cattle before them. These are guided through the labyrinth of turnouts by reins of rope or bed ticking, and the occupants are bundled in patch-work quilts, faded shawls or buffalo robes so ancient as to be baldheaded; family sleighs, roomy, soft cushioned and comfortable, crowded with troops of happy children riotous with delight, enliven the scene with their gladness; belles and beaux in stylish cutters flash by behind high steppers, and the owners of fast horses speed them to the admiration of the pedestrians who throng the sidewalks or lounge before the hotels along the course—this is a familiar picture enough in Northern cities, but here a fleeting pleasure of a few hours; therefore the beautiful snow has always a royal welcome until it becomes the far from beautiful slush. No one will question the intense democracy of the National Capital who has witnessed one of these gala days on the avenue. There are good fellowship and heartiness that are simply infectious. The old darkey, behind his gnarled and spavined mule, is as much at home as the President himself, who is whirled by like the wind by a pair of superb bays, or her Britannic Majesty's representative, whose turnout is drawn by long-tailed clipped thoroughbreds, with the Sackville-West crest on the bauds of their head-stalls. Everyone goes in for a good time, and there is no end of fun for both the observer and the observed.

THE WORLD'S COLDEST PLACES.

The coldest place on the earth is not, as has hitherto been believed by meteorologists, Yakutsk, in Siberia, but Verkoyansk, in the same region, lying in $67\frac{1}{2}^{\circ}$ north latitude, on the River Yana. Its lowest mean winter temperature is 48.6° below zero centigrade. This, then, is the cold pole of the earth in Asia; the corresponding pole in America being to the north-west of the Farry Islands; and the line joining these two places does not pass through the North Pole itself, which is thus, in all probability, outside the line of the greatest cold. It is noteworthy that Verkoyansk, like Yakutsk, is on the mainland, a considerable distance from the Siberian coast, which possesses a comparatively milder climate. The recent Schwatka Franklin search expedition, however, found that in the neighbourhood of the Black river the mean winter temperature is not far behind that of Verkoyansk; of course the minima of both places reach a much lower figure. It is well known that in the tropics, on the other hand, the greatest heat is not at the Equator, but some distance north and south of it.—*Pall Mall Gazette.*

This time Vennor has nearly struck the truth, when he foretold the disappearance of the snow, the past three days having verified his predictions. Drawing heavy loads on runners is almost impossible and if the thaw continues much longer the roads will be bare. On Thursday morning the mill owners were drawing lumber on waggons, and on the same morning the city of Ottawa Passenger Car Company had to take to wheels. The bad state of the roads is materially interfering with the market. Cordwood is very scarce, and a large price is being asked for it.—*Hall Dispatch.*

A special prediction for the summer of 1882 will be given in next issue.

PERIODICAL OR OCCASIONAL EVENTS, 1881.—TORONTO.

- January 24.—Ice on Bay 31 inches in some places, generally 2 feet.
- February 10.—Robins seen.
20.—Woodpeckers numerous.
- March 3.—Ice on Bay 3 feet 6 inches thick; lake frozen as far as can be seen from three miles south of Island.
11.—Wild geese seen.
17.—Crow blackbird seen. Duck numerous in marsh.
- April 1.—First schooner arrived at elevator.
12.—Last snow of season. 14th, Ice 42 inches thick at Church Street Wharf.
14.—Ice broke up, and sail boats out on Bay. Steamer crossed to Island.
8.—Butterflies seen. 10th, cherry birds. 15th, swallows seen.
22.—Swallows numerous. 24th, frogs heard.
26.—Water spout passed down lake at 10 a. m.
29.—Whip-poor-Will heard.
- May 3.—First lake steamer arrived. 7th, last frost of season.
8.—Baltimore bird seen. 9th, humming birds.
11.—Plum trees in blossom. 16th, apple trees in blossom.
21.—First lake steamer arrived. 29th, fireflies seen.
- July 24.—Humming birds numerous.
- September 30.—Swallows still about, disappeared shortly after.
- October 5.—First frost and ice of season.
- November 4.—First measurable snow of season.
- September 5.—3:30 to 7 p. m., a strange colour covered the whole sky, varying from pale yellow through orange to dark red, accompanied by intense darkness. This peculiar phenomenon was owing to the atmosphere being filled with smoke from bush fires raging west and north of the City.

CHRISTMAS ON A MONDAY.

Christmas falls on a Monday this year. It fell on the same day in 1865, 1871, and 1876.

- "If Christmas Day on Monday be,
"A great winter that year you'll see,
"And full of winds both loud and shrill;
"But, in summer, truth to tell,
"High winds shall be and strong,
"Full of tempests lasting long;
"While battles they shall multiply,
"And great plenty of beasts shall die,
"They that be born that day, I ween,
"They shall be strong each one and keen;
"He shall be found that stealth ought,
"Tho' thou be sick thou diest not.

This old verse and "Mother Shipton," probably came out of the same corner.

SKATING IN NORWAY.

In Norway the ground is overspread with snow for three quarters of the year, and not unfrequently to a depth of ten feet. When a thaw comes it is only the surface of the mass that melts; and then the next frost of course covers the whole country with a crust of ice. In such circumstances there is no getting along in the usual way. The people must still ascend the hills and dive into the valleys in pursuit of game; they must still traverse the hoary forests to gather wood for fuel; and they must still journey to the distant towns to bring food to their isolated hamlets. In these excursions, whether long or short, they use skates. Skating is with them neither a mere amusement nor a gymnastic exercise; it is a means of locomotion which the nature of the ground renders indispensable, and a man who could not skate would be unable to walk to any useful purpose.

WINTER.

I saw him on his throne far in the North,
Him ye call winter, picturing him ever
An aged man, whose frame, with palsied shiver
Bends over the fiery element, his foe.
But him I saw as a young god whose brow
Was crowned with jagged icicles, and forth
From his keen spirit-like eyes there shone a light,
Broad, glaring and intensely cold and bright.
His breath, like sharp-edged arrows, pierced the air,
The naked earth crouched shuddering at his feet;
His fingers on all surrounding waters sweet
Lay icily—motion nor sound was there;
Nature seem'd frozen—dead; and still and slow
A winding sheet fell o'er his features fair,
Flaky and white from his wide wings of snow.
—[Fanny Kemble-Butler.

PREHISTORIC TIDES.

Lecture by Professor Bell, of England.—At present the moon is 240,000 miles away; but there was a time when the moon was only one-sixth part of this, or say 40,000 miles away. That time must have corresponded to some geological epoch. It may have been earlier than the time when Eozoon lived. It is more likely to have been later. I want to point out that when the moon was only 40,000 miles away, we had in it a geological engine of transcendent power. If the present tides be three feet, and if the early tides be 216 times their present amount, then it is plain that the ancient tides must have been 640 feet.

There can be no doubt that in ancient times tides of this amount and even tides very much larger must have occurred. I ask the geologists to take account of these facts, and to consider the effect—a tidal rise and fall of 648 feet twice every day. Dwell for one moment on the sublime spectacle of a tide 648 feet high, and see what an agent it would be for the performance of geological work! We are now standing, I suppose, some 500 feet above the level of the sea. The sea is a good many miles from Birmingham, yet if the rise and fall at the coast were 648 feet, Birmingham might be as great a seaport as Liverpool. Three-quarters tide would bring the sea into the streets of Birmingham. At high tide there would be about 150 feet of blue water over our heads. Every house would be covered, and the tops of a few chimneys would alone indicate the site of the town.

In a few hours more the whole of this vast flood would have retreated. Not only would it leave England high and dry, but probably the Straits of Dover would be drained, and perhaps even Ireland would in a literal sense become a member of the United Kingdom. A few hours pass, and the whole of England is again inundated, but only again to be abandoned.

These mighty tides are the gift which astronomers have now made to the working machinery of the geologist. They constitute an engine of terrific power to aid in the great work of geology. What would the puny efforts of water in other ways accomplish when compared with these majestic tides and great currents they produce?

In the great primeval tides will probably be found the explanation of what has long been a reproach to geology. The early palaeozoic rocks form a stupendous mass of ocean-made beds, which, according to Prof. Williamson, are twenty miles thick up to the top of the Silurian beds. It has long been a difficulty to conceive how such a gigantic quantity of material could have been ground up and deposited at the bottom of the sea. The geologists said: "The rivers and other agents of the present day will do it if you give them time enough." But, unfortunately, the mathematicians and the natural philosophers would not give them time enough, and they ordered the geologists to "hurry up their phenomena." The mathematicians had other reasons for believing that the earth could not have been so old as the geologists demanded. Now, however, the mathematicians have discovered the new and stupendous tidal grinding engine. With this powerful aid the geologists can get through their work in a reasonable period of time, and the geologists and the mathematicians may be reconciled.

POUGHKEEPSIE, Feb. 13.—Heavy bodies of ice have amassed in the Highlands. If the cold continues it is doubtful if the steamers start next week.

THE TRYING CLIMATE IN LONDON.

The absence of light in London—due largely to coal smoke, becomes, year after year, a subject of very serious consideration. It is this that drives the middle class to the suburbs, or to any spot where once in the course of the day they can seem to live; and there is no one class of the community which is not affected in health and spirits when the autumn is upon us, and the advent of winter is fairly threatened. Both young and old are subject to this seasonal influence; no man, however robust, can defy the treachery of the English climate, while for the weak a peril lurks at every window, and a danger at every door. If there is one feeble spot in a person's constitution the winter will find it out. Leave off a garment too hurriedly, or neglect to put one on at the right time, and too probably the penalty will be paid. The vigorous individual who gets along from November to May without rheumatism, neuralgia, toothache, cold, low, feverish symptoms, or bronchitis, is a miracle to his less hardy brethren. No doubt there are heroic creatures, of faultless digestion, who make a boast that they never wore a great coat in their lives, who scorn draughts, who neglect even as years advance the necessity of studying underclothing, who come out of hot rooms and refuse to wrap up, who break the ice in their bath or bathe all the year round in the Thames or the Serpentine; but such strong pitchers as these go once too often to the well, and chill October oftentimes forces the oaken gate while the creaking door is still on its hinges.—*London News.*

The indications given of approaching changes of the weather by pains and muscular aches amongst those so afflicted, are often wonderfully accurate; but some of the best of these natural Barometers we have lost since the people have begun using *St. Jacob's Oil.*

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- 2 Lots in the North West Corner of Buckingham;
- 1 " " ditto ditto ditto
- 5 " " Wakefield;
- 6 " " Hull.

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The Canada West Land Agency Company

OFFICES: 11 ADELAIDE STREET EAST,

Toronto, - - Canada.

J. R. Adamson, - - - Manager.

This Company is being established by a few leading men in the Province of Ontario with the object of bringing into the Province a better class of Immigrants than has hitherto been obtained.

It is felt that the time has come when in the interests of Ontario some such step should be taken.

There appears to be a great enquiry just now by persons of this class in Great Britain for information as to the advantages of emigrating to and settling in Canada, but at present there is no organization formed to gather information sought for, and spread it in the right direction there. The Government has never been successful in obtaining this class of immigrants, in fact they have never made it a special object to do so.

The reason for carrying on the work by the assistance of a Company, with a moderately large capital, is in order to inspire confidence in those whom the Company will deal with in Great Britain, who will be more disposed to rely on the information they receive if it is conveyed to them through such a responsible agency.

That there is very urgent necessity for some such organization as is now contemplated is very apparent. Within the last three years the selling value of farms in Ontario has declined at least 20 per cent. This decline has taken place in spite of the fact that during these three years we have had a succession of exceptionally good crops, a circumstance which has always had the effect of raising the price of land. The reason of course for this remarkable decline is that hundreds of our farmers have sold their farms, or have offered them for sale with the view of going to Manitoba or the North-West. So many farms have in fact been thrown on the market that the usual result of over-supply has happened. Now, this state of things will, beyond all question, grow worse and worse. Emigration to the North-West has only commenced. Every sort of inducement to emigrate will be held out to our people, and they will go by thousands. The selling price of land will still further decline, and the very apprehension of it will doubtless influence a great many more to sell, and so increase the difficulty.

It becomes therefore a question of very grave moment to those who have invested money in real estate and in mortgages to lose no time in endeavoring to counteract the influences which have produced this state of things. It does not appear that anything more effectual or more natural can be done than to procure a supply of immigrants who will take the place of those who are gone and are about to go. If this Company can even secure two or three hundred new settlers per annum of the class above indicated, it will have accomplished a great work. There does not seem to be any difficulty in doing this.

The idea of the gentlemen who are interesting themselves in this movement is to establish a Company, with a subscribed capital of \$100,000, the whole business of which will be to energetically and effectually prosecute the objects above mentioned.

Although as much as \$100,000 will be subscribed in order as above mentioned, to inspire confidence in the minds of the people in Great Britain who may deal with the Company; it is not intended to call up more than \$10,000 of this amount. The small commission which the Company will receive on the sale of each property, will, it is hoped, pay the working expenses, and leave sufficient for a reasonable dividend to the shareholders of, say from eight to ten per cent on the amount of stock paid up.

The Company will first collect from all parts of the Province particulars of farms for sale, and lists of farms will be prepared by it and published under appropriate headings in its monthly pamphlets.

These pamphlets will also contain information as to the numbers and nationality of the population in different localities; the advantages offered by schools, markets, railway communication; the kind and quality of soil; the adapt-

ability of the various districts for different kinds of farming, such as agricultural, dairy, hop-growing or stock-raising, and everything else that would be valuable for an intending immigrant to know.

The Company will then appoint special agents in Edinburgh, Glasgow, Liverpool, London and other commercial centres in Great Britain. They will also communicate with the agricultural schools and societies existing in nearly every county in England, Scotland and Ireland; also with the agents in Great Britain of the different Canadian Loan and Railway Companies, Banks and other public institutions; also with the Government Emigration Agents, and will, through these sources, become acquainted with the tenant farmers and others who are desirous of getting information as to the kinds of farms they can purchase here.

The Company will also endeavor to enlist in their service the delegates of the British farmers, who have during the last few years visited Canada in the interests of the small farmers in their own particular localities, and it is confidently hoped that through the aid and recommendation of these gentlemen the Company will be able to induce many of these to come to Canada.

It is proposed that at least a hundred thousand copies of these lists should be distributed by the Company, and its agents, among the farming community in Great Britain and Ireland; the Company will also advertise largely in the English, Scottish and Irish newspapers.

It is confidently hoped that in this way some hundreds of farmers, with moderate capital, say \$5,000 to \$20,000, will be induced each year to immigrate to this Province, and to purchase and settle on the farms from time to time offered for sale.

But such a work as this can only be done if those who have initiated it are supported by the public.

Considerable expense will be incurred in advertising, and making the objects of the Company known in Great Britain, and as all classes of the community will be greatly benefitted by its success, it is thought that a hopeful appeal for support and subscriptions may be made to those of our leading monetary institutions, that are more immediately interested in it, as well as our leading citizens and merchants.

It is well known that the best immigration agents are those who have a direct interest in bringing out immigrants, and inasmuch as this Company will be directly interested in disposing of the farms on their lists, in consequence of the small commission they will receive on a sale being effected, it is expected that they will secure quite a large number of the class of people above mentioned.

The following article on this important subject, taken from the *Mail* newspaper on the 25th of April last, is well worth perusal.

"There is a grave danger that, in the endeavor to settle the North-West, important interests may be neglected nearer home. There can be little doubt that for some years to come Ontario will lose some of its best well-to-do farmers, whom the offers of the Government and the Pacific Railway Company may attract to the rich lands from Winnipeg to the Rocky Mountains. Already not a few have sold their farms and gone hither. As the line approaches completion this emigration from a comparatively old country to a new one will undoubtedly increase; the value of real property will be seriously depreciated, and the wealth of the Province seriously diminished. It is high time that our people were awakened to a sense of the danger ahead. For the present men's thoughts are naturally directed to the North-West, and all the efforts of the Dominion are being put forth to settle it as speedily as possible from Great Britain and Ireland. To that policy, of course, we have no objection; but the question arises whether something

ought not to be done for the older Province, which is sure to be depleted to a greater or less extent of its wealth and population. Canada is inviting emigrants of the poorer class, eminently fitted to be useful colonists in the North West; but she cannot prevent men of capital from selling out here and taking advantage of the wide field for settlement. We shall thus have emigration as well as immigration, whilst Ontario will be a loser, rather than a gainer, from both.

The question cannot be faced too early, therefore how is this danger to be met? In what way may the blank spaces be filled up by agriculturists as wealthy at least as those who left it, or will certainly leave, taking their means with them. Surely by some supplementary scheme of immigration calculated to bring over moneyed settlers in their places. The class of settlers they will heartily welcome in the North-West hardly meet the emergency. What Ontario wants under the circumstances is fresh blood and also fresh capital. Now, no time could be more propitious for the new departure in the scope of our immigration system than the present. In Britain a succession of bad harvests has thoroughly disheartened the small proprietors and the tenant-farmers. They find themselves losing money year after year, and would gladly transport themselves to well-tilled farms in Ontario if they knew that any such were to be had. Some of the Irish Landlords again, and the better class of tenants who have saved money, may also be attracted hither. In the course of four or five years this Province will feel the want of such men without a doubt, and it is not a moment too soon to put the necessary machinery at work to gain them over. The class especially desired are men with families, having from, say \$10,000 to \$20,000, who could immediately purchase and occupy the splendid farms to be vacated by those who go West. Now that such a class of immigrants can be secured, if only the necessary means are taken to disseminate information on the subject there can be no doubt.

At present the idea appears to prevail in the Old Country that the Dominion only desires small tenant-farmers or agricultural laborers. These the country as a whole certainly does want in as large numbers as possible; but in addition we shall soon be in serious need in Ontario of small capitalists. Now that what has been called the North-West fever has set in, there can be no limit set to its effects on the older provinces. But we may partly judge of the future by the present. In two or three years the Pacific Railway will extend more than half-way to the Rocky Mountains, and there will be a certain efflux of population thither from Ontario at a constantly increased rate. By a fair amount of exertion, the balance may be redressed by means not over-expensive, and yet of intense utility if used in time. We are given to understand that an effort in this direction is to be put forth by an association to be called the "Canada West Land and Agency Company." Its chief objects will be to collect information throughout the Province regarding farms for sale with such additional facts regarding country soil, climate, immigrants, equipments, cost, etc., as may be useful to British emigrants with small capital. The Americans, unlike ourselves, have not neglected this very desirable class of settlers, and we can no longer let them have it all their own way. The Company contemplates establishing agencies at London, Liverpool, Manchester, Edinburgh and Glasgow, and probably at Belfast and London. They expect to receive assistance from banks, loan and insurance companies holding real estate, as well as from local agents. By this means the British agriculturist will be kept fully informed of the field to which he is invited under the old flag, and the movement once begun there is little fear of the result. We think that the project will be warmly taken

up, because it may be of an anxiety to us. Ontario must meet the one by the other, unless she is willing to see her capital, gradually, but not seriously, reduced by a real exodus."

Over seventy-five thousand dollars have been subscribed towards the organization of the Company by the following and other well-known gentlemen: The Hon. Sir William Pearce Howland, C. B., K. C. M. G.; the Hon. George W. Allan, Senator; Hon. R. M. Wells; Goldwin Smith, Esq.; J. S. Locke, Esq., (Financial Manager British Canadian Lumbering and Timber Company); Peter Paterson, Esq., (Governor British America Assurance Company); Samuel Nordheimer, Esq., (President Federal Bank); A. H. Campbell, Esq., (President British Canadian Loan and Investment Company); E. B. Osler, Esq., (Vice-President Credit Valley R'y. Company); H. S. Howland, Esq., (President Imperial Bank); W. F. McMaster, Esq., (A. R. McMaster & Bros.); R. N. Gooch, Esq., Manager North British and Mercantile Insurance Company, Toronto.

J. S. Playfair, Esq., (Vice-President Federal Bank); Robt. Hay, Esq., M. P., Toronto; Daniel McLean, Esq., Toronto; Alexander Manning, Esq., Toronto; Wm. N. Anderson, Esq., Toronto; Messrs. Elliot & Co., Toronto; W. H. Lockhart Gordon, Esq., Toronto; J. C. Kemp, Esq., Toronto; James Michie, Esq., Toronto; E. O. Bickford, Esq., Toronto; Messrs. O'Keefe & Co. Toronto; Messrs. Rice Lewis & Son, Toronto; Columbus Greene, Esq., Toronto; Noah Barnhart, Esq., Toronto; Thomas McGaw, Esq., Toronto.

Persons desirous of joining with the gentlemen above mentioned, in their endeavors to benefit the Province by securing the class of immigrants above mentioned, should send their names and addresses to one of the following gentlemen, who have been appointed a committee to receive subscriptions for shares in the Company.

The Hon. G. W. Allan, Toronto; J. S. Lockie, Esq., Toronto; A. H. Campbell, Esq., Toronto; E. B. Osler, Esq., Toronto; W. H. Lockhart Gordon, Esq., Toronto; or the Manager.

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