

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- Coloured covers/
Couverture de couleur
- Covers damaged/
Couverture endommagée
- Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée
- Cover title missing/
Le titre de couverture manque
- Coloured maps/
Cartes géographiques en couleur
- Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)
- Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur
- Bound with other material/
Relié avec d'autres documents
- Tight binding may cause shadows or distortion along interior margin/
La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure
- Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/
Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.
- Additional comments:
Commentaires supplémentaires:

- Coloured pages/
Pages de couleur
 - Pages damaged/
Pages endommagées
 - Pages restored and/or laminated/
Pages restaurées et/ou pelliculées
 - Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées
 - Pages detached/
Pages détachées
 - Showthrough/
Transparence
 - Quality of print varies/
Qualité inégale de l'impression
 - Continuous pagination/
Pagination continue
 - Includes index(es)/
Comprend un (des) index
- Title on header taken from: /
Le titre de l'en-tête provient:
- Title page of issue/
Page de titre de la livraison
 - Caption of issue/
Titre de départ de la livraison
 - Masthead/
Générique (périodiques) de la livraison

This item is filmed at the reduction ratio checked below/
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	12X	14X	16X	18X	20X	22X	24X	26X	28X	30X	32X
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

WEATHER

VENNOR'S



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. 9.

MONTREAL, OCTOBER, 1882.

ONE DOLLAR PER ANNUM

OCTOBER.

Exit Summer.

Rain, rain, rain, again.

Singularly early snow-falls.

Unseasonably sharp frost snaps.

A very early western snow blockade.

Weather prophets will abound.

Earthquakes not improbable in northern sections of United States and in Canada during fall months.

Early migration of northern birds.

More money will be squandered on Venus.

A stormy month on Newfoundland coast. Gales and snow flurries.

Snow falls in England and Scotland and gusty weather on north British coast probable.

The 25th, 26th and 27th of Oct. will be generally days of storm and cold.

1883 ends in an odd number—what of it? It will be an odd winter.

As the latter part of September is, so is likely to be the fore part of October; and as the latter part of October so also will be the fore portion of November.

The most wintry period in the winter of 1882 '83, will, in all probability be that between the 16th of December and 15th January.

Sleighting right down to Virginia this winter, 1883.

Plenty cold, plenty ice, plenty snow for winter coming, or it will be exceptional.

—"Raindrops on the roof." Of course it drops on the roof. That's what the roof is for.—(Cincinnati Saturday Night.)

—A hackman recently went into the surf at Long Branch and encountered a huge shark. Their eyes met for an instant, when the shark blushed and swam out.—Puck.

From the lake and from the mountain,
From the sea and from the glen,
Homeward flock the summer tourists—
Weary women, jaded men,
Soon the butcher and the baker
Will their healthy orders fill,
And the greedy, grumpy gasman
Will present his summer bill.

PSHAW.

10th Month.

31 Days.

OCTOBER.

FIRST WEEK (1st to 7th).

Some sharp frost this week in Northern Sections about 6th. Altogether a favourable week, but there will probably be local wind and rain storms, 3rd and 6th. This will be a very stormy month in Ontario and Western United States.

SECOND WEEK (8th to 14th).

Will probably enter with severe wind storms and heavy rains east and west, marked storm period about 9th and 10th. End of week fine and calmer weather. Frosts may occur about 12th.

THIRD WEEK (14th to 21st).

Very stormy with snow falls in Western and North Western Sections, Southern Minnesota, and Eastern Dakota. Storms on lakes and at Chicago, Milwaukee. Storms will extend to Cincinnati. General snow falls 17th and 18th. Cold weather in Iowa, severe weather towards Des Moines. A terrible week of storms in all sections. Snow in England.

FOURTH WEEK (21st to 28th).

About Oct. 24th generally stormy weather with snow falls in Ontario and in Maritime Provinces. Cold, miserable, wet and sleety weather or snow in New York. An unusually severe October. Storms in England.

CLOSING DAYS (29th to 31st).

Snow and rain falls in Great Britain and heavy gales. Very severe on east coast of Scotland.

Special Notices.

We have just 150 complete back number sets of BULLETIN up to June (inclusive) and these we wish to dispose of to some of our later subscribers, who may desire to have the year entire. Price only 25 cents.

The Almanac for 1883, which I have this year entrusted to A. Vogeler & Co., of Baltimore, for effective publication is one on which I have spent much time and labor. The predictions embrace the Autumn months of 1882, as well as the winter of 1882 and are definite in their wording. The body of the work is composed of brief original papers prepared expressly for this particular issue. At my earnest request the price has been placed at 10 cents per copy, so that every individual in the country may have the book. There will be found reading enough in this little manual for the whole year's reading.

HENRY G. VENNOR.

Sept. 25th.

Special Briefs.

—The average rain fall for the summer of 1882 in the Northern Hemisphere will undoubtedly be very considerably over the average of the past 20 years. The average temperature will likewise probably be much lower than in the same period of years.

—The summer of 1882 will show the heaviest local rain falls in a half century. Thunder storms, however, will be below the average.

—Our prediction that Western section would suffer more from rain and floods than thunder and wind storms during the season of 1882 has proved correct.

—A very windy Autumn is now almost certain with advanced and heavy snow falls.

—Canada will have a very cold winter. So will Great Britain.

—A great storm period is probable over a large part of the North American Continent after the middle of October.

Wheat Growing Maxims.

Somebody has been at the trouble of condensing a great deal of information about wheat growing, as follows, into very small compass, and somebody else has set it afloat without giving credit to the author:

1. The best soil for wheat is rich clay loam.
2. Wheat likes a good, deep, soft bed.
3. Clover turned under makes just such a bed.
4. The best seed is oily, heavy, plump and clean.
5. About two inches is the best depth for sowing the seed.
6. The drill puts in the seed better and cheaper than broadcasting.
7. From the middle of September to the last of October is the best time for sowing.
8. Drilled, one bushel of seed per acre; if sown broadcast, two bushels per acre.
9. One heavy rolling after sowing does much good.
10. For flour, cut when the grain begins to harden; for seed, not until it has hardened.—*St. Louis Miller.*

English naturalists have just discovered that the English sparrow picks the eyes out of the young of other birds. Altogether three appears to be no reason why this foul should not be called the Guitaebird.

Our August "Cold Wave."

CHICAGO LETTER.

CHICAGO, Aug. 11.—Mr. Vennor, the great American weather prophet, has very certainly hit the nail on the head for once in his life. Along last winter he prophesied that we would have a cold, rainy spell during the month of August, carrying around a heavy overcoat and sleeping under two blankets, and then to come near freezing, seems a little unusual for the first of August; but as Hop Price used to say, "it is so."

ARRIVAL OF A COLD WAVE.

NORTH ADAMS, Mass., Aug. 19.—A cold wave has struck North Adams this morning. For several days past the heat has been very oppressive, but a sudden change has taken place. Cool and invigorating breezes are this morning blowing from the Berkshire Hills, and all seem to gain new life and vigor under their exhilarating influences.

We do not, however, regard the warm season as ended. These refreshing breezes will soon give place to sultry days and intense heat, and many will yet flee to the tops of Greylock and Hoosac mountains and other places of equal promise, in order to escape the heat that is yet to come. We are fortunate in being able to find delightful retreats for rest and coolness by travelling a short distance.

THE CHILLY WEATHER.—Yesterday was one of the coldest days of the season, the thermometer only being about 50° degrees in the morning and rising to only between 60° and 70° during the day. Many persons complained of a chilliness unusual in the month of August.—*Toronto, Aug 19*

FROST.

HALIFAX, Aug. 21.—A slight frost occurred here last night.

SHERBROOKE, Quebec, Aug. 21.—Reports from various parts of the surrounding country say that a sharp frost last night did great damage to crops in every direction.

CORRY, Pa., Aug. 20.—A heavy white frost fell in this region last night. There was no apparent damage to vegetation.

Frosts through New York State, Maine and Massachusetts same dates.

Chicago and Cincinnati continued warm through this cool period.

Three days and three nights rain in Texas.

The Eastern Illinois, Marshall, remarks:

The New York Observer says that Vennor is a humbug. That is cheap talk, but we fear the Observer has not carefully observed the weather.

So far as Vennor's predictions for this summer are concerned, they have been in the main verified. It may be said that any fool can safely say there will be rains and sunshine and that they are inevitable. But frosts in August are not common. Yet we had a frost this week and Vennor predicted frost in August. He ran a good deal of risk to guess at the frost at this time of year without any substantial reason.

The weather of the Island of Montreal continues decidedly unseasonable, and its effect is being shown in the scarcity of Garden produce. There is so little continuous dry weather that vegetables are extremely backward in coming forward, and scarcity and consequent dearthness is the result. Two weeks ago, tomatoes, which it is well known are usually a prolific crop in Montreal could be bought for one dollar a bushel, to-day they range from \$2.50 to \$3.00, while potatoes, which on Tuesday last were quoted at one dollar a barrel, are worth from \$1.75 to \$2 a barrel to-day. The present prospects indicate a rather unfavorable outlook for cheap vegetables during the coming winter.—*Montreal Star, Aug. 24*

The August Snow Cloud on the Lake.

Capt. Stine and other officers of the propeller "Menominee," report a singular thing outside. On Tuesday night last (Aug 8)—the same night, by the way, that the reflection of the North Side Rolling mills was seen all the way across Lake Michigan—when the "Menominee" was in midlake, a thick, cold cloud swept over the water and burst over the steamer, or the steamer burst the cloud, and her decks were covered with snow and clush to the depth of six inches. The "Menominee" was moving at the time at a speed of about 14 miles an hour. For five minutes the atmosphere was like that of winter, and with snow on them and on deck, the officers felt as if the boat had suddenly plunged into winter. At the expiration of the five minutes, when the boat had passed out of the polar wave, the atmosphere became warm and summer suddenly again set in. Capt. Stine and his officers and passengers were greatly puzzled at the phenomenon. Snow in this latitude in August is something wholly unprecedented.

The cloud or polar wave, or whatever it may be termed, was accompanied by a roaring sound, though the wind was by no means high or swift at the time, and numerous gulls hovered around the vessel, shrieked a dismal chorus, and whirled away. One great fellow perched upon the pilot house and remained several minutes. The melancholy birds seemed to be travelling with the storm as a part of it. The scene was awe inspiring and grand. For the time being the passengers were startled, if not really alarmed. Following this phenomenon there has been northerly winds the past two or three days, and weather that was colder than many of the oldest navigators ever experienced before in summer time. It was "real cool" in the city as all are aware, but outside on the lake vessel masters say the weather was like November.

The Weather.

The storms predicted in our August BULLETIN, for the 17th and 18th of the month, appeared to have occurred on the 15th, as the following records will show:

MADISON, Wis., Aug. 15th. A fierce rain, wind and hail storm swept over this section last night. It lasted in its great severity from 10 p.m. to 6.30 a.m., the most severe outbursts occurring after midnight. The wind reached a velocity of fifty miles an hour, and the rainfall between dusk and dawn was three and one half inches. The storm came from the west and north-north-west, passing between Fourth and Second Lakes right over the city. In the town trees were stripped of leaves and branches, the gardens were despoiled, streets gullied, low lands flooded and the lakes rose one foot. The hail broke in many windows of houses on Fourth Lake ridge, and the storm was so severe that several families retired to the cellars, fearing their houses would be blown down or carried off. West and east of the city crops were badly damaged, fields covered with wheat shocks were despoiled, corn and standing small grains were laid flat, and hundreds of acres of tobacco in Dane County were riddled and wholly spoiled. Many of the principle fields were insured in hail insurance companies, and the German American Company of St. Paul will lose heavily. At Cross Plains, a neighboring village west of here on the Prairie Du Chien Division of the St. Paul, two bridges were washed away, and two trains, one passenger and one freight, which had been run in there for safety, are imprisoned, but will be enabled to reach Madison some time during to-night. Seven freight cars standing on one of the bridges were washed away and

are a wreck. Telegraph lines are all down west of Cross Plains, so that no news of damage beyond, is attainable. Trains, except on the Prairie du Chien Division, from the west are all on time to day. At Devil's Lake five inches of water fell on the camp ground of the Third Battalion of State Militia, and they had recourse to the higher land. At Portage la Proue, and Watertown there was heavy rain but no hail.

BANGOR, Me., Aug. 15.—A furious tornado visited this vicinity this evening, reaching this city about 6 o'clock. The wind blew with terrific velocity, the rain fell in sheets, converting the streets into streams, the whole accompanied by incessant thunder and lightning. The destruction of property is very great, buildings being blown down, roofs taken off, chimneys demolished, and signs and awnings carried away. The spire of the Universalist Church was blown to the ground and the roof of the country court house was taken off. The interior of the Bangor house was injured by the chimney falling through, and the European and North American Railway car-sheds were blown down and imprisoned a train of cars. Several ice-houses were badly damaged. Hundreds of chimneys went over, and the business streets are almost impassable.

Lightning struck the stable adjoining Maxfield's wool factory, and set it on fire. St. John's Church was struck, but not much damaged. A set of buildings in Veasie were destroyed by fire during the storm. A vast amount of damage is done to the crops in the vicinity. The storm was local and only covered a small territory. An estimate is difficult now, but the loss will amount to between \$50,000 or \$100,000.

MENDOTA, Ill., Aug. 15.—A remarkably severe thunderstorm, accompanied by a violent gale of wind and a perfect deluge of rain, visited this section of the country to-day. Lightning struck several places in this neighborhood. The only serious damage done, however, besides a few severe shocks to persons in the immediate vicinity of the storm, was the burning of Henry Corkin's barn. The horses were got out. Loss about one thousand dollars, insured for three hundred in the Farmers' Mutual. The same fluid struck the smokestacks of Gregg's flour mill and Fay's Rendering Establishment. From the barn to Fay's chimney is over three miles, but, taking in the mill, the fluid must have taken a course similar to a horseshoe, extending the circuit about five miles from southwest to southeast of this point, covering an area of about ten to twelve miles square. Corn is said to have been laid level with the ground. It is hoped, however that much of it will get up again.

ATCHISON, Kas., Aug. 15.—A terrific thunder storm passed over the Central Branch country west of here, this morning. The storm extended from Corning to Irving. At Corning, John Baker and two daughters were instantly killed by lightning, the elder, aged 15 years, standing in the doorway carrying a two-year-old baby in her arms when the bolt fell killing the two of them. At Vermillion the store of Haskell & Co. was struck and much damaged. The storm was also very severe along the Atchison & Nebraska Road, north of the city. A heavy rain fell. There are no reports of any injury to crops. The rain was beginning to be needed. At this city there was no storm, but frequent showers occurred during the morning.

STERLING, Kas., Aug. 15.—A severe thunder storm, accompanied with hail and heavy wind, passed over this section this afternoon. The wind did great damage to buildings, smokestacks, etc. A new boarding house 150 feet long and the Sterling Sugar Works were demolished. Hail probably did damage in the country. Two inches of water fell, which will greatly benefit corn, which needed rain badly.

WATERTOWN, Wis., Aug. 15.—A terrific thunder, lightning, and rain storm passed over the section of country south of here this morning, doing great damage. At Lake Mills the house and barn of W. H. Raynor was struck by lightning and burned and a valuable horse killed loss, \$1,000; partially insured. In Farmington and barn and windmill were also struck and destroyed.

SHERBROOK, Que. Aug. 15.—The most severe thunder storm of the season passed over here to-night. Several houses and barns were struck by lightning. Considerable damage was done.

WASHINGTON, D. C., Aug. 15.—The gigantic oak tree at Mount Vernon, known as Washington's oak, has been destroyed by lightning.

The total rain-fall in Ohio for the nine months ending June 1st was 55.01 inches, or 1.01 inches more than the average rain fall for a full year.

Hunters who pretend to know, and who base their opinions on the late-ness of the spring and certain so-called sure signs, declare this fall will be an unusually good hunting season. Deer are said to be remarkably plentiful in the Adirondacks.

The man who camps out for a few days and is compelled to do his own cooking, will not growl on his return home, about the food that is set before him, until after the recollection of his own failure as a cook shall have been forgotten.—*Commercial Advertiser.*

Leadville, Col., was visited last Wednesday, Sept. 6th with a heavy snow storm. In the Middle and Eastern States the weather has been warm and sultry. Texas at the same time was visited with an unprecedented rain fall, causing much destruction of property along the Cnocho river. Six inches of rain fell all over northwestern Texas. It is estimated that 25,000 sheep, besides cattle, horses and mules, and sixty or seventy-five persons, were swept away. About fifty houses were washed away in Laredo, and the track of the Mexican National Railroad was badly damaged on Sunday.

Sergeant J. G. Linsley's summary of meteorological observations on Mount Washington for the month of August shows the month to have been warm and dry, with light winds, a mean temperature a fraction above the average for the corresponding month during the past ten years, and a total rainfall below the average and less than for the corresponding month in any year since 1876. The mean temperature was 47.7, the highest being 65.5 on the 6th and the lowest 26 on the 19th. The mean barometer was 30.015, the highest 30.264 being on the 1st and the lowest 29.672 on the 9th. Frosts occurred on the 16th, 18th, 22nd and 26th. The highest velocity attained by the wind was eighty miles an hour on the 13th. The total rainfall was 2.51 inches, rain or snow falling on the 4th, 6th and 21st.

DALLAS, Tex., Aug. 28.—From all parts of western Texas, in a region about four hundred miles from Dallas, comes reports of the heaviest and most disastrous storms ever known in the Southwest. They have prevailed, with now and then a dry day, for over two weeks, but the last three days have culminated in the loss of nearly one hundred human lives, thousands of head of stock, and vast amounts of property generally. The most seriously inundated region is in the sparsely settled frontier, without railroad facilities, and penetrated only by the government military telegraph line, and the wires on this are so prostrated that all attempts to-day to reach the flood centre by either the northern end via Denison or the southern end via San Antonio, have failed. There is no doubt that the towns of San An-

glea and Ben Ficklin have been almost entirely swept away, and the settlements surrounding them have suffered proportionally.

DENVER, Aug. 30.—A heavy snow storm has been raging at Leadville, all last night and this morning.

ALBUQUERQUE, N. M., August 31.—A heavy rain has prevailed in this part for the last three days and finished up to day with a snow storm in the mountains. The peaks of the Sandia range are now as white as winter.

Never Such a Season.

There was never such a season before since the world began. The very edge of grumbling is taken off and complainings have been transferred from all classes to picnic parties. It is impossible to find the slightest ground for grumbling. Along with his myriad virtues the man who cultivates the soil and depends upon the weather, possesses the one slight fault, not very serious either. It has been truly a remarkable season. It was demonstrable by the weather reports up to the first of June, that further rain was an impossibility. It did rain in reasonable quantities, most unreasonably and in defiance of all calculations based upon indisputable data. When July opened the impossibility which existed at the opening of June had been further strengthened. The year's rain had pretty well fallen and the doctrine of the equities and assignment of a reasonable rainfall to the remaining month clearly shut July out. We thought it proper to announce this plain matter of fact. We find ourselves tangled in the opening days of August in a most pitiable plight. If we predict rain we might be the means of cutting short the late corn, if we predict drought we may bring another flood upon the already much flooded people of this city. It is a Sirius matter to predict the weather in those days when the dog star rises and sets with the sun, and we shall leave August and the dog days to get along as best they can without any prophecy. In this said failure of the weather it is a pleasure to reflect that our prophecies have been based upon sound data, and that there has been no flaw in them, although the weather has been sadly off. In this respect we are in line with the rest of the weather prophets, Tice and Vennor, and our Alabama friend, whose name we have forgotten. The heavens may go wrong and the weather fail to come to time, but they always come up smiling and unmoved. We are now convinced that weather prescience in this world is confined to the goose bone, the cockle burr, the ground hog and the katydid.—*Nashville Banner.*

Crops damaged by Wet Weather.

MILLERSBURG, O., August 21.—Another tremendous rain poured down upon us to day, and the streets are flooded. The farmers are threshing their wheat that is out as fast as possible, and find much of it in a bad condition. Sprouts and roots attached to the grain are found in abundance, and much of it being very damp and not fit for market. One farmer said to day that we would see by Christmas about how much good wheat there was and the price also meaning that there was three times more damaged grain than was expected.

The continuous rain has further lowered the prospects for oats, but has brightened the corn's chances materially. Not any complaints of potatoes have been heard yet, except in a few bases on bottom lands, where water overflowed them.

—A trade journal gives directions for "preserving harness." Preserved harness may be considered very palatable by those who like that sort of thing, but we don't want a bit in our mouth.—*Norristown Herald.*

Where the Rain Went to.

DALLAS, Tex., Aug. 20.—Passengers by the Texas and Pacific Railroad say one of the heaviest rains ever known, continuing three days and nights, without intermission, stopped falling in West Texas last night. In some places, the plains where tradition says it never rains, have the appearance of a sea, and the rainfall is estimated at six inches. The flooded section begins near Abilene and extends west for nearly 300 miles, including the country from the Brazos to the Pecos Rivers. Miles of the track of the Texas & Pacific Road have been damaged, and in several places washouts have occurred. Four miles of track west of Abilene were washed away and trains cannot cross. Transfers have to be made. In one spot 100 yards of track and embankment are washed away, and will have to be entirely rebuilt. Great drifts of dead prairie dogs are piled in the rubbish. Thousands of them have been drowned, and thousands more can be seen struggling in the water. On these plains the waters from such a flood flow southward, and the only channels to carry them away are the Brazos and the Colorado, the Concho and the Pecos Rivers and their small tributaries, consequently it will be several days before the land becomes dry again. The great washout referred to was the work of a water spout between Abilene and sweet water. A similar one is said to have occurred near Van Horn, nearly 600 miles of Dallas, and another spout is reported to have struck and seriously damaged the Southern Pacific track in South Eastern Arizona. It will take several days to repair the Texas Pacific track. It is feared that great loss of life and stock has occurred in the remote and sparsely settled country to the north and northwest of the Texas & Pacific. Parties in to day from the flooded district along the line of the road say its situation is simply indescribable. Hundreds of laborers have been put to work repairing the tracks and are working night and day.

Wet Weather.

LOUISVILLE, Ky., August 17th.—In conversation with farmers from different parts of the State, a reporter learns that crop prospects are not near so encouraging as they were a month ago. The general complaint is of too much rain. In many districts of the State lying east of the city, creeks and small streams have been over the banks, and whole fields of grain and tobacco have been partly or wholly destroyed. It is the general opinion that the yield of wheat and oats will be short of an average. The outlook for corn is somewhat better, but as much depends upon September it is yet early to speak with any degree of certainty. Early frosts are now most feared, but if these should not occur, indications are that the crop will go fully up to an average. In many parts of the State, tobacco has suffered from wet and insects to such an extent that in many places not more than five-eighths or three-fourths of an average yield will be realized, and the crop will not only be light in quantity, but inferior in quality. The bright promises of a large crop that were so encouraging a short time back have been overthrown by the ravages of insects, and continued rains in many localities have beaten the plants into the ground to such an extent as to materially degrade the quality of the staple that will be gathered. From reports gained through conversations with half a dozen planters, it appears that tobacco has suffered more than any other crop, and calculations that were predicted on an average yield have all been overthrown. One gentleman informed the reporter, however, that there was considerable of last year's crop still held in first hands, and the deficiencies this year will not materially affect the market.

Warm Weather Predictions.

New York Mail.—It must be well remembered that the first half of September a year ago was almost the hottest part of the season and there seems to be good reason to expect such warm weather during the month which began on Friday.

Philadelphia Bulletin.—It becomes a regular thing for a cold rain-storm to come along in August and be followed by a warm September. This year the "nor easter" comes a little late, but though it feels like the beginning of cold weather, it is probably very far from being such. All the golden Autumn is yet to come.

The New England Rain Famine.

Worcester Spy.—In Worcester County since July 1, there has been no general rain fall, and only three or four slight showers. The average temperature at 1 p.m., during this time, has been 84.7, and the sky has been so free from clouds that the sun has fairly baked the surface of the ground, the surface dryness being the most excessive known during the past century. The hay crop has been quite heavy and the season quite backward. Winter rye has also done unusually well, but there is no hope of a second crop of hay, and unless heavy rain comes soon there will be no fall feed. Stock is already being fed morning and night. Corn has curled badly, and much of it is being curled for fodder, while oats are generally being used in the same manner. Early potatoes have done fairly well, but later varieties do not promise half a crop. Vegetables are in a very bad condition, and apples, of which a heavy crop was expected, are dropping off and drying up. Wild berries, which are important thereabouts, have dried on the bushes, and small fruits are in very bad condition. Springs and wells are giving out, and serious future troubles, unless there is rain, are apprehended.

[This drought was broken in the latter part of August by frequent showers, and it is probable September will be a wet month. Ed. BULLETIN, Aug 28.]

Mount Washington in Winter.

ROSENDALE, N. Y., August 8, 1882.—I was astonished when I read in your paper of August 3, 1881, that Mr. H. R. Richardson, of the Highland House, Bethlehem, N. H., claims that he was one of the party who first spent a night (or two nights) on Mount Washington in Winter. So far as individual honor is attached to the achievement I am not ambitious; but when a false pretender assails an interesting record that was made in good faith many years ago—a record that stands prominent among the very many important facts connected with the early history of Mount Washington—I regard it my duty to speak out fearlessly for the right. A good motto is "honor to whom honor is due."

I sent you and you published, September 4, 1878, what can be proved beyond a question to be the true description of the first party that spent a night (two nights) on Mount Washington in winter. That party numbered three and no more, and their names are Franklin White, Chapen C. Brooks and John H. Spaulding, all of Lancaster, N. H. February 11, 12, 1862, is the correct date when that little party accomplished that then regarded perilous feat. A description of the interesting facts connected with that midwinter adventure on Mount Washington was first published in the *Coos Republican*, February 18, 1862, and though taken from that paper and republished in many of the most widely circulated papers in our country, there was such an extensive demand for that article that it was republished in the *Coos Republican* that year in April.

Several years after that, by request, I sent a copy of that same description of that winter visit to Prof. J. H. Huntington of the United States Signal Service, and it was published word for word in the book that contains the record of the government observations made the first winter after the United States signal station was established on Mount Washington. I have one of those books and I received it as a present from Dr. George O. Rogers a short time before he started for Japan. Mr. Richardson says this Dr. Rogers was one of his party, also White, an artist photographer, and that the object of the excursion was to obtain winter views from the summit of Mount Washington. I make bold to affirm that Mr. White did not go up with Mr. H. R. Richardson and get winter views in the winter of 1861 or any other winter. I was on Mount Washington every season from the building of the Tip Top House in 1863 till 1864, and had a party of five or six men broken into the Summit House any winter between the dates named, and remained there, as this Mr. Richardson claims, two nights and two days, in a place that he writes "was cold as a tomb and colder," we should have found ample disorder to confirm the trespass on going up the next spring to put the house in order for a season's business.

I was associated for many years with Mr. White, (he was the artist on Mount Washington for many years,) and though he obtained many frosty and snowy, also icy looking views that were quite winter like, yet I am positive when I declare that he never made but one real winter view, and I was with him when he made that, or when he took the negative of it, and it was in the morning of February 13, 1862. After several vain attempts that extremely cold winter morning, when he at last accomplished his object, apparently as happy as a king might appear with an unexpected acquirement of another large domain, he packed his camera, chemicals and negative, and down the mountain we journeyed. The next spring he had pictures made from that negative patented and published on glass in stereoscopic style. I have one of those stereoscopic views, and any party who owns one can see the date of the patent is 1862. I will briefly describe what the picture represents. It is a winter view of the most northerly end room in the attic of the Summit House. This room, as seen in the picture, has a little four light window that is shaded by thick frost, and a snow drift covers quite a share of the narrow floor. A bedstead and one chair, both well covered with snow and frost, occupy a large part of this uninviting little room. New footprints are visible in the snow drift and a shovel, heavily covered with ice, leans against the chair, apparently placed there for a special occasion—the fact is I brought it there from the kitchen of the Tip-top House. This was for several seasons Mr. White's room or "studio."

Prior to 1862 I received a great number of letters from many different parties asking whether a man could live on Mount Washington in the winter. The chief supposition was that the extreme cold of winter on "Tip-top" was such that a person's breath would congeal, and almost instant death would be the result. In opposition to such fears, in the late days of the season of 1861, I made preparations in the way of getting wood ready, etc., to visit Mount Washington the coming winter. I told my plan to Mr. White and he expressed a wish to be one of my party that season. After leaving the mountain we decided that through fear of accident or sickness our party ought to number three. After a few weeks we quietly enlisted Mr. Brooks, and with our plan all perfected we regarded the whole affair so foolhardy that we kept our own secret till the morning we started, then we were crazy. Thank God, we succeeded!

Before going to Hong Kong Dr. Rogers and Prof. Huntington made me a good long welcome visit in New York, and in discussing Mount Washington life, the doctor spoke of a deer hunt he once took part in; and in connection with that statement, added sufficient to consign to oblivion the Richardson "canard." Mr. White is dead, but Dr. Rogers and Mr. Brooks will, if necessary, vouch for me, and hundreds who know the facts, will help me protect my record, for it is true.

JOHN H. SPAULDING.

Frosts.

As frost occurs during the northerly winds of an advancing high barometer after a storm or rain-belt has passed, the probability of its formation can be anticipated through the information conveyed by daily weather reports. In a clear, still night, the wind having been northerly and the mercury at about 50° at sunset, frost is likely, because then the mercury will probably fall rapidly during the night, and 40° or under will produce frost. Cloudiness and wind, it is well known, however, will prevent frost, but these conditions can not always be depended upon, as the former may disappear and the latter cease, leaving rapid radiation unchecked.

The Flea.

This insect belongs to the genus pulex. When he gets on your arm you Pulexceditedly at your sleeve. You are anxious also for the insects to leave. The flea has a strong love for man, but he manages to get over his attachment. He is a leper. In olden times they used to drive the leper out of the synagogue. When the flea gets on you, he sees sin agog in your heart. The flea is a parasite. You have not to cross the ocean, therefore, to see a Paris sight. Fleas are very plentiful. You remember that Mary had a little lamb whose fleas were white as snow. In ancient times, however, the golden fleas were very scarce, and consequently much sought after. There can be no doubt about the habitant of this social insect, for does not the Bible speak of it as the flea, from the wrath to come? And again it is referred to as the 'wicked flea' which no man pursueth.' But we prefer not to dwell on this subject. Neither do we wish to have this subject dwell on us. We might be long, have a flea in our ear should we not atop.

A SAND STORM IN ICELAND.—A remarkable sand-storm, accompanied by an intensely cold temperature, is mentioned in Icelandic journals as having raged on that island for two weeks during the past spring. The air was filled with fine dry sand to such a degree that it was impossible to see for more than a short distance, and the sun was rarely visible, though the sky was clear of clouds. Nobody ventured out of his house except upon matter of most urgent necessity, and many who were exposed to the storm were frozen. The sand penetrated into the houses through the minutest crevices. It was found mixed with articles of food and drink, and every breath drew it into the lungs. Thousands of sheep and horses died.

Fine Weather Assured.

It is a pretty well settled fact, that the weather for the coming years is sure to receive expert attention. Vennor has calculated and prognosticated the whole business, and A. Vogeler & Co., Baltimore, Md., who control the Vennor Almanac, will send a copy to any address upon receipt of ten cents.

Weather Factories.

[CONTINUED.]

In Greece and Sicily the three midwinter months resemble a west Indian rainy season, and increase the sickliness of the coast swamps to such a degree that foreigners generally prefer the misery of the dog days. Byron arrived at Missoloughi in the month of February, and died in April, after fighting the fever for six weeks. The summers are healthier, but inexorably dry; and, without irrigation and the elevated mountain ranges that always have a little moisture to spare, Southern Europe would be a sort of Africa Minor. Murcia and Valencia, under the parallels of Missouri, are hotter in summer than Southern Yucatan; on the Gulf of Salerno, near the ruins of Paestum, 110 degrees in the shade is nothing unusual; for the proximity of the ocean is no protection against the arts of the desert-makers; the Portuguese have managed to ruin Maderia, and the Spaniards in a still shorter time, have ruined a considerable part of Central America and the West Indies.

Up to the end of the eighteenth century the whole world of the Caucasian races had been a cooperative factory of villainous climates; but about eighty years ago the good weather-makers began their noble work. Near Cape Breton, on the west coast of France, the drifting of the dunes had encroached upon the arable soil till the inhabitants of half a hundred hamlets had to remove their houses and rebuild them further landward, when it occurred to the proprietor of an endangered farm to protect his garden by a bulwark of rush-wattles.

That stopped the sand drifts for five or six years, during which time his vineyard and an orchard of young apple-trees became the finest on the Breton coast, till a heavy sand-storm overwhelmed the bulwark and ruined his vineyard in a single week. But the orchard stood its ground; the foremost row of trees had broken the force of the wind, and the rearward rows continued to flourish till nothing but a sand hurricane could have endangered their growth.

The hint was too valuable to be neglected, and during the next ten years (1802-12) Professor Brémontier elaborated a system of tree culture which has since enabled the coast dwellers of Europe to reclaim about ten thousand acres per year in France, and eight thousand in Denmark, Belgium, Eastern Prussia and the Tuscan Maremma. In the Landes of Gascony, and in the Belgian "Campine," the planting of the umbrella pine (*Pinus maritima*) has effectually arrested the advance of the dunes, and thus given the inhabitants a new lease of their land, but also a new climate; the average monthly rainfall has more than doubled in summer, and perceptibly decreased in the winter season. The improved summer weather of Bayonne, at the south end of the vast pine plantations, has made it the favorite seaside resort of Southwestern France. In 1832 Mehemet Ali decided to try his luck with the *Waddies*, or sand-plains, on the coast of Egypt, Upper Egypt, Abyssinia and the slopes of Mount Caucasus were overrun by the tree agents of the autocrat: trees by ship loads and caravan loads were landed at Cairo, and distributed to the overseers of an army of *l'ellahs*; and according to a moderate estimate, 15,010,000 of fruit and forest trees were actually planted and so carefully nursed that 40 per cent. of them took root and helped to qualify the soil for further plantations. As a result, the average yearly rainfall has increased from 0.60 to 14 inches, and the summer temperature of Suez decreased from an average of 92 Fahrenheit to 86 degrees.

In North America the colonists of the Atlantic States were blessed with such a re-

dundance of forests that thus far the axe has not changed our climate for the worse. It has made our summers a trifle dryer and the winters considerably warmer. Very dry summers like those of 1875 and 1881 are too exceptional to establish the probability of a permanent change; but I venture the assertion that a committee of five hundred old farmers, representing the five mountain States of the Southern Alleghanies, would agree with hardly a dozen dissenting voices that the temperature of the five coldest months has steadily moderated for the last forty years. Eye-witnesses in eight or nine different counties assured me, for instance, that in the first half of this century the Ocoee (or Toccoa, as they call it in Georgia) used to "freeze solid" about every other winter, while during the last fifteen years it froze only twice—in February, 1877, and January, 1881. So in West Virginia and western Pennsylvania, heavy snow storms have become shorter and less frequent, and "cold snaps" less severe, though in the agricultural districts of the same States one often hears the complaint that the bad weather has begun to set in sooner—i.e., that the miracle of the Indian Summer seems not to last as long as formerly.

In the West Indies and some of our Gulf States the clearing of the primeval forests has already gone too far. The denudation of the coast plains has produced extensive sand-barrons and their usual concomitants, sand-drifts and scorching summers. On the Pacific slope the ruralists of a prehistoric race have committed the same blunder on a larger scale, and the return of many discouraged pioneers of the Great West has scared our cotton planters into redeeming their worn out fields, and it is evident that the experience of France has awakened our agriculturists to the climatic importance of our remaining wood-lands though the work of replanting the forests of the West appears to lag from want of systematic management.

But it seems more than probable that weather manufacture is destined before long to become the principal occupation of the human race. The children of the next century, like the Alabama cotton planters, will be obliged to reclaim their own fields. Instead of husbanding the interest of our earthly inheritance, we have devoured the principal, till the day of reckoning is now evidently near at hand. The 680,000 foreigners whom a single year has added to our population, and its average increase of four-tenths per decade, presage that a second centennial of our independence will be celebrated by half a billion citizens of the United States; in other words, that before the end of the next century our country—prairies, mountains, and all—will be as thickly populated as Egypt under the Ptolemies, or as Belgium under her present King. But since General Hazen has proved that it would be far easier to reclaim Palestine than two-thirds of our Great West, it is probable that the tide of immigration will overflow into Mexico and South America. There, too, every square mile of arable ground will be crowded before some of our boys can be called old men—*et apres?*

"We will reclaim the land of our fathers," said Mehemet Ali, when he planted his *Waddies*. "You will? you must?" one might reply with Byron's French Count. To plant or not to plant will soon be an equivalent of Hamlet's alternative. The Old World was on the verge of bankruptcy when Colon and Cook effected a stay of proceedings; and if that respite is up the prodigals will be reduced to a dilemma of cultivating old fields or the talents of Dr. Tanner. A considerable plurality of European malcontents are still under the impression that the agricultural capabilities of the United States could be measured by the total area of

our territory, but the next forty years will suffice to convince them that the builders of the Casas Grandes have forestalled us in the Great West, and after a recoil toward the neglected highlands of the Alleghanies the westward current of the tide will bring us back to our eastern garden home: the first oycy will be completed and the era of reconstruction will begin.

And by that time the experience of the Algerian colonists will have taught us a useful lesson. The results of their systematic horticulture have revealed the consoling fact that the work of the first successful tree planter facilitates the labor of his neighbors as well as of his successor. When a good sized orchard has once taken root it exerts a fertilizing influence on the adjacent sand fields; even in the midst of the desert, a clump of forest trees tends to propagate itself—Vishnu prevails against Shiva; and without the constant interference of the *Simia destructor*, as Lorenz Okon proposed to call the mischievous biped, the spontaneous spread of the oases would probably redeem the "Dying Continent" in two or three centuries. But the alliance of man and nature is more than a match for all the hostile powers of the elements, and if the establishment of that alliance has once been recognized as the only practical plan of salvation, the work of redemption will proceed fast enough to meet the wants of a growing population for many centuries to come.

Asia Minor would be a good nucleus, a central weather factory for the withered fields of the five Aryan Empires, and in itself the fairest prize of the redeemer. The tree gardeners would extend their plantations from the mountain woods downward, and after the western highlands had once been restored to their pristine fertility, grove after grove of the ancient settlements would emerge from the sand sea like the mountain tops from the assuaging waters of the deluge. Further east the difficulties of the work would increase, but also its rewards. The Taurus and Lebanon will receive the Aryan wanderers in the home of their fathers; the river nymphs, the wood birds and wood gods will return to their ancient haunts; the terrace lands of the Mediterranean coast would offer every variety of soil and of climate, ready-made names for every new village, and chances for classic treasure-troves, in every plowed field. The first May festival under the replanted oaks of Bashan will be the birthday of a new world, the second advent of the *Juventus Mundi*. The harmony of nature recalls in the smallest things the law of the greatest, and if the labor of a single man can redeem an old farm, the labor of millions can redeem an old empire; and even the twentieth century may witness the highest triumph of the Caucasian race; the restoration of their birthland in the fertility that could astonish the leaders of the Egyptian refugees, and with a climate that could lure the Italian magnates from their luxurious villas.

When Pessimism had gone out of fashion Claude Bernard, M. D., ventured in a public lecture to profess his belief that the progress of science was destined to effect the physical regeneration of the human species. "The physical laws of God," said he, "shall then be so thoroughly understood that a sensible man will think it a disgrace to be sick." Nor is it impossible that the nations of that golden age will be ashamed of a drouth, and that Macaulay's New Zealander will gather figs on the site of a former Sahara.

No man can be successful who neglects his business.

No rank can shield us from the impartiality of death.

Hints About Making Bird Skins.

Skin the head close down to the base of the beak, especially in front of the eyes. Otherwise the feathers may come out when the skin is relaxed for mounting, and even if they do not, whoever mounts the bird will find it necessary to separate the skin from the skull in order not to leave a ridge of feathers marking the boundary between the skinned and unskinned portions. Always leave in all but the head of the humerus in a good-sized bird. Never on any account detach the secondaries from the ulna in birds of the size of the red shouldered hawk and upward. True, the bird may never be mounted, but very likely, too, he may, and to do good work on a large bird the secondaries must be attached to the bone. Especially is this the case where the bird is to have the wings spread. You may clean the roots of the feathers and sew them carefully to the ulna, but you can not get them as solid as they were, while to give them the even spacing and regular spread that they have in nature is quite out of the question. You can remove the muscles and tendons by making a cut on the under side of the wing from the elbow to the wrist, and the taxidermist who mounts your skins will set you down as one of the few who know how to make up a large skin properly. Take out the tendon back of the leg in long legged birds of prey and waders, thereby rendering it possible for a leg to be wired readily, to say nothing of the fact that it is a great aid to keeping the scutellum of the tarsus intact. To do this make an incision back of the heel, i. e., tibio-tarsal joint, and a second in the fleshy part of the foot. Sever the tendon at the heel, get an awl under it at the cut in the foot and pull it down. Remove the part contained in the tibial portion from above when you skin the leg.

Remove blood-stains. Grease and dirt can be removed, but blood hard dried upon feathers is almost impossible to take off. Warm water and sugar will do something toward it, but not much.

Do not "bung out" a bird's eye by putting too much cotton in the orbits. Be particularly careful about this in hawks, who have deep set eyes, which should be pressed inward rather than distended.

Get off as much fat as possible from the inside of a skin, otherwise it will be very apt to crack when it comes to be mounted.

Don't be afraid of opening a bird too high up on the breast. If you ever mounted half-a-dozen dry skins you will know why. In the majority of skins the cut is too short for ready manipulation of the bird in mounting, and it is necessary to prolong it. Now the skin on the edge of the old cut will be shrunken and thickened, and a stitch taken in it holds and does not tear out; but in the new cut the edges are thin and weak, and a thread pulls easily through, thereby causing great annoyance to the individual who is at work thereon.

The above notes cover some of the most annoying mistakes that are made by collectors. We trust they may not be without some influence.

SAVE THE ICE. A good way to prevent ice from melting has been suggested by Dr. Gargee, in the *Lancet*. Instead of placing the broken ice in the ordinary bowl or tumbler, it should be suspended in a piece of coarse, open flannel stretched across the mouth of the bowl, and allowed to fall partially into it. The ice thus supported in the flannel pouch had better be covered over with another piece of the same material. Protected in this way from the light and the water formed by its own melting—which filters through to the bottom of the vessel—it can be kept for ten hours.

If you would succeed in life, rise early and and be an economist of time.

An Astronomical Weather Prophet

THE GREATEST STORM OF THE 19TH CENTURY.

Editor of the *CITIZEN*.

Sir,—The *Asia*, Her Majesty's steamship *Phœnix* and many others have been wrecked in the great storm which I announced two months ago would pass from east to west over this continent during the month of September, striking the Gulf of St. Lawrence on the 13th, and British Columbia on the 15th.

My warnings were unheeded, and hundreds of poor souls who know nothing of the great laws by which nature governs the world have gone down to the bottom of the sea.

Here we have another proof—if proof were needed—of the utter uselessness of our meteorological bureaus. On the principle that water run down hill, they pretend to announce the approach of storms. Owing to the fact, however, that they have no stations at Hudson's Bay or the middle of the Atlantic, their scope is exceedingly limited, and the storms they do indicate are of a purely local character, being short in duration, harmless in their effect, and local in their action. But how can the barometer indicate a storm that has not yet struck our planet? Was the great storm known to the observatory at Quebec or Toronto before it struck the Gulf of St. Lawrence? It was not, because it is impossible that it could have been known from atmospheric disturbances. Of what use was it, therefore, to the Captain of the *Phœnix* or the *Asia*, or the hundreds of poor creatures whose bodies are now floating in the great Canadian inland sea, to hoist the storm signals after those vessels, only a few hours before, had gone out into the jaws of death?

Owing to the advice of friends and to the fact that every man should feel an interest in his fellow, I now make the following announcement:—

A great storm will strike this planet on the 9th of March next. It will first be felt in the Northern Pacific, and will cross the meridian of Ottawa at noon (5 o'clock p.m. London time) of Sunday, March 11th, 1883. No vessel smaller than a Cunard will be able to live in the tempest. India, the South of Europe, England, and especially the North American Continent, will be the theatre of its ravages. As all the low lands on the Atlantic will be submerged, I advise shipbuilders to place their prospective vessels high upon the stocks, and farmers having loose valuables, as hay, cattle, etc., to remove them to a place of safety. I beg further most respectfully to appeal to the honourable Minister of Marine that he will peremptorily order up the storm drums on all the Canadian coast not later than the 20th of February, and thus permit no vessel to leave harbour. If this is not done, hundreds of lives will be lost, and millions' worth of property destroyed.

E. STONE WIGGINS, LL.D.,
Astronomer.

Ottawa, Sept. 22nd.

And if this Storm does not come, O!!! WIGGINS.

—"What is that in your wagon?" he asked of the ice-man, who had got his ice all cut in pieces of the regular size for delivery. "Why, that's ice." "Is it, though? Really, I thought you had been caught out in Vennor's hail storm."

—"Ma, will you play base ball with me?" inquired a little lad, hot with enthusiasm and breathless with running, as he burst into the parlor where his maternal parent was trying to cut a seven yard polonaise out of a four-and-three quarters piece of goods. "I will, my son," she replied with feeling. And she made five base hits before the boy could stop the bawl or reach the right field.—*Boned*.

How to Secure Vast Crops.

Send ten cents to A. Vogeler & Co., Baltimore, Md., with your name and address and receive a copy of the Vennor Almanac for 1883, which will so thoroughly post the farmer upon the state of the weather, that he can run his farm for profit, and not experience only.

How to preserve Birds.

The prairies of West Texas are literally alive with beautiful and rare birds of almost every variety, and of late years many have undertaken to secure and preserve collections of the different varieties. We give below some hints to amateurs from an exchange.

"It may be said that the first thing, and one of the greatest importance, is to remove the skin with extreme care, so as to avoid any injury, and then treat it with a good preserving preparation. One of the best of these is an arsenical soap, composed of, arsenic, 1 ounce; white soap, 1 ounce; carbonate of potash, 1 dram; distilled water, 6 drams; camphor, 2 drams. This prescription can be prepared at any drug store. It is an excellent preparation for softening the skin and keeping it pliable, free from insects and decay. There is a powder composed of arsenic, 1 pound; burnt alum, 1 pound; ground oak bark, 2 pounds; camphor, 1/2 pound, which is used a good deal to preserve the skins of larger birds and other animals. After all, pure pulverized arsenic, such as can be got by special order from the wholesale druggists of the principal cities, if not kept by home druggists, is one of the most effective and simplest preparations. Care should be taken in handling this poison, and it is best always to wear gloves in applying the powders. Plaster of Paris should be used in the skinning process, to absorb the blood and other fluids, and clean blood and grease from the feathers. It can be sprinkled on and rubbed off repeatedly, until the cleansing is perfect. The Illinois State Natural History society, at Bloomington, will furnish pamphlets giving full instructions to amateurs. There are many nice particulars to be observed to preserve skins and skeletons of birds in really fine condition.

The Number Seven.

On the 7th day of the 7th month a holy observance was ordained to the children of Israel, who feasted 7 days, and remained 7 days in tents—the 7th year was directed to be a sabbath of rest for all things; and at the end of 7 times 7 years commenced the grand Jubilee—every 7th year the land lay fallow, every 7th year there was a grand release from all debts, and bondsmen were set free. From this might have originated the custom of binding young women to seven years apprenticeship, and of punishing incorrigible offenders by transportation for 7, twice 7, or three times 7 years. Anciently a child was not named before seven days, not being accounted fully to have life before that periodical day—the teeth spring out on the 7th month, and are shed in the 7th year when infancy is changed into childhood. At thrice 7 years the faculties are developed, manhood commences, and a man becomes legally competent to perform civil acts—at four times 7 he is in full possession of his strength—at five times 7 he is fit for the business of the world—at six times 7 he becomes grave and wise, or never—at seven times 7 he is in apogee and from that time decays—at eight times 7 he is in his first climacteric—at nine times 7, or 53, he is in his grand climacteric or year of danger, and at ten times seven, or three score years and ten, has by the royal prophet, been pronounced the natural period of human life.

And, we would add, the most constant weather cycle is that of seven, or some multiple of this mythical number.—*Ed*.

Oscar Wilde ignored capitals at Saratoga, signing his name "oscar wilde, london." His sun-flower followers will follow his example. Bad spelling is already very fashionable in la-de-da society.—*New Orleans Picayune*.

The Moon and the Weather.

By CHARLES H. BARTON.

For at least a thousand years, perhaps much longer, the influence of our attendant satellite on the weather has been a tenet firmly held by the nations of north-western Europe. The foggy and uncertain climates of the British Islands, with Norway, Jutland, and the coasts of the German Ocean and the Baltic, are the cradle of the belief that change of weather has a necessary if not always prefigurative dependence on the moon's phases. To this day the great majority of Englishmen, Scandinavians, Germans, and other branches of the old Teuton stock, place more or less faith in "the arbitress of floods," and half-unconsciously consult their lunar oracle with a degree of confidence which, considering how often it is deceived, must be ingrained in their very nature. Among the Latin and Slavonic nations who inhabit regions much less troubled with atmospheric vicissitudes, this belief is not equally prevalent, or, at all events, does not enter so habitually into the calculations of daily existence. Where sun and cloud, drought and rain, storms and calms are wont to recur periodically at accustomed seasons, there is little room left for speculative combination of conjecture. Frenchmen, Italians, Russians, &c., generally trouble themselves very little with weather predictions of any sort, least of all with such as are professedly based on a coming full or new moon. Not that they are devoid of fancies about lunar influence, but such fancies are of a more special, and, so to speak, subjective complexion, dealing with the supposed effects of moonlight on the human body and on the wide range of natural objects pressed into man's services for the uses of daily life. If, as seems probable, the moon really does affect the weather, the latter class of ideas, based, as they must be, on actual though inexact, and, perhaps, mistaken observation of sundry phenomena, would be more likely to lead up to the discovery of some positive law than the traditional or conventional aspects and critical states of the atmosphere. It is easy to conceive how such a theory may gradually have crystallised out of the crude guesses of a seafaring people, ever anxious to gather some warning of the sudden changes habitually occurring in their boisterous and fickle climate.

In the zone embraced between north latitudes, 50, 60, and upwards, the moon is far from being constantly under observation. In the latitude of Greenwich, for instance, it happens that out of about 345 hours per lunar month during which she is above the horizon, there are, at or near the winter solstice (when the moonlight is longest) not more than 235 in which her rays are not drowned by the glow of the sun. At the summer solstice the possible hours of exclusive moonlight per lunar month are, in the same latitude, only 54 or 55. Hence the mean between these extremes, or 144 hours, represents the average moonlight per month over the whole year. But at least half this time is, by the bulk of the population, spent in sleep, while of the remaining 72 hours, representing the actual time during which the moon would (in a clear sky) be visible to the community at large, a considerable proportion must be deducted for foggy or cloudy weather. Fifty hours of moonlight per lunation may, under such circumstances, be accounted a very liberal allowance to the average observer in those latitudes. To him, therefore, the lunar orb or crescent is, compared with other heavenly bodies, a relatively infrequent, not to say unfamiliar, object. But in proportion to the infrequency of the phenomenon will attention be concentrated more strongly on those startling changes of aspect which unfold themselves more gradually to the observer in a more favorable climate, and exert a less powerful effect on his imagination.

The existence of a generic connexion between the four principal lunar phases and accompanying atmospheric changes was, no doubt, suggested originally by the tides. The high or spring tides at full and new moon, with the neap or lack tides at the times of her quadrature, would naturally lead to the inference that causes adequate to produce such effects in the oceanic region must be equally potent in the domain of the atmosphere. Such a theory could, however, assume definite shape only where the tidal phenomena are strongly marked, as on the deeply indented coasts of North-Western Europe,

where the rise and fall exceed, in places, 49ft. to 50ft. On the almost tideless shores of the Mediterranean, as on the Atlantic seaboard of Southern France and the Iberian Peninsula, where the change of level in unobstructed ocean is comparatively slight, the tidal oscillations would attract little attention and their periodical increase and decline probably still less. The Teutonic persuasion of definite weather change corresponding with definite lunar change, had its origin no less in the tide-veat no less in the cloud draped and storm-swept northern skies.

A real or assumed connexion between the two classes of phenomena once established, an accommodating empiricism would soon work out of the theory in all desired minuteness of detail. The interval between any two of those lunar phases of which it takes account never exceeds seven days. Hence it results that any notable change of weather must either precede or follow one of said phases at an interval not greater than three and a half days. The chances, moreover, are much against any weather change being so exactly intermediate that it cannot be plausibly and decisively referred either to the preceding or succeeding phase. If it be full moon on one Sunday and the last quarter on the Sunday following, and a decided change of weather take place during the week, a believer in the phase theory will naturally connect such change with the phase to which it comes nearest in point of time. Should the change, however, by a rare accident occur precisely in the middle of the week, he will put no great strain on his convictions by attributing it to the preceding or full-moon phase as the more striking and, consequently, the more potent one, and thus press into the service of his weather-creed the very argument which, to an unbiased mind, would be conclusive as to its fallacy. The weather-tables propounded some years ago by a Captain Saxby, who professed to have reduced the phase-theory to exact rule, were as remarkable for the elasticity of interpretation they admitted as for the immediate and powerful hold they took on the public mind.

Science, doubly armed with scepticism where a traditional belief is in question, has long since exploded, by exact observation, the alleged relation of weather phenomena to the nearest lunar phase. It does not, therefore, follow, however, that the moon is wholly inactive, and that her position and aspect ought to be left out of the account in any attempt to establish a basis for meteorological inquiry. That she does not exert influence of a certain kind was more than half accepted by Humboldt, who alludes to, without controverting, the belief that the full moon at the zenith has a mysterious faculty of dispelling cloud. Melloni's experiments on the calorific power of the moon's rays, and the more decisive data since obtained by Professor Smyth on the Peak of Teneriffe, are certainly not consistent with the alleged inertness of the illuminated surface of the satellite. And the yet more recent discovery of magnetic tides, closely following the moon's passage over the meridian, warrants the conclusion that at least one of the more potent factors of meteoric change is directly under her control.

It is to be regretted that scientific observers, concerning themselves exclusively with testing the grounds of the phasesuperstition, have almost entirely neglected the study of weather phenomena occurring contemporaneously with the course of the moon above the horizon. If the moon does—as there is strong reason to suspect—indeed influence the weather, though not after the fashion popularly imagined, it is probable that such influence is similar in kind to that which causes the tides, but that, having for its medium the more yielding aerial ocean, it would vary greatly in its sensible effect. The influence would, for instance, be exerted over only one-half of the globe at a time, viz., that hemisphere to which the moon had (either visibly or invisibly) risen. The effect would, moreover, be less subject to retardation, would come into play more speedily, and sooner pass off again. Want of precision and detail in all the earlier meteorological records deprives us for the present of data on which a precise theory of the moon's meteoric influence could be built. Even now, at the majority of observatories, no account is taken of the hours or duration of rainfall, but merely of the quantity registered during the day and night together; and similarly with regard to the amount of cloud, direc-

tion, and pressure of wind, &c. The writer has long held the view that a systematic registration of weather phenomena from hour to hour, were it only for a few months, would conclusively demonstrate the existence of a direct action of the moon, while above the horizon, on the upper atmospheric strata, and especially during the interval between her meridian passage and her setting. From attentive though not regular observation, I have arrived at the conclusion that the bulk of the annual rainfall in any locality takes place in the interval between the moon's setting and her next meridian passage, and that the hours which in critical states of the atmosphere are most likely to prove rainy are those immediately preceding moonrise. This thesis, if borne out by observation, would by no means exclude a large amount of variation in the effect exercised by the satellite, which effect might be expected to differ according as the meridian passage takes place by day or by night, in conjunction or in quadrature, or under different electric states of the atmosphere. Although the commonest effect of a high moon is to dissolve the venacular vapours as they drift past, her ascent towards the zenith is not unfrequently attended with gathering clouds, which are not dispersed until some time after the meridian passage has been accomplished. If the perceptible effects are due to attraction, either acting alone or in conjunction with small but appreciable quantities of doubly-reflected heat, it is *primæ facie* to be expected that those agencies might, under one set of conditions, increase the capacity of the atmosphere for holding moisture in solution, while under another set of conditions they might remain inert, or even favour the contrary result of condensation. The strongest effect either way is, probably at night, but the clearing or dissolving influence is also very perceptible on the bright afternoon of cloudy mornings, and especially about sunset, when the latter precedes by a few hours the setting of the moon.

Should these views be thought of such importance as to warrant a course of systematic registration over a sufficient period with the object of testing their correctness, and should their validity be demonstrated as fully as the writer anticipates, an important point will thereby be gained for the infant science of meteorology. The fact, once established, that the oceanic tide that accompanies the satellite in her circuit round the earth has its analogue not only in the magnetic medium but in the gaseous envelope of our planet, must greatly simplify the study of atmospheric phenomena, and afford valuable aid in the attempt to harmonise and explain their apparent contradictions. To be able to predict, with tolerable confidence, the wet and the dry for the coming 24 hours, and to be able, under ordinary conditions, to repeat the prognostication at will, would be an achievement hardly second in practical usefulness to the lately acquired power of tracing the origin and marking out the probable course of a cyclone.—*English Paper.*

The Thermometer.

Hero, of Alexandria, who lived about 130 years B.C., is said to have been the inventor of an instrument for measuring the heat of the atmosphere, which continued in use until the close of the sixteenth century. It was then reduced to a more convenient form by Santonio, an Italian; and was afterward considerably improved upon, especially by Fahrenheit, who, in 1720, affixed the graduated scale, and added other details, which chiefly tended to render the thermometer the instrument of practical utility which it now is.

—The reason why the thermometer does not always accord with the comparative discomfort of hot weather is owing to variation of moisture in the air. While the human body is all the time giving off perspiration, either sensible or insensible, this evaporation will go on more rapidly when the air contains but little moisture than when it contains a great deal. Evaporation is cooling when it has no obstruction; but when it is obstructed by moist air, the reverse effect is produced, and a temperature of 80 degrees is quite as oppressive as that of 90 when the air is dry.

The Weather Bulletin.

PUBLISHED MONTHLY BY
HENRY G. VENNOR, F. G. S.

OFFICES:
No. 210 ST. JAMES STREET,
MONTREAL, CANADA

ANNUAL SUBSCRIPTION, . . . \$1.00

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

CONTENTS.

October, Special Notices, Special Briefs, Wheat Growing Maxims.....	1
Our August Cold Wave, the August Snow Cloud on the Lake, The Weather.....	2
Never Such a Season, Where the Rain went to, Crops damaged by Wet Weather, Wet Weather.....	3
Warm Weather Predictions, New England Rain Famine, Mt. Washington in Winter, Frosts, The Flea, Fine Weather Assured..	4
Weather Factories (Continued).....	5
Hints about making Bird Skins, An Astronomical Weather Prophet, How to Preserve Birds, The Number Seven.....	6
The Moon and the Weather, The Thermometer..	7
Contents, Editorials, Queries and Replies, Criticising the Prophet, More Queries and Replies.....	8
The Flicker, Economic Tree Planting.....	9
Correspondence, Vennor and the Saint, Old Prob's Bureau.....	10
The Atlantic Ice Drifts, The Wretched Season in England.....	11
Thermometer Pantaloon, Harnessing the Wind	12
The Whirligig of Time, The Drought of '49, Our Medical Basket, Old Orchard Beach.....	13
The Gatineau Valley Railway.....	14
Advertisements.....	15-16

Editorials.

We have to thank the *Farmers' Review Co.* of Chicago for a very large number of subscribers to the BULLETIN, sent in during the past summer.

—A good deal of injury is done to the circulation of the *Bulletin* by Editors of newspapers and other journals reproducing the predictions in full. Would it not answer all purposes to allude to the publication of the paper and merely give a brief synopsis of contents of number last issued. A hint on this point we think will suffice.

We would acknowledge with thanks the receipt of six vols. of Reports of Sec'y of War, Washington, D. C.; that for the year 1880 having recently come to hand. This last is one of the most thorough and valuable reports it has yet been our privilege to examine, while it demonstrates very plainly the magnitude of the work undertaken annually by the Signal Service of the United States. The charts and maps are unique as to style and execution, arrangement and general clearness of idea aimed at.

We do not think we go too far in stating that, from our very large correspondence and copious receipt of newspapers from every section of the North American Continent, we believe ourselves to be in a better position to judge the general results of the predictions given forth than any other individual or individuals can possibly be. We are the very first to hear of the "misses," when these occur, and are sagacious enough to gather from

the general telegraph reports of the day our "hits." The review of our predictions from present stand point is decidedly encouraging, and we are prepared to prove that of these, more than two-thirds have been verified. But now this task is taking out of our hands by the publication of the monthly Weather Review, at Washington, D. C., in which a thorough digest of the past month's weather is given. It, therefore, is only necessary to contrast with this our predictions for a given month to enable any one to see at a glance, in how far we have been right or wrong. It is a severe test, but we are prepared to stand by it.

Queries and Replies.

[We would direct special attention to this column of the paper, and think it will be the means of putting weather observers in communication with one another, and with ourselves. Let all who have questions to ask send them in.—Ed.]

CINCINNATI, Ohio, Sept. 1, 1882.

SIR,—August in this section of country has been a cool and pleasant month as has been the summer throughout. Your prediction of a cool summer for 1882 has been verified in a marked manner. How about the winter here?

A SUBSCRIBER.

[REPLY.—Decidedly severe in Cincinnati section and westward, with abundant snowfalls, commencing early. "A cool and wet summer" is generally followed by a severe winter, but we have even stronger grounds than this for our prediction for the coming winter.—Ed.]

LONDON, Eng, Sept. 13, 1882.

DEAR SIR,—I am a Canadian and have only spent about a year on this side the ocean. Your BULLETIN reaches me rather late in the months, but still I would not be without it. Do you know your summer predictions has "hit us" precisely. What kind of winter should you judge we are likely to get on this side? As far as I can gather, such a summer as the past has in most cases been followed by a severe and stormy winter, as was the winter of 1880-81. A line on this point ahead of the BULLETIN would be gratefully received and in return I shall send you a score or more of English subscribers. You are about as well known in London as in Montreal, and a gentleman recently from Paris, informs me your predictions are quoted even there.

Yours sincerely,

[REPLY.—As we have already stated, the outlook for the winter of 1882-83 in Great Britain is cold and stormy with unusually early and heavy snow falls. The storms are likely to begin in October and continue through the remainder of the year. We expect to hear of a real Canadian winter in England and Scotland.—Ed.]

HARTLAND, Vt., Sept. 11, 1882.

DEAR SIR,—From where does the vapor supply for the North Temperate Zone come.

Your Subscriber
THEODORE A. KINGSLEY.

Answers to the above will appear in next number.

Vennor admits that he scatters his predictions as he pleases and then picks out the weather to fit them.—*Lowell Courier.*

Right *Lowell Courier*, but somebody must have told you, or you would never have guessed it.—Ed.

Criticising the Prophet.

Vennor in his *Weather Almanac*, for 1882, set down under the month of July, the following predictions:

Alternations of very hot and stormy weather, with frequent rains, generally up to about 10th of month. Some of these storms in Western Canada and Western United States are likely to be very severe, causing much damage. A cooler change between the 10th and 13th, with, possibly, a frosty night or two. Hot and oppressive weather, with heavy rain and wind storms, between 15th and 20th. A great deal of rain and storm so far this month. Between 20th and 23rd cooler and windy weather, with continued rains and cool evenings and nights. Between 24th and 26th there is likely to occur a very hot term. After the 26th or 27th, sultry, warm and oppressive weather, with thunder storms up to close of month. There may be indications of a cooler change about the last day of month—probably altogether, a muggy and reeking wet month, very different from that of 1881.

In the interest of science and by way of comparison, we give the result of the observations of Signal Service Sergeant Weber, stationed at St. Louis for the month, as reported by him to the Signal Service Bureau. The curious reader will be good enough to analyze Vennor's prediction and also Weber's report. Due allowance must, of course, be made, for Vennor is general while Weber's field covers only St. Louis and vicinity. Vennor has been remarkably successful in his forecasts. Weber reports as follows: Highest barometer, 30.291, on the 22nd; lowest do., 29.839, on the 3rd; mean barometer for the month, 30.039; monthly range of barometer, 0.452; mean temperature, 73.8; highest temperature, 94.8, 1st; lowest temperature, 57.8, 14th; range, 37; greatest daily range of temperature, 24.0, 3rd; least daily range of temperature, 8.8, 20th; mean of maximum temperature, 84.6; mean of minimum temperature, 60.2; mean daily range of temperatures, 18.4; prevailing direction of wind, south; total movement of wind, 6,169 miles, highest velocity of wind and direction, 31, N. W., 3rd; number of foggy days, none, number of clear days, 11; number of fair days, 13, number of cloudy days on which no rain fell, 3; number of cloudy days on which rain fell, 4; total number of days on which rain fell, 5; depth of unmelted snow on ground at end of month, none; dates of auroras, none, dates of solar halos, none; dates of lunar halos, 26.2; dates of frost none.—*St. Louis Paper.*

Queries and Replies.

What kind of fall are we likely to have, soft or severe? Ans.—That depends upon what you fall against. If, for instance, you fall down a hatchway it will be an open, as well as a severe one.

Are there likely to be many "cold dips"? Ans.—That depends upon the thickness of the ice in your section.

Will we have a "January thaw"? Ans.—That I have not thawed over.

How will the New Year come in? Ans.—Happy, of course, as people always say it does.

Do you believe in weather cycles? Ans.—Yes, somewhat. My son, however, says he will give a ten yard start and lick me on his bicycle.

What are your predictions based on? Guess work or calculations? Ans.—Neither, they are a mixture of fret-work and altercation.

The Flicker.

THE FLICKER, THE GOLDEN-WINGED WOODPECKER,
WIDGEON W., PIGNON W., HIGH HOLE, YOPPLE
YARUP.

It is remarkable that the learned names of this bird are outnumbered by its common names; of the former there are only four, while there are seven of the latter. I think we may easily trace the origin of most of the common names of this species. Flicker was derived from its resemblance to the loud song of the bird, *flick-ah, flick-ah, flick-ah*, &c., rapidly uttered. High-hole is a name given it from its habit of nesting in high holes made near the summit of tall trees. Yopple is plainly a corruption of high-hole, coming from hurried and careless pronunciation and careless listening. Yellow-hammer comes from its loud hammering on the branches of trees and its yellow plumage. I cannot explain the etymology of yarup.

The flicker attracts observation in my neighborhood where it is a new comer. Its peculiar ways, its loud notes, and its extraordinary vivacity gains everybody's attention. A young lady wrote me some years since, from Cohasset, to inquire the name of a bird called a yopple by the farmers of that place. After describing the bird, she mentioned as one of its peculiarities, a habit of making holes in the sides of barns in winter and taking refuge in them. I replied that it was probably the golden-winged woodpecker; and she found my conjecture to be right. Dr. Brewer alludes to this habit of the bird, and mentions a pair of flickers that took shelter in his barn; and he remarked that while they could come and go freely through the doors and windows, they preferred to use the holes they had made in the most solid parts of the barn.

I am indebted to ladies for a great part of my information concerning the habits of birds. A lady in West Medford said to me that for several successive mornings she had been disturbed by a singular noise outside and near her chamber window. After carefully watching she discovered a flicker standing on the roof of her porch, making the sound by drawing his bill repeatedly across the zinc. The bird seemed to have no motive for this act except its own amusement. It is rarely that any of the lower animals amuse themselves by making artificial sounds. In this case the flicker seemed to imitate the boy who draws a stick across the palings of a fence as he passes along the road. A somewhat similar case is related by Dr. Brewer in regard to a tame golden robin. It delighted in occasional acts of mischief, such as putting its bill through lace curtains, seeming to enjoy the sound produced by rending the threads with its beak.

The flicker is usually a very shy bird; so that the ubiquitous boy-with-a-gun can seldom get near enough to shoot one. But there are some birds which are very shy in their natural habits that seem to change their nature as soon as they find themselves in the midst of human population. A lady in my neighborhood informed me that in the winter before last a flicker came often into her yard and fed with her doves. All insectivorous birds, when very hungry, will take farinaceous food, and hunger may have caused the tameness of her feathered guest. The bluejays which have been long colonized in my vicinity are as tame as robins; while the robins, which are very tame when rearing their young in our gardens and orchards, become shy as soon as they leave us in September, and forage in loose flocks in the domain of the boy gunner. They grow shy as soon as they no longer sing.

The flicker in its feeding habits differs from other woodpeckers by taking a part of its food from the ground. Mr. Augustus Fowler, of

Danvers, writes in the *Naturalist* that he has seen one feasting upon the inhabitants of an ant-hill. He then speaks of its diligence in taking borers from the orchard trees, finding their exact location by listening against the hole. The scratching noise made by the grub when gnawing the wood betrays it, when the woodpecker drives its bill directly through the wood and draws out the borer. Two or three pairs of these birds, if they were constant occupants of a farm, would exterminate the borers from its orchards. But the public has not yet arrived at that point of intelligence that would lead the people to cherish the wild birds with reference to their utility. While our men and women of the highest education and culture are riding hippogriffs, the rest of the community who have any leisure are either reading novels or killing the birds. There is only here and there a solitary voice of warning; but nobody hears it. All are listening to Plato!

It is a fact that ought to be humiliating to our national pride, that the only general movement which has been made in this country for the encouragement and protection of birds was made in behalf of the pestiferous house-sparrows. Consider, too, that all this was done when it ought to have been well known that these birds, in their native Europe, have always been regarded as a nuisance. The increase and extent of public libraries have been the cause of this ignorance. In former days, when there were no such opportunities for young people to regale themselves with fiction, they could read these facts in some odd volume of natural history on the domestic shelf. Any such volume would be neglected at the present time for a tale in the newspaper, or an enticing story from the public library. In this way our public libraries keep our youth in ignorance of almost everything which is useful.

Mr. Gentry says of the flicker, "The young when about two weeks old, climb to the mouth of the nest and receive their food; but in a week more they quit the hole, and betake themselves to the upper branches of the tree, where they are fed and where they gambol round the trunk and boughs, after the fashion of children playing hide and seek." This elevated site renders them, while thus amusing themselves, perfectly safe from the majority of their natural enemies.

Whether the loud notes of the flicker deserve to be called a song, or merely a cry, is a question that cannot be very definitely answered. If it be a song, the flicker is the only known woodpecker that sings. In one sense the cry of a peacock or the cackling of a goose may be considered a song. The cry of the loon, as heard booming over the waters of a solitary lake in the forest, is a sound that fills the mind with wild and picturesque images; but we do not call it a song. The cry of the upland plover, which is heard all summer in the region where it breeds, is modulated precisely like that of the loon. It is indeed a perfect miniature imitation of it, and it is highly musical; but we do not call it a song.

Mr. Gentry, who represents the notes of the flicker as "h'wit-ah, h'wit-ha, h'wit-ha," etc., finds "both sweetness and sublimity in the strain." He must do this by the force of imagination; for to ordinary ears these notes are not very musical. But to the imagination indeed we owe nearly all the pleasure we derive from the songs of birds. A horse or an ox never listens to the song of a bird; and there are men to whom the notes of the sweetest songsters are no music at all. It will not be denied that the songs of birds are intrinsically musical. At the same time we must admit that without the aid of imagination we should be quite indifferent to their songs. The pleasant illusions associated with them produce

their greatest charms. In young persons of either sex there is no better evidence of an imaginative habit of mind than their susceptibility to deep impressions from the songs of birds. WILSON FLAGG.

The flicker is an abundant bird in Canada, where it is commonly known as the "High Hole," "Pivart," and other names. During the fall months it is particularly numerous and the individuals congregate in large bodies. Its eggs are laid in the abandoned nests of other species of woodpeckers.—Eg.

Economic Tree Planting, How and Where.

There is much of this country, especially Ontario, that little feels the need of special or extensive tree planting. But might it not be asked, "Cannot something be done for the timber growing interests of the country even now, while the land is being cleared?" It is possible, from the first, to save portions of the grand old primitive forests unharmed and untouched for the use of future generations. A country depleted of its trees is unfit for human habitation, and will soon be classed among the "deserts of the earth." By the phrase "economic tree planting" it would be well to understand tree planting on economical principles, something illustrated on a systematic scale. The work might be done by individual effort or by the legislature. It would be well to consider, 1st, the sources of timber supply; 2nd, the management of timber supply, and 3rd, plan of operations. The sources of timber supply are seeds, sprouts, coppices, budding and grafting, and, lastly, layers. The first three are the most generally relied on for the timber supply. Seeds are the numerous germs of vegetable existence annually matured by the trees themselves for the special purpose of individual propagation. Tropical tree seeds have wonderful powers of longevity. Sprouts are offshoots that in the case of many kinds of trees start freely from underground buds on the roots of the parent trees. They are easily transplanted. Coppices are wood growths from buds on the stumps of trees, previously cut down for timber uses. The following are trees that most readily sprout at the stump after the tree has been cut off, viz.: the ash, elm, oak, poplar, cotton wood, willow, linden, chestnut, mountain ash, sycamore, birch, alder and hazel. Budding and grafting, when practised, is merely for the advancement of certain scarce and valuable timbers. Layering is only applicable to a few sorts of trees, and is never done on an extensive scale. Seedlings must be at the base of all propagation. In the management of seeds it was recommended to adhere closely to the known and acknowledged laws governing the life habits of the parent plant. The management should be placed only in the hands of experts. The system of transplanting young trees, as practised by the best men of the times, is firmly believed in. In planting, it was preferable to place the seedlings in nursery beds for a year or two than at once to plant in permanent situations. Better attention could be given when the rows were near together. When the trees were about five or seven feet high they might be fixed in a permanent situation. Timber planting requires a large amount of capital, of time, of labor, of faith. At no very distant date our forest supply will inevitably give out. We should then do our best to meet the want which will be created. Concerted action is absolutely necessary to insure success and to attain ultimate results.—B. Gott, Arkona, Ont.

—Old lady reading head-line in paper
"Arabi throwing up fresh earth-works!"
"Why, how sick he must be, poor man!"

CORRESPONDENCE.

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

Letter from the Rev. Leo Gaetz.

Henry Vennor Esq.,

DEAR SIR,—I beg you to excuse my seeming discourtesy in not complying with your request sooner. Your card just reached me as I was starting on a trip to the Lower Provinces and during my absence I was too busy doing nothing to write letters or even read the almanac.

The "Weather Bulletin" reaches me in my summer haunt with commendable regularity. Upon the whole I am pleased with it and always interested in its contents. Spending the summer on a farm and watching the progress of different crops, where so much often depends on the weather, the BULLETIN is kept as a sort of reference, as of old, "some believed the things which are spoken and some believed not."

Your general forecast of the summer has been pretty correct. Quite a number of the more particular predictions have not been verified in this locality: but I always take it for granted that Bulletin weather has turned up somewhere, and being of an unselfish nature I have no disposition to monopolize all the July frosts and August storms (especially if the wheat is ready to draw in) on my little plantation.

Reading the "Bulletin" has given me a great admiration of your close observation, and patient noting of details, and if what you are now seeing, "through a glass darkly," prove to be the first fruits of some yet undeveloped science, you will have made a name and fame worthy of your zeal in this matter. Personally, I confess I cannot as yet see much probability of success in issuing any forecasts that will be of advantage to the individual; for if the atmospheric freaks should continue as lawless as they have been of late, the science would require to be worked down to a very fine point to be able to determine what kind of weather would be experienced at a half dozen different localities, in a radius of three or four miles. Of course if the "cycle system" be absolutely reliable, and rain or sunshine occur at precisely the same time and place every three or even three-and-thirty years, each man by keeping a well posted diary, and deeding it with the real estate to which it pertains, in case of death or removal, might serve some good service to himself and posterity, but that there is any law that will make a thunder cloud drench or a frost nip a particular locality at exact intervals is not at all certain from any data that is yet at hand. Of course an interest in the matter will lead us to study the weather, but supposing we knew all about it I yet fail to see the advantage, for if the kind of weather that is on the way suits my particular case I shall know it soon enough, and if not, I shall know it a great deal too soon. But I frankly confess I am in the dark in this matter and anxiously waiting for more light which I sincerely hope you may be able to disseminate. In the mean time send on the "Bulletin," and favorable weather for the root crops and pastures.

Yours sincerely,

LEO GAETZ.

CINCINNATI, O., Sept. 5, 1882.

H. G. Vennor, F. C. S.

In your September Monthly you request questions to be answered.

In reading the article from the *Boston Post* page 12, 1st column, I find these words, "It is a favorite assertion of the aged that the climate of these islands(?) is manifestly diminishing in severity."

Fifty-seven years ago, when I was a boy ten years old, I was repeatedly told by my father, mother and other "old inhabitants" that "Naraganset Bay, from old fort Adams to Canonicut, west of Newport, R. I., was so frozen over that wood was brought over on the ice from the latter place to Newport, and that one person undertook to travel in a cutter from Newport to Providence, but failed when part of the way up.

Since my recollection, fifty-seven years, there has not even been skating on these premises, not even a freezing over of the inner harbor of Newport.

Quest' n. Will you or some "old inhabitant" of Rhode Island tell us how much truth there was in these traditions?

J. A. P.

Will some of our readers kindly answer the question for us.—Ed.

Prof. Henry G. Vennor.

You ask, "Will each of our subscribers ask us one question?"

It has been said that at the beginning of the carboniferous era no air-breathing animal could exist, that the immense coal-forming ferns, absorbing the carbonic acid gas so defiled the atmosphere that first amphibious, and then by degrees, more perfectly developed land animals, up to man, came into existence, the question now is, in your opinion, does that capulation still go on, (equivalent), promising therewith a higher evolution of life?

C. C. BENNETT, M. D.

[Answers to the above communications will appear in next issue.—Ed.]

AMBERLY, P.O., West Huron, Ont.

SIR—I am pleased to see that the August Bulletin contains no almanac. This, I believe to be a step in the right direction, and I hope you will now have done with particularizing and dates entirely. It affords me no small measure of satisfaction to see your remarks on *Bulletin* under the heading "never give up." Your renown for weather wisdom is great but it will still be greater if "you never give up." Your predictions for the month have been closely fulfilled in this section and Ontario generally.

Believe me, yours truly,

RALPH BULGLASS, JR.

[The above correspondent has contributed monthly, valuable records from his station of observation.—Ed.]

AMBERLY, Ont., Huron Co.

August. Rain fell on 19 days.
Thunder Storms on 8 days
No. of cool days, 14.
Frost occurred on the 18th and 19th.

R. B.

Mr. Ida, Ark., Sept. 1, 1882.

August.
Highest temp. during month, 92°
Lowest " " " 54°
Mean " " " 72½°
Total rain fall " " 5.40 in.
No. of rainy days " " 10
Cloudy days " " 13
Thunder Storms on 2nd, 6th, 14th, 15th and 23rd.

NOTE.—Lowest mean temperature for August in past eleven years, and unusual rain fall.

OBSERVER, Sig. Station.

Vennor and the Saint.

This time Vennor "has struck it rich," as they say in mining parlance. He has secured the inside track of the weather, given us a book replete with valuable information, and allowed the St. Jacob people the control of it. A. Vogeler & Co., Baltimore, Md., will send a copy to any address upon receipt of 10c.

Old Prob's Bureau.

Old Prob one day sat up in his shop,
Pouring the rain out drop by drop,
Boiling and freezing and stirring it 'p
Into mist, rain and snow,
Bottling sunshine for Winter use,
Tying up winds that were getting loose,
Sending out clouds for a little cruise
Across the sky to go.

And when all things were arranged . . . is mind.
For a change of scene he felt inclined.
So shutting his workshop door behind
He descended the creaking stair,
And spoke to his housekeeper down below,
At her favourite window setting to sew,
To have an eye to the shop, you know,
While he was taking the air.

"I've fixed the weather at cold and clear,
And there is nothing to do, my dear,
And if any one calls at the office here
Just say for a walk I've gone."
Then he went striding to the North,
Like that Satanic chap of little worth,
To visit his snug little farm on the earth
And see how things went on.

Said the housekeeper then in a musing way,
"Now I must begin without delay—
That dreadful shop for many a day
Has wanted my broom and mop."
She quickly mounted the narrow stair,
And looked about with a business air:
Cobwebs and dust were everywhere
From floor to window top.

"Now, the very first thing to do, no doubt,
Is to move the furniture all about,
And dust every piece both in and out,
And here I'll begin the job."
She turned to a corner where, wide and tall
Stood a huge big bureau against the wall,
With many a drawer, and cupboard and hole,
And many a broken knob.

'Twas a piece of furniture known to fame,
But the woman had never heard its name,
At it she went without fear or shame,
And pulled the knob of the bureau.
Out came a blast that chilled her nose,
The end of her mop to an icicle froze—
Frost on the window spreads and grows,
And the mercury drops to zero.

She opened a drawer and something white
Came out like a flock of birds in flight;
She neither could see nor hear from fright,
As the snow grew thicker and deeper.
She tried another and there flew
All kinds of winds that ever blew;
"O, gracious me! what a hullabaloo!"
Cried poor old Prob's housekeeper

Now, just at that hour of that same day,
The northwest corner of U. S. A.
Right under the workshop corner lay,
In winter sunshine glowing.
The people started in great surprise,
They looked at each other; they looked at the skies
They shook their heads; they rubbed their eyes;
But still it kept on snowing.

At last every drawer she opened wide
Hoping for sunshine somewhere inside,
And then—she suddenly turned to hide,
For she heard the master coming.
She jumped through the window, she didn't care,
It she never lighted, nor when nor where,
While Prob stumped slowly up the stair,
An air from "Pinafore" humming.

And oh! the scene that met his eye!
He laid his cap and mittens by,
Stopped not to question how, or why,
Nor if, nor but, nor whether;
And he's busy yet, both day and night,
Making the bureau sound and tight;
And till he gets that shop set right
We can't get pleasant weather.

One who is never busy can never rest, for rest implies relief from previous labor.

The Atlantic Ice-drifts.

The *New York Herald*, August 19, says under the head of the Great Atlantic ice drifts and its results:

The extraordinary record of icebergs encountered by European steamers arriving here recently, shows that the glacial drift in the North Atlantic this year is almost without a parallel for both duration and magnitude. The *Vandalia*, which arrived on the 6th inst., reported passing eight of these formidable ice masses, some of which were from one hundred to one hundred and twenty feet above the sea. Two months ago such a phenomenon was not out of season. But the prolongation of this ice drift to double its usual length indicates the action of some remarkable thermal force within the polar circle. As early as January 30 the steamer *Glamorgan* passed an ice field in latitude 47° north, longitude 48° west, stretching more than forty miles. From that date the accumulation of ice off the Newfoundland coast increased, until on March 1st it extended in a southeast direction two hundred miles. In the early part of May all the harbors of Labrador were reported blocked with ice, and as late as June 10, an English vessel bound to this port had to sail through two hundred and fifty miles of sea covered with bergs, the ice belt thus projecting to the fortieth parallel between the forty-fourth and fifty-third meridians, and extending over two hundred thousand square miles. In the south Atlantic Ocean, during the summer of the Antipodes, the great Antarctic icebergs reach their utmost limits, approaching the parallel of 41 degrees south, having passed the latitude of Cape Horn to the east of the Falkland Islands. But their advance so near the tropic is less remarkable, as they are originally larger than the Arctic bergs, and they do not meet, as the latter do, an ocean current of high temperature.

The occurrence of such a phenomenal and protracted discharge of ice from the Arctic basin is a mystery yet unsolved. It may possibly be the result of some abnormally warm year in the north polar area, though some may be disposed to account for it by the passage through the Davis Strait, as an under current, of a branch of the warm Gulf Stream, the existence of which Lieutenant De Haven, in his search for Franklin, apparently proved by observations of bergs of heavy draught drifting northward against strong surface currents. The more probable cause of the voluminous outflow from the icy seas is a general excess of moisture in the high North, by which the process of radiation of the earth's heat in winter is arrested, and hence, with the approach of the spring equinox, an exceptional amount of precipitation, loosening the glacial masses, would occur, while unusual severe gales would drive them out to sea. Whatever may be the cause of their descent in such massive forms and large numbers over the North Atlantic, their presence must have a potent meteorological influence on the ocean. Mr. David Cunningham, of Dundee, forcibly suggests that the movable ice causes a high barometric pressure and a correspondingly low temperature over the Western North Atlantic basin. No doubt to this result must be attributed the cool, wet British summer, which has marred the fine crop prospects of last spring. But the effect of the great ice drift will be strikingly seen as the West Indian hurricanes of the next two months begin to develop and advance along the Gulf Stream towards Europe, when their proximity to the cold ocean around Newfoundland will in all probability cause excessive condensation and extreme barometric falls in the storm centers, giving unusual intensity to their cyclonic winds and attendant cross seas. For this reason, if for no other, navigators will do well during the coming hurricane season to give the Banks a wide berth.

The Wretched Season in England.

(*London Daily Telegraph*)

Never was the genial September sun more welcome than at the close of this unseasonable season. We deserve a little brightness, a touch of gaiety, a day of daylight, wherewith to behold the fading tints of our own beautiful England before the darkness comes, and we are overcovered by a canopy of gloom. For, truth to tell, it has been a wretched year. The springtime came too soon, and had no strength to fulfill its promise. The unsuspecting blossoms, smiling too early in our London gardens, and delighting many a heart, were soon cut off and withered by wild tempests of hail and sleet. Seldom had the pink almond appeared so soon on the leafless tree; never so early was the garden path snowed over with the unformed flowers. Lilac and laburnum, hawthorn, red and white, they all came in profusion, and were destined to become spring's sacrifice. Can any one have forgotten that morning when London awoke to find every spire of chestnut flower burnt and blackened, and the young leaves scorched as if a whirlwind of fire had passed across the land. From that moment the beauty of the year seemed to have faded away. It was not alone that the season which should be the most consoling was rude, rough and ungenial. We could have borne that. Englishmen are said to be made by the east wind. But it was miserably cold and wet. What need to look back upon our lost pleasures? The cricket matches, when the turf, however well drained, could not drink in the excess of water, and lakes appeared between the wickets; the garden parties saved from ruin solely by the good temper of the guests. the fashionable race meetings such as Ascot made muddy and wretched with the trampling of many feet; even Henley doomed to a drenching to which the history of this delightful meeting has scarcely any parallel. It was a season of umbrellas and waterproof coats, and when the time for the holidays came, there was, as if by one consent, an exodus from England, most of those who departed philosophically remarking that, after what had happened in the past months on our "tight little island," it could not be worse elsewhere. Unfortunate delusion! It was worse, far worse, as experience has taught only too many—worse even by comparison, colder than any one could have conceived, wetter than any human being could have dreamed, worse with the aggravation of no home to go to, no familiar corner in which comfortably to growl. Wet weather is bad enough, no doubt, in London. A cold season is not enlivening to the spirits; but at the worst there is the study at home and the distraction of whist at the club. A spell of wet weather may be destructive of all exercise, and materially increase our petty disbursements; but if it rains "heavens hard," if we are treated to a deluge that is supposed to contain cats and dogs, to say nothing of pitchforks, still there is ever within whistle a hansom cab. But once we have packed up, and committed ourselves to the servitude of a tourist ticket, there is no turning back. We must put a bold front on the matter; we must grin and bear it.

For, truth to tell, the traveller this year did not go far enough away. Sunshine was alone to be found across the Alps and the Apennines. But most of the travellers stopped short of the barrier that obstinately interposed between the searching damp of cold and the blue and ever cloudless sky. The Rhine, no doubt was a miserable spectacle, the stream had become positively ugly with the constant rains, the castles on the jagged rocks stood disconsolate in the mist, and forlorn enough were the tourist travellers on the up-river steamers, trying to feel jolly over their early dinner and Walperzheim under a dripping awning. Rain is not favourable to the effective display of any kind of scenery. It utterly spoils the Rhine; and even the travellers who passed the rapid river by on the railway on either bank were inclined to pull down the blinds and look at its green waters no more. All this time there was sunshine on the Danube. Gaiety and life seemed to begin in that ever-courteous and laughing city of Vienna; though, so far as English travellers were concerned, the hospitable little tables in the hotel courtyards were deserted, and the Viennese inhabitants consumed alone their decorated dishes of cold fish and their still colder glasses of light and amber-coloured beer.

There was no rain at all in smiling Hungary—that land which veritably flows with milk and honey, and is so rich in produce that its people leave it half ungathered. That most delightful of all river cities, Buda Pesth, had not a cloud above it, not a speck in the blue sky, at a time when people were rain-besieged at Zermatt and weatherbound in the giant hotels of gay Lucerne. How was it that those who hoped against hope for fine weather at Ems and Wiesbaden, at Hombourg and Baden Baden, and who drank the accustomed waters under umbrellas, had not bethought them of the cure house on Margarethen Insel on the Danube river, that miniature paradise of trees and flowers where the wandering foot of the Englishman is so seldom set? For if there are excursion boats on the Rhine and the Lake of Lucerne are there not pleasure steamers also on the Danube, when in a lazy and luxurious fashion the traveller, sick of the train, can interview the countries that have bought their liberty, can see the rocky fastnesses and the eagle's lair about the bold scenery of the Iron Gates, and catch the first glimpse of the picturesqueness and colour of eastern life where melon sellers and vendors of grapes, veiled women and turbaned men, Turkish porters and Greek popes crowd to the landing-place of Turin Severin or gay Widdin, receiving thus their sole communication with the outer world? It rained desperately no doubt in the neighborhood of the climbing inns of the athletic Alps, there was despair at Zermatt and the Riffel, a wet fog swept around the platform of the Eggischorn, and blotted out the beauty of the Great Aletsch Glacier, the clergymen and schoolmasters were at their wits' end what to do at Murren, and the weatherbound traveller looking from his window at the Wengernalp or the little Scheideck heard the distant avalanches and saw no rosy sunset over the Jungfrau, the Eiger, or the Monch. Meanwhile there was a sunset that would have delighted Turner to brighten Varna, not a ripple to disturb the passage of the Austrian Lloyd steamer on the Black Sea; and all through the long fast of Ramadan down to the time that the cannons of Constantinople proclaimed the advent of Bairam, the mournful dogs of Pera basked on the jagged stones of the tortuous, evil-smelling streets, and it required Christian courage to face that blaze of sun across the bridge which divides the fashionable Turkish quarter from the native homes and shops and alleys of old Stamboul. Strange, indeed, must it have appeared recently to the troops on the transports eastward bound to read, on the Mediterranean, with its waveless waters of deep blue, of storms in the Channel and dripping beaches all the way from Dieppe to Trouville, of tempestuous weather around the Isle of Wight and the southern ports, when they found on either side of them what the Laurate has so happily described as "summer isles of Eden lying in dark purple spheres of sea," and when they heard such glowing accounts from Egyptian refugees of Athens crowned with a perpetual sun, Sicily without a shower, and Naples with days that were endurable and nights at Pausilippe as soft as spring and light as noon.

"Oh! rest ye, brother mariners, we will not wander more," groan inwardly the seasick and returning passengers cast upon our coasts, glared at by Dover, stared at by Folkestone, bundled about into inhospitable custom-houses at Southampton, or hurrying homewards from Flushing. Too many of them cannot fail to confess that they have, take one thing with another, had a very bad time of it. Their scruples, however ever, the reaction is at hand, and if the weather-wise be correct, we are promised a delightful autumn. To some minds there may be a settled melancholy in the fall of the leaf. Nature is then in the minor key. The year, so far as beauty is concerned, is almost over, and there is nothing to anticipate but the fog. Yet, socially considered, the autumn is, after all, the merriest division of the year. People unbend and become more genial. During the London season they are on stilts; at a country-house they become natural, and are humanized. For life at a country-house means something much more than everlasting sport and never-ending slaughtering of partridges; it does not mean going out in the morning and coming home dog-tired at night; it is not an embodiment of selfishness and egotism, as many people suppose. Quite the contrary. Grave men and women are boys and girls again, at least in heart; and country-house life in

England, if sensibly conducted and properly understood, has no rival in the affections of those who are able to appreciate its pleasures. Why is it that after these spells of country life, these great draughts of exercise, these trappings through the turnips, and this being brought face to face with nature in the calm evening of the year, that men, usually so stiff and reserved, come back to the club with the roughness rubbed off them, ready to converse, glad to be amused, eating with appetite, and taking their pleasure rationally, telling their adventures with relish, and going to the play with the light heart of Colonel Newcome! Because they have to a certain extent been humanized by the daily round of a country-house existence, and have learned to value the refining influence of the society of their mothers and sisters, their wives and children, and of many more good women whose presence can but be acknowledged in crowded ball-rooms or fashionable assemblies of a London season. Add to country-house life, with its merriment and music, its excursions and rides, its shooting and theatricals, the genial charm of fine weather, and may be much of the sorrow of the commencement of the year will be forgotten and forgiven at its close.

Thermometer Pantaloons.

Hoffenstein was busily engaged scolding Herman for not publishing a lot of cheap jewellery there was in the show case, when a stoop-shouldered countryman entered and inquired—"Have you got any good jean pants here?" "Certainly, my frent," replied Hoffenstein, "ve makes a specialty of goods in dot line, und ve defy competition. If ve sell anything und you don't like it you gets your money back or someding else in exchange, you know. Ves you a farmer?" "Yes, sir, I live up on Red River." "Vell, den, you need a pair of bants like dese," said Hoffenstein, pulling out a sky-blue pair from a pile of clothing on the counter; "dey vas de genervine doeakin, und vil last de whole year oud, you know." The countryman took the pantaloons to the light, examined the texture of cloth, and then shaking his head knowingly said: "There's too much cotton in them; they will shrink." "Of course, my frent, dey vil shrink, but vait and I tells you someding. If a man vat owns a bank or keeps a store comes here, I don't sell him dem kind of bants. Vy? Because they vas made expressly for de farming business. Dey vas de dermometer bants, and a blessing to every farmer vat wears a pair of dem. Do you know my frent, these bants vill dell you exactly vat the vedder vill be. Ven it vas going to be vet und cold dese bants vill begin to shrink up, and ven it vas going to be dry und warm dey comes right down, you know. Dree years ago I sell a pair of dem to a man vat vas name Vikings, und efer since den he makes good crops ven de oder people don't make noding, because he always knows by his dermometer bants vat de vedder vill be. After a vile de people in de neighborhood finds oud dese degred ut Vikings' success, und at de beginning uf zeeding, you know, dey comes for dirty miles around und uf de see Vikings bants crawling up his legs dey holds off und vait for a change, but i his bants vas down dey goes right back home, and put in de crop. Dink uf it, my frent. Mid de dermometer bants you can dell exactly ven to but in cabbage seed und wheat dwice as better as mit any almanac, besides ven de vedder gets so cold und vet dot de bants goes under your arms, you can sew buttons on de front und wear dem as a vest." When Hoffenstein finished his yarn concerning the pantaloons the countryman smiled, and turning abruptly on his heel, left the store. "Did you see de voy dot man acted, Herman?" said Hoffenstein, angrily. "Yes, sir," replied the clerk. "Vell, it shust shows dot de more you try to help some peoples along, de more you don't get any thanks for it."

Sun Spots and Rain-fall.

(From Commercial, Cin., O.)

A theory largely accepted by scientists, that there is a close relation between sunspots and rainfall, is reinforced by meteorological observations in different parts of the world. The theory has been briefly stated as follows: In those years in which the number of spots on the sun's disc exceeds the average annual number the amount of rainfall exceeds the average annual amount, and vice versa. The statistics of India in this regard have proved to be particularly valuable. In other parts of Asia but little information has been obtained for or against the theory. In China, where so many accurate and interesting records have been kept for many centuries concerning other subjects of great value to science, but little attention has been paid to minute details of meteorology. Foreigners, however, residing in that country have of late years accumulated considerable information upon that subject. Mr. Alex. Hosie, M.A., of the British Legation at Peking, has recently prepared and published tables showing the connection of sun-spots and rainfall in that city from 1843 to 1877.

Mr. Hosie, who is a pains-taking and scholarly gentleman, in explanation of his tables says: In the second, third and fourth columns of table No. 1, Wolfe's relative sun-spot numbers are so arranged that the years of maximum sunspot fall in the sixth year; the result of which is that three cycles are formed from 1843 to 1877, both inclusive. In the fifth column the means of the three cycles are taken, and in the sixth column will be found a mean cycle of eleven years, which has been arrived at in the following manner: Of the thirteen means obtained from the three cycles above referred to, the mean of the first and third means, and of this mean and the second mean, forms the first year of the mean cycle of eleven years. The mean of the second and fourth means, and of this mean and the third mean, forms the second year of the cycle, and so on.

At p. 564 of *Nature*, for September 26, 1878, Mr. Meldrum thus expresses it. "The first term of what is called the 'mean cycle' is obtained from the expression $atb+c$, where a , b , c , are the means of the sun-spots for the first, second and third years of the thirteen years, the remaining terms being obtained in a similar manner." The same plan has been followed in the construction of Table 2. The seventh column of either table shows the deviations from the mean value of the sun-spots and rainfall, respectively, for the mean cycles of eleven years. These mean cycles have been formed with a view to reducing the effects of what are called "accidental irregularities." The falls for the years 1856 '59 and 1862 are lacking.

TABLE I.

Wolf's Sun-spot Numbers.

[Maximum years in the sixth line.]

Year.	1843-1855.	1855-1867.	1867-1877.	Means.	Mean Cycle.	Variation.	Year of Cycle.
1	13.1	7.1	31.4	14	15.8	18.7	1
2	19.3	11.1	14.7	13.0	15.8	14.0	2
3	23.3	20.1	23.3	22.2	15.8	22.2	3
4	26.6	28.1	28.6	27.8	15.8	27.8	4
5	27.4	32.1	28.5	29.3	15.8	29.3	5
6	32.4	32.0	31.8	32.1	15.8	32.1	6
7	32.4	24.1	13.8	23.7	15.8	23.7	7
8	33.4	16.1	27.1	25.5	15.8	25.5	8
9	33.4	6.1	27.1	27.2	15.8	27.2	9
10	32.7	45.4	43.1	43.7	15.8	43.7	10
11	31.5	31.4	35.9	32.9	15.8	32.9	11
12	21.0	14.1	11.3	15.6	17.1	15.6	12
13	7.1	8.8	7.0	7.8	17.1	7.8	13

TABLE II.

Peking Rainfall, 1843 to 1877.

Year.	1843-1855.	1855-1867.	1867-1877.	Means.	Mean Cycle.	Variation.	Year of Cycle.
1	26.0	24.0	15.5	21.8	21.8	0.0	1
2	24.7	10.0	10.0	17.8	21.8	4.0	2
3	31.9	15.2	22.3	23.1	21.8	1.3	3
4	23.8	22.3	16.0	20.7	21.8	-1.1	4
5	19.6	16.0	16.0	17.2	21.8	-4.6	5
6	31.4	18.2	30.1	26.6	21.8	4.8	6
7	23.8	21.5	44.0	31.4	21.8	9.6	7
8	23.6	30.0	30.0	27.9	21.8	6.1	8
9	23.5	25.7	30.0	26.4	21.8	4.6	9
10	23.9	20.0	25.5	23.1	21.8	1.3	10
11	23.5	15.5	17.0	18.8	21.8	-3.0	11
12	23.5	17.0	24.5	21.8	21.8	0.0	12
13	21.0	15.2	19.3	18.5	21.8	-3.3	13

"From a comparison of the seventh columns of Tables I and II we find that—

"(1) The number and nature of the deviations from the means are precisely the same in both.

"(2) The maximum rainfall year immediately follows the maximum sun-spot year.

"This 'lagging behind' of the rainfall is not peculiar to the maximum year, but will be found to pervade the whole cycle, for if the maximum rainfall year, *i. e.*, the sixth year of the mean cycle, is moved up so as to coincide with the maximum sun-spot year, or fifth year of the mean cycle, the variations of the sun-spots and rainfall will coincide in every particular; that is to say, years of maximum sun-spots will be years of maximum rainfall, and vice versa, and the variations will be found, in maximum years at least, to increase and decrease in almost the same ratio.

"It will be remarked that from the sixth to the eleventh years of the mean rainfall cycle, or from the maximum to the minimum rainfall years, the gradations are well marked, and it will be seen that the statistics from which this part of the cycle is derived are all but complete."

During the month of August the highest temperature at Cincinnati was 80° on the 6th the lowest 58.3° on the 11th. The prevailing wind was southeast. The were 7 clear and 13 fair days, and rain fell on fifteen days. The summer, now virtually ended, has upon the whole been a pleasant one, and the following figures show its record in respect to temperature and rainfall as compared with past years:

	June		July		August	
	Tem.	Rain	Tem.	Rain	Tem.	Rain
1871	74.7	3.81	77.1	2.78	79.4	6.05
1872	74.7	3.38	79.2	3.01	78.1	3.21
1873	77.3	2.38	77.2	3.94	75.8	4.62
1874	79.0	4.23	75.1	3.43	77.7	1.63
1875	77.0	4.53	76.6	6.93	71.3	3.17
1876	73.3	6.53	75.6	6.55	76.5	1.38
1877	74.0	5.24	75.3	4.23	74.3	1.26
1878	70.0	5.24	80.5	5.03	77.5	4.11
1879	73.1	5.22	81.3	2.75	72.6	11.72
1880	74.2	7.56	76.3	4.5	75	4.01
1881	73.4	7.82	80.5	12	73.5	5.16
1882	73.0	4.31	74.4	2.91	74.3	5.73

This gives a general average temperature at Cincinnati of 74.3° for the month of June, 78.4 for July, and 76° for August.

Harnessing the Wind.

We don't mean to say that any one can literally harness the steeds of the wind, but we would tell our readers that Vennor fully describes their course and the state of the weather for the coming year. The Vennor Calendar for 1883 is a valuable book, and will be sent by A. Vogeler & Co., Baltimore, Md., who control it, to any address, upon receipt of 10cts.

The qualities we possess never make us so ridiculous as those we pretend to have.

The Whirligig of Time.

(Buffalo Express.)

A feature of the falls that at present attracts much attention is the "spouting of the waters." This occurs in the centre where the waters, of what was originally the Horseshoe fall, but which is now the exact shape of the letter V. Two or more years ago it was evident that the Horseshoe was fast losing its form, and at the same time, at intervals, water and spray was seen to raise at the centre from below the precipice high in the air above the brink. It then attracted no especial attention, as it was thought the rocks had worn away in such a manner that when the water in its descent came in contact with the jagged projections it shot upwards. This theory was generally advanced and is held by many to day, but the shooting of the waters has assumed such proportions, the water now shooting 100 feet above the brink, that various other theories are advanced, none of which, with one exception, seem at all probable. A gentleman who was viewing the phenomena, suggested that the rocks that have broken away have been piled up in the centre to such a height that when this gigantic body of water strikes them, it causes the water to shoot upward. Whether this theory is correct cannot be said. It is probable, however, the real cause will never be known. There is no means of getting near enough to the fall to ascertain. A full view of the fall can now seldom be had, and only on a very mild day can a partial view be had. This is owing to the great amount of spray arising from the spout.

The Drought of '49.

(Hackensack Letter in Brooklyn Eagle.)

"Stranger, I take it?" observed an elderly resident the other day, as I stopped him and asked if there were any blackberry trees around his way. "I judged so. I was a stranger myself when I fust kim here. That was in the summer of '49. Hottest summer ever known in these parts."

"Any warmer than this?" I asked him.

"Summut, summut! That summer of '49 the cedar trees melted and run right along the ground! You notice how red that ere dust is?"

"Pretty warm," I ventured.

"Wy, sir, durin' the summer of '49 we kept meat right on the ice to keep it from cookin' too fast, and we had to put the chickens in refrigerators to get raw eggs!"

"Where did you get the ice?"

"We had it left over and kept it in bilin' water! Yes, sir. The temperature of bilin' water was so much lower than the temperature of the atmosphere that it kept the ice so cold you couldn't touch it with your finger!"

"Anything else startling that season?"

"That summer of '49" "Well, guess! The Hackensack river began to b'ile airly in June and we didn't see the sky until October for the steam in the air. And fish! fish! They were droppin' all over town cooked just as yo wanted 'em! There wasn't anything but fish until the river dried up."

"What did you have then?"

"The finest oysters and clams you ever heard of. They walked right ashore for water and they'd drink applejack right out of the demijohn! Yes, sir. You call this hot! I feel like an overcoat!"

"What is your business?" I asked him.

"I am a preacher," he replied. "By the way you wanted blackberry trees. Just keep up the thumbhand side of this road until you come to the pig pasture and there you find the trees. Climb up on my goose roost and you can knock down all the berries you want if you can find a pole long enough."

Our Medical Basket.

(Special Selections.)

Milk Diet in Bright's Disease.—Since we know at present any drug that possesses the therapeutic value to any marked extent in this terrible and fatal disease, and since it is daily making sad havoc among human beings, and principally among that class who, by reason of their valuable public labors, are particularly to the world, therefore it becomes a medical question of paramount interest that we should discover some potent method of combating this very prevalent disease. Some years since Carel first called attention to the treatment of Bright's disease by the use of a milk diet, and since then Duncan, as well as many other prominent physicians, have written on this subject. We have ourselves seen some remarkable results follow this treatment, while Dr. S. Weir Mitchell, of our city, is now quite an enthusiast on this subject. This method of treating a formidable disease has received sufficient distinguished endorsement to recommend it seriously to our notice. We would, therefore, ask all physicians who read this article to try this method of treatment, and to furnish us with their experience, which we will publish. The milk is used thoroughly skimmed and entirely freed from butter. To procure the best results it has been advised that the patient shall restrict himself absolutely to milk and continue the treatment for a long time. If it disagrees with the stomach (as it will in some cases), Dr. Mitchell advises that the patient be put to bed, and the treatment commenced with tablespoonful doses, to which lime water is added, until the stomach tolerates the milk, when from eight to ten pints daily should be taken, and absolutely nothing else. The sanction of such a distinguished physician as Dr. Mitchell forces us to seriously consider the merits of this treatment, and we trust to receive the experience of all readers of this journal who may have cases of Bright's disease to treat.—*Medical and Surgical Reporter.*

CAUSE OF BRIGHT'S DISEASE.—What is the cause of so much Bright's disease? asks a victim of this malady. To which we reply, there are many causes. One is the taking of a cold. A cold may go to the kidneys as well as the lungs, and do a great deal more harm there, for the tubules in this organ are very multitudinous and very minute. When inflamed they suffer in the same way that the nasal and bronchial tubes do; that is, get catarrh. A slight inflammation of these tubules is called a catarrhal one, but when it becomes deeper-seated then it called croupous. About the only difference is one of degree, not of kind. Another cause of the disease is the excessive use of flesh food, and of hot, stimulating spices and drinks, Lager beer, it is said, is a frequent cause of Bright's disease. Alcoholic drinks we know are. Many medicines are said to cause it, as, for instance, chlorate of potash, used so freely in many diseases; and it would not be at all strange if it was also caused by the use of the various baking powders now so much in vogue. A person suffering from this malady should lead a sober and careful life, live on a plain, unstimulating but nutritious diet, take moderate exercise, avoid lean meat, or use it only sparingly, and keep the skin active, so as to relieve the kidneys as much as possible from work. In its first stages its ravages may be stayed, and if the constitution be a good one the person may live to a good age. In its worst form there is no remedy of much avail. Those advertised by the quacks, and we are sorry to say, those given by the doctors, are of about equal worth, and both are valueless.—*Herald of Health.*

PERILS OF THE TURKISH BATH.—The hot-air bath in all its varieties of construction and arrangement, is a powerful agent for the disturbance of the circulatory system. The change effected may be good or it may be bad for the subject, but it can scarcely be in-

operative. The heart's action is quickened; the tension of the blood pressure is at first heightened, and then if copious perspiration take place it may be reduced. Speaking generally, there is a determination of the blood to the surface, leaving the central and deep organs less fully supplied than before. In this way, doubtless, local congestions are occasionally relieved by the bath. Under ordinary circumstances the change effected in the distribution of the blood and pressure is likely to be beneficial, but if the heart be weak or the larger vessels rigid, it may happen that faintness ensues. Then something is done, either by the affusion of cold water on the extremities or in one or more of several empirical ways, to drive the blood in again, and this endeavor may prove the last strait that throws the whole physico-vital apparatus of the circulation out of working order and renders the continuance of the essential functions of life difficult or even impossible. Except by the robust or thoroughly healthy, the hot-air bath should on no account be employed without express medical approval. Even this restriction is scarcely enough, because it may happen that the subject of a weak heart or abnormal blood vessels regards himself as healthy, until the unaccustomed demands made on his organs of circulation by the bath discover the weak place in his economy. It is not desirable to lay too much stress on those deaths which occasionally occur in, or after a visit to, Turkish baths. At the same time it is desirable that the dangers of the bath should be more generally understood than they would seem to be, and that the proprietors of these establishments should be required to instruct their managers and attendants to send at once for medical assistance whenever a visitor becomes faint or even momentarily unconscious. Such occurrences must needs portend peril of death, and, however large may be the proportion of instances in which the "slight faint feeling" or "sleepiness" passes away, it is manifest that a grave risk is in all cases incurred, and a responsible medical man should be instantly summoned to aid the recovery. There ought to be nothing left to the discretion of the manager or attendant in such a case. Again, although it is easy to see that proprietors would prefer to avoid death on their premises, no person who has been ill or even slightly unwell in the bath should be allowed to leave the establishment without being seen by a doctor. Further, we think the practice of sleeping in the hot rooms ought to be interdicted. There is always danger at the moment of awakening.—*London Lancet.*

Old Orchard Beach.

The Beach itself is nine miles long, of crescent form, and as level and hard as a concrete walk, furnishing a superb promenade or drive. The shore is a gradual decline for nearly a mile, rendering bathing perfectly safe even for children, as there is no undertow, but a sublime surf sometimes rising to huge proportions. The beach derived its name from the fact that this locality was once the Staples farm, and there was a large and very old orchard where the hotel bearing that name now stands. The post-office designation was "Old Orchard," and when the beach became famous as a summer resort it naturally assumed that name. For many years the "Old Orchard House" was the only hotel here devoted exclusively to summer guests, but the popularity of the Beach has so increased that now there are over twenty hotels for summer visitors, some of them of immense proportions, and all of them have been filled to their utmost capacity the whole season. It is estimated that there are at least ten thousand people at Old Orchard to-day, and all with whom I have conversed are so well pleased that they "declare their intentions" to return next season. The leading hotels, such as the "Sea Shore," "Old Orchard," and "Fiske," are models of neatness and convenience, and the cuisine and attentions are not excelled by the best hotels of the largest cities. The surroundings are so vivid as to constantly open up new attractions, and such a thing as monotony is unknown. What with bathing in the soft sea, sailing over the beautiful bay, romantic drives in the interior, and hourly excursions in every direction by rail and by water, together with a sumptuous table on which clams, lobsters and fish are conspicuous, nothing seems to be left to make up the full sum of human happiness. But, like all human happiness, it is transitory, as the sojourners here begin to realize as the dial points toward home

The Gatineau Valley Railway. THE GATINEAU VALLEY AND JAMES' BAY.

The Ottawa and Gatineau Valley Railway Company, in addition to the early construction of their main line, work upon which will commence this month, have in contemplation the prosecution of an extensive exploratory survey from the Dessert River, the present terminus of the road, to James' Bay, the distance from Ottawa to the Bay by the Hurricanaw River route being only 450 miles, and acknowledged to be not only the most direct, but easiest of construction, whilst traversing a line of country full of valuable minerals of a highly merchantable character, and offering an inviting field for the capitalist and farmer, second to none on the continent.

Not many years since the great North Western prairies, now the marvel of the world for their wonderful fertility and extraordinary production of grain, were a *terra incognita* to the general public, and were given up in the popular imagination to bowling desolation and perpetual frost. The opinion entertained of them is very generally held to-day regarding the large and more southern region, comprising 60,000 square miles situated between James' Bay and the height of land north of Lakes Superior and Huron. Yet the constantly accumulating facts are likely to prove that this northern heritage of Ontario is exceedingly valuable in lumbering and mining resources and capable of sustaining a very considerable agricultural population. The recent geological surveys demonstrate that a most valuable mineral region lies within and beyond it, that the dense forests which cover it contain a very large amount of valuable timber, which can easily be floated down the magnificent rivers—several of them each over 300 miles in length—which traverse the region; that the surface, unlike that of the Ottawa, Muskoka, and Algoma districts, is almost unbroken by lakes, and only occasionally by rocks; and that the south and south-west of James' Bay, at some distance inland, a fertile belt well adapted for agriculture exists, which, when the mineral and forest wealth of the country is being turned to account, will be an inviting field for the farmer.

COAL AND IRON MINES.

It is exceedingly gratifying to learn from Prof. Bell's recently published report that around James' Bay and up the eastern side of Hudson Bay lie great deposits of iron and coal so close together that with the cheap water freights which the region may afford, the district along James' Bay may yet become another Pennsylvania. Prof. Bell, after referring to the soil, climate and forests of the district, says:—"Minerals may, however, become in the future the greatest of the resources of the shores of Hudson Bay. Little direct search has yet been made for the valuable minerals of these regions. In 1875 I found a large deposit of rich ironstone on the Mattagami River. In 1877 inexhaustible supplies of good manganiferous iron ore were discovered on the islands near the east main coast (that is the coast along the eastern shore of James' and Hudson Bays,) and promising quantities of galena around Richwood Gulf and also near Whale River. Traces of gold, silver, molybdenum, and copper were likewise noted on the east main coast. Lignite was met with on the Missinaipi (a branch of the Moose), gypsum on the Moose, and petroleum-bearing limestone on the Abitibi River (another large tributary of the Moose)." Another explorer, referring to the great iron, coal and other minerals of the neighborhood of James' Bay says: "I have no hesitation in pronouncing this district the richest mineral region in the Dominion, perhaps on the continent." Anthracite

and iron are found along the rivers south of James' Bay, a gigantic outcropping, containing over twenty-five per cent. of pure iron ore, displaying itself along the Moose, and a magnetic island on the Abitibi rendering the surveyor's compass useless. To Ontario, this immense mineral wealth is likely to yet prove an important factor in her prosperity, particularly as Moose Fort is only 500 miles from Toronto, and on the completion of the connecting link the Calendar, near Lake Nipissing, a Moose Factory Branch over 200 miles long from near Nipissing or a branch only 200 miles long from near Nipigon, will, with the Pacific Railway, furnish a short route to the shores of James' Bay.

THE GREAT NORTHERN FOREST.

The great forest which bounds Hudson Bay on the east and extends up the interior of East Main and Labrador to Ungava Bay and Hudson Straits, six hundred miles north of Moose Factory, attains its greatest characteristic development just south of James' Bay, which lies nearly midway between the northern and southern limits of the peculiar trees which compose the great northern woods. Some trees, such as the Banksian pine and spruce, which along their southern limits in Central Ontario are almost valueless commercially, here become giants of the forest, and are valuable for timber. The list of trees which flourish at James' Bay or in its drainage basin includes, according to Prof. Bell, the spruce (two feet or more in diameter) the tamarac, balsam, poplar (luxuriant) Banksian pine, silver fir, arbor vitae, elm, white pine, and red pine, and of lesser importance the poplar, mountain ash and mountain maple. As James' Bay is as near to Liverpool as is Quebec, the future of the district as a lumbering country looks hopeful.

WARMER THAN NORTH WEST WHEAT LAND.

Such being the great wealth of mine and forest which is likely to be developed some day, the question arises, are climatic conditions sufficiently favorable for the agriculture which will be necessary to sustain the large population which may flock to James' Bay territory? Prof. Bell who has spent thirteen summers around Hudson Bay, thinks they are. Testimony comes from other reliable sources to similar effect: casual experiments in wheat growing have succeeded at some localities. Moose Factory, at the extreme north of the Moose drainage basin, is in latitude 51° 15', the same as the Qu'Appelle Valley, and further south than Battleford. Its winters are not colder than those of Manitoba generally, and are warmer than the Athabaska and Peace River countries. The average temperature for the year (30° F.) is higher than that of many parts of the best wheat-growing lands of the North-West, and less than four degrees colder than that of Winnipeg—a difference chiefly perceptible in early spring. The southern part of the James' Bay district is further South than Manitoba, and on the same latitude as districts in Quebec, wherewheat and even Indian Corn are grown every year. The "fertile belt" of the district is a greatly undulating plain, with a sandy loam soil, and lies in the same latitude as Winnipeg. If wheat in Manitoba is an assured success every year, it is reasonable to suppose that James' Bay district with its large area of fertile soil, cannot be without agricultural value.

The scantiness of the population has prevented agriculture being tried. Fortunately at one point—"Moose Fort"—but on a "low, wet clayey soil, exposed to icy winds," a careful record has been kept for several years, and it furnishes a test of climate much superior to that which casual experiments in agriculture would afford. The figures and comparisons

given hereafter are chiefly compiled from the three latest meteorological reports, and embrace the year 1878-79-80, a sufficiently long period to exclude the possibility of such mistake regarding the general characteristics of the climate.

WINTER AT JAMES' BAY.

The winter usually begins in the early part of November, but sometimes not until the third week. November and December are snowy months, but after New Year's, excepting in one year when January was snowy, the snow fall had not exceeded a few inches. The total snowfall is much the same as in Toronto, although a greater depth is on the ground at one time. Rain is rare in mid-winter, although not unknown. The mean temperature of December, January and February is 1.° 3, or little more than one degree warmer. The mean of Dungen, in the celebrated Peace River country, is 7.° 5 below zero, or nearly eight degrees colder than Moose Factory. In extreme temperatures Moose Factory is not so cold as Winnipeg, the lowest being 45° below zero, while Winnipeg shows 47° below. Dungen registered 63° below zero in 1880. As excessive temperatures as Moose Fort knows, are recorded in the colder settled parts of Ontario.

THE NORTH WINDS OF SPRING.

In March occasional temperatures of 45° to 50° above zero indicate the approach of spring. In the early part of April the ground becomes bare, but the weather is exceedingly disagreeable and variable until near the middle of May, cold winds and warm winds rapidly alternating. This is due to the fact that James' Bay being exceedingly shallow, except in the deep central portion, freezes almost over its whole width—150 miles—and northward to its junction with the deep open waters of Hudson Bay, presenting in this respect an analogy to the northern end of the Caspian Sea. The ice in spring remains and melts in the Bay, and the cold air arising from it is drawn southward by the greater heat of the Moose River basin. North winds are thus the prevalent winds during April, May and June. In this respect the immediate neighborhood of the bay resembles Cape Breton, and several other parts of the Maritime Provinces where spring is retarded to an almost similar degree by the cold winds from the icy current flowing down the coast. In May Moose Factory is 4 degrees colder than Prince Arthur's Landing, but inland, where the cold north winds have lost their force, this month, like the rest of the spring, is warmer. Gardening at the Fort begins about the middle of May, and the last severe night frosts occur before the month is over, and temperatures of nearly 80° in the shade are sometimes reached.

WARMER SUMMER THAN EDINBURGH.

Summer may be said to commence with June, although the freezing point is touched about the beginning of this month in most years, as it is in the North-West, and in several parts of Ontario not far from Toronto. The summers at the Fort are not so warm as fifty and a hundred miles inland, and are cooler in June, July and August than at Winnipeg, and in many parts of the North-West, but warmer than at other North-Western districts, or at Edinburgh, Scotland.

The following table shows the mean temperature at various places, and will prove interesting for comparisons. The foreign stations are from Blodgett: all the Canadian stations, excepting Edmonton and Fort Saskatchewan show the mean, not in one year but in three—187°-79-80—and may be taken to represent the usual summer climate.

	June.	July.	Aug.	Mean.
Moose Fort....	deg. 54.0	deg. 62.0	deg. 58.5	deg. 58.2
San Francisco ..	58.8	57.0	62.3	59.6
Edinburgh	56.0	57.7	56.8	57.2
London, Eng. . .	58.7	62.4	62.1	61.1
Wick, Scotland				54.0
Truro, N.S.	57.1	62.8	62.5	60.8
Prince Arthurs Landing	56.9	64.8	63.1	61.6
Beatrice, Mus- koka	59.5	65.7	61.8	62.3
Winnipeg.....	63.9	67.5	63.9	65.3
Edmonton			54.4	
Fort Saskatch- ewan.....			56.8	
Toronto.....	63.3	69.4	68.0	67.5
Windsor.....	67.5	73.7	71.0	70.7

THE LIMIT OF PROFITABLE WHEAT FARMING.

Wheat requires for its ripening in Scotland a mean temperature for three months of at least 55 degrees, and in the interior of continents a temperature a few degrees higher, so as to counterbalance the effects of the chillier nights occasionally experienced inland. It would, therefore, appear that although wheat would easily ripen and produce a good crop some years at Moose Fort, the mean temperature of the place might render it a rather precarious and not very profitable crop. Moose Factory, however, is surrounded by low, wet, cold clayey soil, and exposed as well to the cold winds from the bay. Beyond doubt the inland, valleys with their warmer soil have a temperature in many localities as favorable for wheat growing as some parts of England and Scotland, where it is a staple crop.

OATS AND BARLEY CERTAIN CROPS.

The average temperature required for wheat is at least five degrees greater than is required for barley and oats. These crops succeed far up the Mackenzie River, beyond the Arctic Circle in Norway, and the northern counties of Scotland, where the summer mean is only 52° to 54°, and the month of June is sometimes as low as 48°, or 6° lower than Moose Factory. Oats appear to be as sensitive to frost as wheat, and if it can be shown that the climate of Moose Factory compares well in exemption from frosts with localities where oats succeed well, the general high temperature of the summer months will guarantee the full success of the wheat and barley crops in the James' Bay region wherever a proper style of farming is pursued.

CONTINUOUS EXEMPTION FROM FROST.

Taking the average dates of the occurrence of the last temperature of 32° in spring and the first fall to the freezing point in the close of summer, we find the following to be the average periods of continuous exemption from black frost for three years, 1878-80:

	Last 32 deg.	First 23 deg.	Continuous Exemption
Moose Fort	June 6	Sept 26	112 days
Winnipeg	May 14	Sept 15	129
Prince Arthurs Landing.....	June 2	Sept 13	101
Beatrice, Ont.....	June 6	Sept 7	93
Pembroke, Ont.....	May 15	Sept 25	136
Hamilton, Ont	Apr. 17	Oct 20	186

From this it will be seen that Hamilton and Pembroke far excel Winnipeg in exemption from damaging frosts, yet the exemption at the Prairie capital allows of the growth of not only oats, barley and wheat, but even of Indian corn. Beatrice, Muskoka, grows with profit all the grains excepting corn, yet it has a continuous period of exemption from frost nineteen days shorter than Moose Factory.

(To be continued in our next.)

VENNOR'S ALMANAC

—FOR—

1883

10 CTS. 10

A. VOGELER & CO.,

Baltimore, Md.

The Montreal Printing Company

PRINTERS  **ENGRAVERS**
AND BINDERS,
245 ST. JAMES STREET.

Satisfaction guaranteed in all cases.
GIVE US A TRIAL.
JAMES A. LAWRENCE, Manager.

The Maine Mining & Industrial Journal

IS A SIXTEEN PAGE WEEKLY NEWS-PAPER, REPRESENTING THE

MINING
AND

INDUSTRIAL INTERESTS
OF THE

Eastern States and British Provinces.

IT IS THE PAPER FOR THE

Manufacturer, Farmer, Merchant,
and **Capitalist.**

Terms only \$2.00 per year in advance. Trial subscription three months 50c. Address
THE MAINE MINING JOURNAL,
Bangor, Maine, U. S. A.

VENNOR'S
Monthly Weather Bulletin.

Issued in advance of each month.
General weather of the month given.
Charts and other interesting cuts
Outlook for Fall and Winter.
Dates of chief disturbances.
Original weather facts.
Old and new theories.
Brief Predictions.
etc., etc., etc.

Subscription One Dollar a year, single copy ten cents
SPECIAL OFFER.—The BULLETIN will be sent to any address for remainder of present year, for fifty cents.
Address or remit to
HENRY G. VENNOR.

VENNORS GREAT WORK ON CANADIAN BIRDS.

OUR BIRDS OF PREY,

OR, THE

Eagles, Hawks and Owls

OF CANADA.

BY HENRY G. VENNOR, F.G.S.

This beautiful work

CONTAINS THIRTY PHOTOGRAPHS

IN NOTMAN'S BEST STYLE.

It is a unique book. There is no other work upon the Birds of Canada with illustrations.

It was originally published at \$12. A few copies now remaining will be sold at the very low price of

Five Dollars per Copy.

The book will not be reprinted, and eventually will command a high price as it becomes scarce.

DAWSON BROS.,

159 to 165 St. James Street, Montreal.

THE RUSSELL,

OTTAWA.

THE PALACE HOTEL OF CANADA.

This magnificent new Hotel, fitted up in the most modern style, is now reopened. The RUSSELL contains accommodations for over

FOUR HUNDRED GUESTS,

With passenger and baggage elevators, and commands a splendid view of the city, Parliamentary grounds, river and canal. Visitors to the Capital having business with the Government, find it most convenient to

STOP AT THE RUSSELL,

where they can always meet leading public men. The entire Hotel is supplied with escapes, and in case of fire there would not be any confusion or danger. Every attention paid to guests.

JAS. A. GOUIN,

Proprietor.

OTTAWA, February 13, 1882.

The Boston Journal of Chemistry.

ANALYTICAL

LABORATORY.

PRICE LIST

FOR

ANALYSES.

Potable Water, including Free and Albuminoid
 Ammonia and Chlorine.....\$ 5.00
 Ditto, Complete Analysis..... 10.00
 Mineral Waters..... 25 00 to 50.00
 Fertilizers:
 Phosphoric Acid, each Determination..... 3.00
 Potash..... 5.00
 Nitrogen..... 5.00
 Iron Ores, each Determination..... 5.00
 Limestone..... 5.00 to 10.00
 Phosphate Rock (Apatite)..... 3.00

Other Analyses, not included in the above list, will be charged for according to time and work.

For further information address
BOSTON JOURNAL OF CHEMISTRY,
 165 High Street,
 BOSTON, MASS.

BOOKS FOR FARMERS.

Farming for Profit..... \$3 75
 Allen's New American Farm Book..... 2 50
 Warrington's Chemistry of the Farm..... 1 00
 American Farmers' Hand Book..... 3 00
 Our Farm of Four Acres..... 60
 Waring's Book of the Farm..... 2 00
 Bridgeman's Gardener's Assistant..... 2 00
 Doyle on Poultry..... 3 50
 Kendall on the Horse..... 25

Also Books in every Department of Literature,
HYMN BOOKS, BIBLES, &c.

Family and Commercial Stationery.

Send for Catalogue.

ALL ORDERS RECEIVE OUR PROMPT ATTENTION,

And Books procured to order from Great Britain or the United States at shortest notice.

W. DRYSDALE & CO.,
232 St. James Street,
MONTREAL.



SOUTH-EASTERN RAILWAY

—AND—

MONTREAL & BOSTON AIR LINE

The only Line running through the White Mountains to Portland and Old Orchard Beach.

THE ONLY DIRECT & BEST ROUTE

—TO—

WHITE MOUNTAINS

Concord, Manchester, Nashua, Lowell, Worcester, Providence.

BOSTON,

and all points in NEW ENGLAND, also to the EASTERN TOWNSHIPS, NEWPORT, LAKE MEMPHREMAGOG, &c.

LEAVE MONTREAL.

9 00 a.m.—Day Express running through to Boston, with Parlor Car attached, stopping only at principal stations, also to Portland, with Parlor Car attached.

6 30 a.m.—Night Express, with Pullman Sleeper through to Boston.

5 00 p.m.—(Except Saturdays) Local Train to Richford, Knowlton, Ferrisburgh, Stanbridge and intermediate stations.

2 00 p.m.—(Saturdays only) Local Train to Newport, Knowlton and intermediate stations.

Passengers taking the 9 a.m. train arrive at Portland at 8.30 and Old Orchard at 9.00 the same evening—passing through the Celebrated White Mountain Notch,

Elegant Parlor Cars on Day Trains between Montreal and Portland and Montreal and Boston and Pullman Palace Sleeping Cars on night trains between Montreal and Boston.

Night Express leaving at 6.30 p.m., will stop only at Chambly, Canton, Marieville, West Farnham and Cowansville, between St. Lambert and Richford, except on Saturdays, when this train will stop at all stations.

Express Train arriving at 8.15 a.m., will stop daily at Richelieu, Chambly, Canton and Chambly Basin.

ALL CARS AND TRAINS run between Bonaventure Station, Montreal, and Boston, WITHOUT CHANGE. Baggage checked through to all principal points in NEW ENGLAND.

Baggage Passed by the Customs at Bonaventure Station,

Thus saving all trouble to Passengers at the Boundary Line.

For Tickets apply to 202 St. James street, Windsor Hotel and Bonaventure Station.

T. A. MACKINNON, BRADLEY BARLOW,
Asst. Mgr. Pres. & Gen. Mgr.

—THE—

BOSTON JOURNAL of CHEMISTRY

The Journal of Chemistry is a first-class, reliable scientific and popular science journal, and is sent post-paid for one dollar per year.

It has been established sixteen years: and all of its articles, with rare exceptions, are written expressly for it, and are selected with great care from the best sources in this country and Europe.

It is illustrated and printed in the very best style, on the finest paper, in a convenient form for binding, and with a reliable index at the end of each volume for reference.

It is the only scientific or popular science journal in the country that clubs with all other first-class American and foreign periodicals, so that its additional cost when ordered in this way is only from ten to about thirty cents per year.

With the **LARGEST CIRCULATION** of any Chemical and popular science periodical in the world, it has long received the indorsement and support of the leading Physicians, Druggists, Chemists, Artists, Mechanics, Farmers, Manufacturers, and Scientific men in the Country.

Sent three months on trial for twenty-five cents. Complete reports of the weather in Massachusetts are published in every number.

Agents and canvassers wanted at every place, with whom liberal arrangements will be made.

Specimen copies, clubbing and premium lists, and terms to agents, sent free to any address.

Address all communications, etc., to the
JOURNAL OF CHEMISTRY CO.,
165 High Street,
BOSTON.



WHAT IS IT?
A 24 page, ably-edited weekly, devoted to Shooting, Angling, Natural History, Fish Culture, the Dog, Yachting, Canoeing, Sketches of Camp Life, Travel, Field Sport, and Adventure, Practical Instruction and Information.

WHO WRITE FOR IT?
Among its hundreds of Correspondents are Business Men, Lawyers, Farmers, Physicians, Tourists, Clergymen, Army and Navy Officers, Naturalists.

WHO READ IT?
The paper is for me, but every body is interested in it. The whole family reads it.

WHAT IS ITS TONE?
Its tone is high; its reading and advertising pages clean. It is not a "sporting" but a "sportsman's" Journal.

BRIGHT AND UNIQUE!
Terms, \$1 per year, in advance. Sent for examination to any new address, 3 weeks, for 25 cents.

Forest and Stream Publishing Company,
39 Park Row, N. Y. U. S. A.