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VENNOR'S

WEATHER BULLETIN

FOR CANADA AND THE UNITED STATES.

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

VOL. I.— NO. 11. MONTREAL, DECEMBER, 1882.

Briefs—December.

Month will enter sharp.

There will be more than the average precipitation for December 1882, and it is probable that most of this will come as *snow*.

A well snowed in Christmas seems extremely probable. Last year there was no snow.

There will be an early and severe "cold snap," which will come from the North West.

Shortly after the entry of the New Year there will probably be a decided "let up" in the weather

The year 1882 will close exceedingly stormy in Western States and portions of Ontario and Quebec.

To Subscribers.

All subscribers are requested to renew as early in December as possible to enable us to prepare our new list for 1883. The Almanac will be mailed shortly to every subscriber, and back numbers of the *Bulletin* may be had at *three cents* each.

We should be pleased if recent subscribers would call for the numbers they require to complete this years set, and allow their subscription to expire with the year, but, of course, just as they please about this. We wish all a MERRY CHRISTMAS and a HAPPY NEW YEAR in case we have not another issue. But we do not think we can keep quiet so long.

A Fair Warning.

The predictions given in the BULLETIN are given modestly and without presumption. Some read them otherwise. This is their own mistake. Our one aim is to interest and instruct the many who are curious about the weather and who have not gone into the subject deeply. The predictions are always experimental and are based upon the general laws of compensation weather recurrences, weather relationships, and such like, so frequently referred to in my previous issues of BULLETIN and Almanacs. We make no such ridiculous pretensions as Wiggins, of Ottawa, and do not threaten our readers if they will not follow our warnings. All we have to say is *that should we see fit to predict a flood and people pay no heed to it—and it comes—and they are drowned—they will be sorry.*

Moccasins were at one time made out of *Moose* and *Caribou* skins by real Indians in Canada, they are now made out of sheep skins by white girls.

12th Month. 31 Days.

DECEMBER.

1 to 3—Snow falls and cold weather. Storms on Lakes and Atlantic.

3 to 10—Steady winter weather probable with cold weather in North West and West.

10 to 17—Much of week mild weather. Colder with snow sterms 16th and 17th. Heavy cold rains to southward. Stormy weather Chicago and westward.

17 to 24—Moderate weather after 17th with heavy rains south.

24 to 31—A general week of storm and cold weather in all sections, with heavy snow falls. Stormy on Atlantic and English coast.

Probably a stormy entry of the New Year.

Another December Forecast.

A correspondent who has observed our winters for a number of years sends us the following for publication.

MONTREAL, Oct. 20th, 1882.

Editor Bulletin.

WATCH THIS.

A "COLD WAVE" EXPECTED ABOUT THE 29TH.

Dec. 7 to 10—A cold and wintry change generally, with very cold weather west and northwest, terminating in the heaviest snow fall so far.

Dec. 10 or 11—A general snow fall and drift.

Dec. 12, 13, and 14—Milder weather. An abrupt rise of temperature; rains in western and southern sections, and storms on "lakes."

Dec. 15 and 16—Colder and stormy; extending well to southward.

Dec. 17—Snowstorms, Chicago and westward.

Dec. 18—Cold and blustering, generally.

Dec. 19—Gales on lakes and Gulf of St. Lawrence.

Dec. 20—Cold weather and snow in southern United States.

Dec. 21 and 22—Generally milder weather.

Dec. 23 and 24—Snow, sleet, and rains, generally to New York and Washington. The rains at southern stations, and snow west.

Dec. 25, (Christmas)—Probably stormy, generally.

Dec. 26 and 27—Snowstorms over northern United States and in Great Britain.

Dec. 28, 29, 30, and 31—A "cold wave" all over and well to westward, with heavy snowfalls on closing days of year or New Year's.

The early part of December gives no striking indications of anything unusual.

OBSERVER.

Snow Flakes.

—*The greatest truths known were established only after repeated failures.*

The spring of 1883 will probably be early and favourable.

—Kindly attend to renewals in time and do not stop the weather.

—The year 1882, *ought*, by our theory to terminate on "*the wings of the storm.*"

—The point is not "Who predicted the storm?" but "How was the storm predicted?"

The 25th, 26th, and 27th of October and November are, as a general rule, dates of stormy weather.

The indications of intense cold in the North West in December and January seem more numerous and definite than usual.

—If an observer has "to retire" from the field of inquiry because another is more correct than he, there will be but few workers left and these few would be in perpetual strife.

Christmas of late years, has been very sparing of snow in Northern Sections; we think there will be an improvement this year in Canada at all events.

The first week of March will probably be stormy, but not unusually so. As to for the occurrence of "tidal waves" we do not see that there is any ground for alarm. We are more inclined to dread the last week of the month and entry of April.

Special Notices.

Any reader who does not feel that he can afford one dollar a year for the BULLETIN can have it *free* by sending in *five* names and the requisite amount.

There will be a special CHRISTMAS BULLETIN issued during first week of December.

Glad to receive more questions and will be happy to answer them—if we can.

The BULLETIN continues to gain ground and warm allies have sprung up in Dakota and Minnesota.

See Almanac for December, details and several articles of great interest.

SNOW SQUALLS IN AUGUST.

—The Signal Service (U. S.) *Monthly Review* reports snow squalls during August in Sandusky, Grand Haven, Utah and Colorado.

—Snow fell to the north of Quebec (Canada) on the 12th Oct.

Continued from page 8.

through interstellar space at a rate which throws the "winged lightning" altogether into the shade. But the theory that their tails are part of the solid substance which has been vaporised by the heat generated from rapid motion is "not proven" at present, any more than is the rival doctrine which ascribes the tail to the fact that proximity to the sun causes the body to dissolve. Dr. Tyndall's ingenious theory is to the effect that the cometary appendage is a sort of illuminated cloud, formed by the effect of the sun's rays passing through the head of the comet. In that case the tail would be scarcely more than an optical illusion, and a collision with it would be not much more dangerous than collision with a moonbeam. But even granted that there is little solidity about the monster's "tail" or "beard," there is still the bright, round nucleus or head of the comet to be taken into consideration. Some astronomers assert that the head can hardly be thicker than the tail, and stars have been seen through it, while a transparent body, unless it be like glass, cannot be gifted with much solidity. But it seems doubtful whether there is sufficient evidence for the cometary nucleus being so thin as to be really transparent. A more valid argument against a comet possessing much density is that no planet has ever been known to be in the slightest degree affected by the neighbourhood of one of these rovers of the firmament. They are themselves readily diverted out of their course, but have no apparent power to attract other heavenly bodies. Lexell's comet was making post-haste for the sun, when it came rather too near Jupiter, and that gigantic planet exercised such an influence that the creature was at once shunted off into space, and has never been heard of since. Hence there seems considerable ground for believing that comets are worse to look at than they would prove in an actual collision. The chances are that even the nucleus of a comet would not destroy all living creatures on the earth, if we were unfortunate enough to pass through it or bump up against it. Hence, supposing the coming comet to fall into the sun in the course of a year or so, there is some reason for hoping that the consequences would be rather interesting than disastrous. Probably the nucleus is no more than a fine mist; but suppose it is a good deal more? To predicate solidity of a body of the immense size of a comet is appalling. Were it in that case to be precipitated into the sun the increase of heat produced might be absolutely fatal to all organic life on our planet. We might suffer from torrid tropical weather in December, and our July and August would be absolutely intolerable even to a salamander. The vast icebergs of the Polar Seas would suddenly melt, and the whole world would be infallibly flooded, and human beings, if not previously scorched to death, would be drowned. The mere flare up at the moment when the comet was swallowed in the solar furnace might be so enormous as to shrivel our little planet into a red-hot circular cinder.

THE CLIMATE OF RHODE ISLAND.

J. A. P., of Cincinnati, asks whether it is true that the climate of Rhode Island is becoming milder and whether or not Naragauset Bay was ever so frozen over that wood could be brought on the ice from old Fort Adams to Newport. The answer to the last question will explain the reason for the moist temperate climate of Rhode Island. That there has been much change of climate, I do not believe, although the denuding of any country results in hotter summers and colder winters. But an exceptional cold snap in any year does not prove anything. Very cold winters usually follow very mild ones, and the freezing over of the Bay in question one winter would simply show that there had been an unusually high range of temperatures previously. It is not impossible for the Naragauset Bay to have been frozen over, no more wonderful an occurrence than the freezing over of the Sea of Marmora in 401, or of the Hellespont in 762.

A HIGHER EVOLUTION.

Dr. C. C. Bennet asks the following 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 caupilation still go on, (equivalent), promising therewith a higher evolution of life?"

This is entirely too deep for us. It is a question that should be referred to Mr. Tyndall. As far as we know the atmosphere was perfectly adapted to our use although we would think this was not the general opinion in this country from the care usually taken to prevent its penetrating into houses in summer as well as winter and the waste of their stifling gas emitting coal stove.

Fortunately man is so constituted that he can become used to everything, so that the city alderman, who has never been into the country, actually revives the delightful odor of reeking chimneys and the occasional whiffs of sewer gas, which the convenient air holes at the edge of the sidewalk, provide for the wayfarer.

As men know more they will not be satisfied until in city and country they obtain the full benefit of the pure breath of heaven.

THE VAPOR SUPPLY.

Mr. Theodore A. Kingsley asks *where the vapour supply for the North Temperate Zone comes from?* This question perhaps may best be answered by the application of several well known general rules which may be summarized as follows: Winds traversing a considerable extent of ocean carry with them a moderate rainfall; if they advance into colder regions, the vapor is more rapidly precipated and the rainfall is increased; if they are intercepted by a range of mountains, the rainfall on the windward side is thereby increased and that on the leeward side diminished; if but a small extent of water has been traversed by the wind, the rainfall is not large; if the breeze passes into a warmer climate the rain fall is lessened or reduced to nothing.

The application of these rules will explain the peculiarly moist climate of the west of Ireland to which the rain is carried from the breeze from the south east over the Atlantic and the dryness of California, where the prevailing breeze comes from the cold and dry slopes of Alaska. These illustrations are very extreme ones, but the principle applies equally well to any section of country. The prevailing winds and the extent of water they traverse rule the rainfall.

Editor Bulletin.

Sometime ago you said in one of your BULLETINS that you wanted each subscriber to ask one question. What is Zodiacal Light? By answering the above you will greatly oblige,

Yours truly,

HENRY H. EMERSON.

REPLY.—Zodiacal Light is the faint nebulous aurora which accompanies the sun, and is visible immediately before sunrise, is after sunset in the place the sun is about to be visible, is in the one it has just vacated. It is best observed about the beginning of March or towards the *vernal equinea*, when the pyramids of Zodiacal Light is directed to a point nearer the zenith than at any other season of the year. On its discovery it was supposed to be the atmosphere of the sun, and now, while this theory is no longer held, astronomers have not been able to decide what the cause of it really is.

Preparing Skeleton Leaves.

A correspondent of *Knowledge* gives these directions for preparing skeleton leaves: Take a large saucepan of cold water, and a piece of scrubbing soap about four inches square, cut into small slices. Gather mature leaves, seed-vessels, etc.; put some soap into the water, then a layer of leaves one by one, then more soap, then leaves and so on. Put on a lid, set the pan by the side of a fire, and let it simmer. After an hour take out a few leaves, and try them between the thumb and finger; if the pulp separates readily from the fibre, remove them from the fire; if not, let the pan remain. Some leaves, such as ivy, orange, etc., are done in an hour or two; others of a tougher fibre take half a day. Seed vessels of mallow or campanula take a short time. Large poppy or stramonium requires perhaps two days. Now lay a leaf upon a plate, under a tap of running water, and beat it with sharp strokes with a hard brush—say a tooth brush; the green matter will run off with the water. When the skeleton is quite clean, dry it upon blotting paper.

To bleach the specimens put a quarter of a pound of chloride of lime into a large bottle of water, cork it, and let it stand some days. Strain it, and mix with more water in a basin; immerse the leaves, etc. Again carefully watch and remove them as soon as they are white, for the lime soon renders them brittle and rotten. Wash again in pure water, and dry as before. As the stem usually comes away from most leaves, it is well to boil several stalks separately, and after bleaching to mount the leaves by gumming them to the stems.

The Forests of Louisiana.

Louisiana, according to the New Orleans *Democrat*, possesses a rich variety of timber. The pine is the most abundant tree in the State, and constitutes over a third of the lumber wood of Louisiana. The cypress is unexcelled for shingles. Walnut and gum are well adapted to cabinet making. The first is master of the furniture field, while the gum has a brilliant future before it, and promises to be its successor at an early day. The cotton-wood has been found equal to the famous white pine of Michigan for boxes, and even stronger and more durable. The live oak is admitted the best timber for shipbuilding in the world. Growing in the swamps, it becomes completely impervious to water, and will resist water-rotting longer than any other wood known. The white oak has been found unexcelled for staves for the tougher barrels and casks. In shipping this timber to Europe, New Orleans does a large business. The ash and smaller oaks are unexcelled for fuel; they are firm and hard, and give a long lasting and hot fire. Excellent charcoal is furnished by the pine. These varieties of woods are to be found in nearly every portion of the State, and cover nineteen-twentieths of the forest area of Louisiana. It is estimated, says the *Democrat* that the State of Louisiana contains about 80,000,000,000 feet of good lumber, more than twice as much as Michigan; 300,000,000 cords of wood fuel, worth, when sawed, some fifteen times the assessed value of the State, some $20,000,000.

True bravery is shown by performing without witness what one might be capable of doing before the world.—[*Rochefoucauld.*

The Transit of Venus.

HINTS TO AMATEURS—PREPARATIONS IN CANADA—TABLE OF ELEMENTS.

(To the Editor of the Weather Bulletin.)

SIR.—The greatest activity prevails at present in astronomical circles all over the civilized globe, in anticipation of an event of transcendant importance, namely, the transit of the earth's sister planet Venus over the disc of the sun on December 6th, 1882. Some scientists have been preparing for months past, I might safely say years, instruments have been constructed, and observers familiarized themselves with frequent observations of the god of day. No less than forty scientific expeditions will be stationed in different parts of the world. Their object is, I need hardly add, to try and determine the earths exact distance from the sun, for given this known measure as unity, probabilities of distance in the immeasurable star depths become resolvable by human calculations. One thing is certain, whatever else occurs, no human eye uplifted to the sun and that apparently small world crossing its face, can ever behold the like again, as no other transit occurs until A. D. 2004.

Giant strides have been accomplished by science since 1639, little more than two centuries since, when a transit occuring visible in England it only had one observer. On December 4th of that year Jeremiah Horrox, a young man devoted to science, calculated the time aright and watched the planet across the sun. He had no suitable instruments, but simply cut a hole in the shutter of his room, to admit some rays of light, which he contrived should fall on a sheet of prepared paper. With this primitive invention Horrox fortunately succeeded, and with the scanty data gleaned therefrom was enabled to instruct his successors to prepare for the next in 1761. This lad, of whom it might be said, the scientific world of that day was not worthy, died in the prime of youth, leaving a name behind to be remembered as long as the planets run their courses, or at least so long as man takes a delight in their observation. In 1639, it should be remembered, the Copernican theory was but coldly received (Dr. Gosd, an eminent mathematician, writing in 1686, throws out doubts as to its truth) therefore a transit of Venus was of great importance because it went a long way toward establishing the theory of the Prussian monk. A transit of Mercury, it is true, had been observed by Gassendi, on November 7th. 1631, which was the very first achievement of the kind. He projected the suns image on a screen through a telescope, but the result was very unsatisfactory.

Venus has been "evening star" and an object of great interest ever since her superior conjunction, passing behind the sun on Feb. 20th last, she commenced that progress through the constellations which terminates in the transit. I do not purpose telling your readers "why" Venus transits the sun; that may be found in any primer, but a few outside facts not so easily gathered together may be of interest.

In Canada, observations will be made at Fredericton, Quebec, Montreal, Ottawa, Kingston, Toronto, Woodstock and Winnipeg. A government grant of $5,000 has been voted and will be expended under the superintendence of Mr. Carpmael of the observatory, Toronto. This gentleman has ordered from England a six-inch aperture refracting telescope for this special purpose. At the McGill College observatory, the six-inch refractor now in use, will be the chief instrument, this is probably the best public glass in Canada, which fact is a very humilating one to record of a comparatively well to do nation. Private instruments in Montreal are unfortunately few, far between and of low powers. I am not acquainted with any over three inch aperture, which scarcely admits in the calmest weather a power over two hundred. In the United States very different is the record, the very best instruments will be utilised by the most skilful observers.

To those persons fortunate enough to possess "dark heads" specially adapted for solar observation, no instructions are necessary, but to the unscientific many a few words may prove useful. All persons having common field glasses of low power may watch this unusual event. Let them take a piece of card and with it form a cap covering the object glass or large end, make it like a pill box lid, see that it fits exactly so that any wind stirring at the time will not displace it. In the centre of the card cut a circular hole half to three-quarter inch diameter (about the size of a five cent piece) and one end of the spy-glass will be complete. The necessity for this covering is, to cut off all extraneous sunlight and admit into the tube as few rays as is consistent with perfect visibility. Any dust should be removed from the lens with chamois leather. I would caution all amateurs against attempting to view the sun through a telescope without thorough protection, let them remember the light is both focused and magnified. It will certainly injure the sight, possibly occasion blindness When the covering of the object glass is finished, the eye-piece will need some attention. Obtain some pieces of stained glass (blue is suitable) see there are no scratches on them, cut two or three into circles exactly fitting a cardboard tube which must be made to slip on over the eye-piece end. The glass may be cut easily enough with a pair of scissors if is held under water at the time. Fix the telescope securely, the firmer the better, because every motion is magnified according to the power used. When I say fix the telescope, of course I mean upon a moveable, because the sun will need to be followed as it progresses. If these directions are properly attended to a very fair observation will be obtained.

Those that are without instruments of any kind need not despair, let them deprive the sun of his glare with some smoked or colored glass and they will discern a tiny black dot making its way across his disc. On the eventful morning of Dec. 6th, if the sky is clear, take up position a little before nine o'clock. To those who may feel sufficient interest to watch the most beautiful star that ever sparkles from the depts of the firmament along her future path I give the following:—

1882—83

Feb.	20.	Venus at superior conjunctions with the sun.
Sep.	26.	" Greatest elongation East. 46 deg 31 min
Nov.	1.	" at greatest brilliancy
Dec.	6.	" at inferior conjunction [Transit]
Jan.	9.	" at Perihilion [nearest sun]
Jan	11.	" at greatest brilliancy.
Feb.	16.	" greatest elong. W 46 deg 45 min.
May	2.	" Aphelion [furthest from sun]
May	10.	" Conjunction with Mars passing 48 min S
June	19.	" " " Saturn passing 35 min N
July	20.	" " " Jupiter passing 10 min N
Sept	20.	" Venus at superior conjunctions with the sun.

The transit elements are as follows:—

Greenwich mean time in Right Ascension	4 h. 20 m. 2 s.
Venus and Sun's Right Ascension	16 h. 52 m. 43 s.
Venus Declination South	22 deg. 14 m. 12 s.
Sun's " "	22 deg. 33 m. 6 s.
Venus true semi-diameter	31 s.
Sun's " " "	16 m. 13 s.

The transit begins on the eastern side of the sun and passes off on the western. It may be expected to commence at Montreal 9h. 1 m. 40s. Internal contact at Ingress, when the phenomena of the "black drop" may occur, 9 h. 22 m. 1 s. Least distance of centres (Middle of Transit) 12 h. 9 m. 45 s. Internal contact at Egress ("black drop" again possible) 2 h. 57 m. 29 s. External contact at Egress (end of Transit) 3h. 17 m. 52 s. These times are corrected from tables in Nautical Almanac and are reliable, although Venus may upset them by commencing to transit a little earlier or later than anticipated.

A word in conclusion to those who give but little attention to this subject and may have seen the affair anticipated in every newspaper for months past. Once for all I advise them not to expect a grand sight, a solar eclipse is far more impressive, and an occultation of a large star by the moon more noticeable, the intrinsic value is known only to the astronomer, whose toil and watching is condensed into a few moments observation to the end that a most puzzling question, asked in vain for ages, may be definetely answered.

WALTER H. SMITH.

Montreal, Oct. 23rd, 1882.

(Toronto Mail.)

OBSERVERS PRACTISING FOR THE GREAT EVENT.

Mr. Carpmael, Superintendent of the Meteorological Office in this city, has returned home from a six weeks' trip in the Eastern Provinces. His trip, although a very pleasant one, was not for pleasure, but to make the necessary arrangements for the great astronomical event of the century—the transit of Venus. Mr. Carpmael first visited Montreal, where, in conjunction with Prof. Johnston, of McGill College, Prof. McLeod, and others, he had a long practice with the "model," and instructed the observers in their work. The model is a mechanical arrangement: whereby a ball or disc is made to pass across an illuminated space, and supplies a very good artificial transit for training the observers for the 6th of December next. The observers from Fredericton, Quebec, and Montreal were present. The probability is that the weather will be favorable at two of the stations on that day, and if so Mr. Carpmael is sanguine of success. The importance of obtaining more accurate data on which to calculate the distance of the sun cannot be over estimated, and as there will not be

ANOTHER TRANSIT FOR A CENTURY

it is to be hoped the weather will be fine at a large number of the stations on this occassion. Mr. Carpmael next visited Quebec, Halifax, Rimouski, Digby, Yarmouth, and Fredericton for the purpose of observing and calculating the magnetic declination at these places. As soon as they are through with the model in Montreal it will be sent to Toronto for the purpose of Practising the Western observers.

The new equatorial for the observatory here has reached Montreal, and will probably arrive at its destination within the next few days. The massive pillar is ready for its necessary to place it in position, and make the necessary adjustments. To give an idea of how small a matter may affect the observations, it may be stated that the passage of a waggon two or three hundred yards from the instrument will often cause a very perceptible tremor. The passage of a railway train even more than a mile away will sometimes set a star dancing about in the field of the instrument, much to the disgust of the observer. Every possible arrangement has been made, however, to secure solidity for the instrument at the Toronto observatory. It is intended to use it as soon as the transit is over for making observations on the sun.

I am convinced that we have a degree of delight, and that no small one, in the real misfortunes and pains of others.—[Burke.

Conscience is a coward, and whose fault it has not strength to prevent, it seldom has justice enough to accuse—[Goldsmith.

It is safer to affront some people than to oblige them; for the better a man deserves the worse they will speak of him.—[Seneca.

Peace rules the day where the reason rules the mind.—[*Collins.*

Wrecks of Ocean Steamers.

Brooklyn Eagle, Oct. 8.—The Arctic sailed from Liverpool on September 20th, 1854, with over two hundred passengers and a crew of one hundred and fifty men. At noon on Wednesday, 27th she was on the banks of Newfoundland, about fifty miles from the coast. A thick fog had prevailed during the day; sometimes it cleared away sufficiently to allow an object to be seen half a mile off, and then again it settled down as densely as before. Notwithstanding this, the ship was running at the rate of twelve and a half miles an hour, the ordinary speed kept up by the Collins Line it is stated, even in foggy weather. Some of the passengers were engaged in the cabin drawing the numbers of the daily lottery the chances of which are based on the number of miles run during the preceding 24 hours. The captain had left the deck for the purpose of working out the ship's position, when at about quarter past 12 a cry was heard from the officer of the deck of

"HARD A STARBOARD!"

A steamer under full sail which had been seen speeding through the fog toward the Arctic's bow, which she struck within a couple of seconds, glanced off and disappeared in the fog as quickly as she had appeared. On hurrying forward the captain found that the Vesta's iron anchor stock had been driven through the bows of the Arctic about eighteen inches above the water line, and at the same instant the fluke of the anchor had made an immense hole two feet below the water line. So furiously did the water at once begin to pour in that in a few minutes it was over the cargo, an the lower fires were put out. All efforts to stop the leak were made in vain; the captain steamed on till it became evident that ere long the ship would sink. Orders were issued to to lower the boats; confusion prevailed; the seamen and stokers leaped into some; others were swamped. A large raft was put together by the few officers and sailors remaining on board. Numbers rushed on to it, just as the Arctic, fully five hours after she had been struck, was going down. Had discipline been maintained, had those precious five hours been properly employed, most, if not all of those who perished might have been saved. Although cowardice marked the conduct of most of the crew, there were many individual acts of heroism exhibited, one of which should be told whenever the loss of the Arctic is mentioned. A young gentleman named Holland, from Washington, who was serving on board to get instructions in engineering, was directed by the captain to fire the signal gun when all others had fled, and to the last the sound booming out upon the sea told the runaway sailors that one man at least was heroically doing his duty. The Arctic settled rapidly, and when the water had nearly reached the muzzle of Mr Holland's gun, the last shot was fired and the devoted ship sank. Of the 368 persons on board the Arctic, only forty-five were saved.

The following list of lost Atlantic steamers is as complete as the records within reach supply.

1841.—President, mysteriously disappeared.
1843.—Columbia, wrecked on Coast of Nova Scotia.
1846.—Great Britain, wrecked on coast of Ireland; Tweed, on Alacrames Reef, off Yucatan.
1848.—Forth, wrecked on same reef.
1850.—Helena Sloman, foundered.
1852.—St. George, burned; Amazon, burned.
1853.—Humbolt, wrecked on coast of Nova Scotia.
1854.—City of Glasgow, disappeared; Franklin, wrecked; Arctic, run down; City of Philadelphia, wrecked.
1856.—Pacific, disappeared; Le Lyonnais, run down.
1857.—Tempest, disappeared; Montreal, burnop.
1858.—New York, foundered; Austria burned.
1859.—Argo, wrecked on coast of Newfound land.
Indian, wrecked on coast of Nova Scotia; Hungarian, wrecked on same coast.
1860.—Connaught, burned.
1861.—Canadian, wrecked on sunken ice; North Briton, wrecked.
1863.—Norwegian, Anglo Saxon, Georgia—all wrecked off Nova Scotia.
1864.—Bohemian, wrecked off Nova Scotia; City of New York, wrecked on Irish coast; Jura, wrecked at mouth of Mersey; Iowa, wrecked off Cherboorg.
1865.—Glasgow, burned.
1866.—Scotland, run down.
1868.—Hibernia, foundered.
1869.—United Kingdom, disappeared; Germania and Cleopatra, both wrecked on coast of Newfoundland.
1870.—City of Boston, disappeared; Cambria wrecked on Irish coast.
1872.—Dacian, wrecked on coast of Nova Scotia; Tripoli, wrecked on Irish coast.
1873.—Brittania, wrecked in the Clyde; Atlantic, wrecked on coast of Nova Scotia; Ismailia, disappeared; Missouri, wrecked on the Bahamas; Ville du Havre, run down; City of Washington, wrecked on coast of Nova Scotia.
1875—Schiller, wrecked on one of the Scilly Isles; Vicksburg, went down in a field of ice; Deutschland, wrecked on English coast.
1877.—George Washington, foundered off Cape Race.
1878,—Metropolis (bound from Philadelphia to Para, with workmen and materials for the Maderia and Mamore railroad), driven ashore on Currituck Beach, N. C, in a violent gale and wrecked; Sardinian, burnt at the entrance of Londonderry Harbor.
1879.—Borussio, foundered at sea; Montana, wrecked on Welsh coast; State of Virginia, ashore on Sable Island and wrecked; Pomerania, ran down in English Channel.
1880—July 16, bottle picked up off Irish coast, containing memorandum signed by the engineer, stating that the steamer Zanzibar was sinking. Vessel left New York for Glasgow, January 11, 1879, and has never been heard of since. City of Vera Cruz, foundered in a cyclone off Florida coast; Anglia, run down.
1881.—Bohemian, wrecked on Irish coast; Leon, foundered; Montgomeryshire, lost.
1882.—Mosel, wrecked on coast of Cornwall; Edam, run down by the Lepanto. Both these losses due to fog.

So far this year, therefore, two Atlantic steamships have been lost, with a loss of two lives only, on the Edam. The passengers of the Mosel had a narrow escape, but thanks to the presence of mind of her officers, the whole of the six hundred and fifty emigrants on board, together with her crew, were taken off in the ship's boats, aided by one of the National Lifeboat Institution's boats of England. (Since this has been published the Herder has been added to the awful list.) It is certainly

A STARTLING FACT.

That in the space of forty-one years since the unfortunate "President" left New York, on March 11th, 1831, never again to appear to mortal ken, nearly seventy fine mail steamers, including the West Indian mailboats have been utterly destroyed while on their passage across the Atlantic. Of these, seven, after leaving port, mysteriously disappeared and have never since been heard of; six were run down by or collided with other vessels; five were burned; one ran on sunken ice in the Straits of Belle Isle; another went down in a field of ice; two foundered in mid-ocean and the remainder of the melancholy list were wrecked either on the Irish or British coasts, on those of America, or on the islands or rocks off them. Fully eight of these ran in foggy weather on the shores of either Nova Scotia or Newfoundland on their westward voyages, a sufficient warning, it might be supposed, to captains to give a wide berth in those latitudes. One only, the Iowa, an American steamer was wrecked on the French coast, near Cherbourg, in 1864. It is generally supposed that shipwrecks are caused by the rage of the elements, but of all the vessels that went on shore only three or four appear to have directly suffered in consequence of heavy weather. Miscalculations as to distances run and courses steered clouded skies, dark nights, and more generally than all, dense fogs, were the primary causes of the destruction of all these vessels—if, as in too many instances, a reckless desire to make a quick run should not rather be set down to the account.

Comparatively few of these shipwrecks occurred without serious loss of life, at least five thousand persons have perished among the passengers and crews who were on board. When the Atlantic was wrecked on Meagher's Head, off Nova Scotia, in 1873, no less than 562 persons were drowned. With the City of Glasgow 480 people disappeared; with the President, 120; with the Pacific, 186, and with the City of Boston, the last of the missing steamships, 191. When the Austria was burned in mid ocean, 470 lives were lost; with the Arctic, 323; with the Anglo Saxon, 372; with the Ville du Havre, 226. with the Borussia, 200; and with the Schiller, 311. The destruction of other vessels caused the loss of fewer lives than those named, as, happily, fewer passengers were on board; but with several on the list from one hundred to two hundred beings perished. In 1873 no less than six large steamships were wrecked, run down or disappeared, the most disastrous losses being those of the Atlantic and the Ville du Havre.

Perhaps the most terrible beyond all description of these sad disasters, was the loss of the Amazon, West India mail steamer, which left Southampton on January 2nd, 1852, on her first voyage. She was the largest steamship ever then launched from an English dockyard, and was built of oak, teak and Dantzic pine, the last being an exceedingly inflammable wood. Her officers and crew numbered one hundred and ten men, and she carried fifty passengers. From the first doubts were entertained about the engine, which worked badly, and heated the surrounding wood. She had not been thirty-six hours at sea when, as she was entering the Bay of Biscay, against a strong head wind, flames suddenly burst forth from the engine room, overcoming all the efforts made to extinguish them. The boats would have carried all on board, but the last fatal act of one of the engineers, had been to turn on the pipe of the cistern which fed the boilers, so as to allow a continuous supply and prevent an explosion. Thus no power could stop the blazing ship, and the Captain not knowing what had occurred, in expectation that the boilers would exhaust themselves waited till too late to lower the boats, several of which were on fire. The keels of others, to prevent them from swinging, were grasped in iron cradles, and when attempts were made to lower them by those ignorant of the fact, capsized with all on board of them. Ultimately two lifeboats, the pinnace and dingy, got off with fifty-eight persons, the only ones saved. Among those who perished was Eliot Warburton, author of the "Crescent and the Cross." The loss of the vessel was owing to her defec-

tive engines and the unprotected condition of the surrounding woodwork. The destruction of life, however, was entirely due to the engineer's error in judgment and the way in which the boats were secured.

The President heads the list of

MYSTERIOUS DISAPPEARANCES.

There have been other missing ocean steamers with more passengers than the President, but none whose loss made a more painful sensation in England and America. Passengers and crew numbered 120, among the former being a son of the Duke of Richmond and Tyrone Power, the Irish comedian. She left New York, on March 11, 1841, and with what awful anxiety tidings of her were waited for can be remembered by many. None ever came. Whether she caught fire, like the Amazon, or rushed headlong against an ice berg, or ran into or was run down by another vessel, will never be known. Towards the end of March, 1856, no doubt longer existed that the Pacific, one of the fleet of Collins' Line of Mail Steamers, running between New York, and Liverpool, had perished, with one hundred and eighty persons. Nothing at any rate, has ever been heard of the missing steamer. She was a magnificent American built ship, fitted up with every appliance necessary for comfort, speed and success in the competitive work for which she was intended. She belonged to the same company as the Arctic, spoken of above, and the loss of these two splendid vessels was a blow from which the once prosperous Collins line never recovered.

With the City of Boston we come down to our own days. She is another missing ship, and he must have a short memory who can not recollect the letters in the newspapers, the anxious inquiries of friends, and the sympathetic comments of persons casually meeting each other for the first time, touching the City of Boston. This remarkably fine vessel belonged to the Inman Line, and sailed from Halifax—whether she had gone to take up certain British officers returning to England—on January 28, 1870, having on board fifty-five cabin and fifty-two steerage passengers, and a crew of eighty-four men. The hopes of those who had friends on board were buoyed up from time to time by rumors brought by various ships of the appearance in distant waters of a vessel that bore some resemblance to the missing steamer. All the old excuses for a ship overdue were made, she had been driven out of her course by stress of weather, she had become disabled and had found refuge in some far away harbor; she had become hedged about by icebergs, and would in God's good time be released. Towards the end of February, however, it was openly said that the City of Boston was lost, and as the summer came garments of mourning were put on for the dead, believed to have found a tomb in the great grave yard of the Atlantic Ocean.

A touching circumstance connected with this vessel is related of a widow living until lately in Detroit, whose only son was on board. She for a long time comforted herself with the fond delusion that the boy would yet return to her. Fancying that the Boston papers would first receive news of the steamer named after that city, she subscribed for a Boston paper, read it carefully hoping her son's fate might be explained. His plate was always laid at the table, the hopeful mother saying to her friends: "I have not heard from Willie yet, but I hope to get news this week."

More melancholy with regard to the number of lives sacrificed than even the loss of the City of Boston, was the destruction by fire of the Austria, of the Hamburg and New York Line in mid ocean, on September 13, 1858, with four hundred and seventy of her passengers and crew. No sooner did the flames appear than all discipline was overthrown, and in the mad rush to the boats many perished, who, had order been maintained, might have been saved. One of the most frightful and sudden catastrophes in the annals of shipwreck, was that of the Atlantic, of the White Star Line. She left Liverpool on March 20, 1873, for New York, with nearly one thousand persons on board, the greater number of whom were steerage passengers. Being short of coal she was steering for Halifax on a dark night, when the officers of the watch, under the belief that the ship was much further off the land than was the case, mistook one light for another, and she ran stem on to a ledge of rocks off Meagher's Head, twenty miles from the port. A frantic attempt was made to lower the boats, when, after striking several times, the ship rolled over into deep water, and sank, engulfing over five hundred human beings, the remainder having in the meantime sprung on to the rocks or climbed into the rigging. Not a woman or child was saved out of the two hundred and ninety-five on board.

Newfoundland.

We send down of present issue of the BULLETIN several hundred to Newfoundland. We have received numerous inquiries from this quarter relative to our paper and many interesting weather notes. We now open our columns to all correspondents, and would earnestly request further communication and queries on all points connected with Meteorology and Astronomy. It is by asking questions that we attain to our knowledge of any subject, and it is our intention ro devote considerable space, henceforth, in the BULLETIN, to the queries of our correspondents. A paper will be sent free to all who may contribute articles founded upon original observation, and a prize will be given for the best review of past winters in Newfoundland.—ED. BULLETIN.

Wonderful Weather on the Alps.

THE SEPTEMBER SNOWS.

London Times.—SIR: With occasional out bursts of sunny weather, the summer of 1882 in Switzerland has, on the whole, been a bad one. Thunder-storms have been few, but rain has been frequent. The present weather in the Valaisian Alps, at a height of seven thousand feet above the sea, is without a remembered parallel, and you may therefore like to have a brief account of it. On Tuesday, the 12th, the air steadily darkened, the distant mountains looming ever fainter through the turbid atmosphere. In the afternoon a thick drizzle began to fall. This rapidly augumented to a heavy, cold rain, which during the night changed to snow. On the morning of the 13th a layer a foot in depth surrounded us. It continued snowing all day, and long before night the little road which connects our house with the subjacent hotel was so completely obliterated that I strayed from it in going down. Towards night the flakes dwindled to flocculi, and next morning the sun shone down upon a world of clouds and mountains of indescribable grandeur. It was hoped by all that the storm had passed, but during the afternoon the eastern air darkened ominously, and it soon became obvious that we had not yet done with the snow. It recommenced that night and continued falling the following day. On the morning of the 16th we were surrounded on all sides by snow four feet deep, through which I found it exceedingly difficult to break so as to reach the hotel, three hundred feet below us.

On Thursday morning, while speaking to some peasants about the extraordinary beauty of the mountains, I received the reply that the scene was by no means beautiful to them. Nine hundred sheep were at that moment scattered over the heights, the rescue of which would be difficult, if not in part impossible. A party of thirty-five strong men started in search of them, and succeeded that day in saving three hundred. On the 15th little could be done without risk to human life. It was ascertained, however, that some of the sheep which had been grazing on the steeper slopes, had been carried away and killed by avalanches. On the afternoon of the 16th the weather had cleared, and a party of fourteen ascended the mountain in the direction of the Sparrenhorn. My wife and I accompanied them to a height of about one thousand feet above our house. A few days previously I had had some experience of snow on the level, but the labour of breaking through it up hill was enormous. Imaging the leader standing erect waist deep in the snow, with his colleagues in single file behind him. Throwing his knees and the weight of his body forward, he pressed down the snow, and then, by the push of the man behind him, he was helped to extricate his feet and to regain the erect position. The process of falling forward was then repeated. Twenty or thirty yards of this work sufficed to exhaust the foremost man, who then sat down upon the snow until his comrades had all passed him, and he had become the hindmost of the party. Our progress being slow, we had time to observe and enjoy a scene of unspeakable loveliness. All asperities had disappeared. The slopes, combs and rounded bosses were smoother and whiter than chiseled marble; while the light impinging on the snow crystles flashed back in colored sparks of surprising brilliancy. Half way up the Sparrenhorn some groups of sheep were discovered, but it was too late to think of getting them down.

We descended along the deep furrow which had been formed in the ascent, finding ourselves at intervals plunged in the soft shadows which now began to steal over the snow fields. The subsequent sunset was in point of glory without a parallel in my experience. The intensity of the light was extraordinary. Its color on the summits was of a most fiery crimson, while a wondrous belt of the same hue girded the eastern sky. After night-fall the heavens seemed serene. There were no clouds, still the stars sent but a feeble light through the atmosphere. The aspect of things was hopeful but untrustworty. A chance occurred during the night, and thick flakes were falling steadily when we opened our windows on Sunday morning. A party of men reascended to the point where they had seen the sheep on the previous day, and succeeded in recovering about sixty of them. The poor animals seemed utterly exhausted when brought down. Parties continue to scour the mountains, for several hundred sheep are still among the snows.

Save in the solid form, wewere without a drop of water for a day and a half, our firewood being expended in rendering its own heat latent in the indispensable liquid. Last night, however, a thaw set in, which continues this morning, and, though it has made no sensible impression upon the snow, it has filled our pipes and greatly diminished our difficulties. From our present position the town of Brieg and the country adjacent to it are within view, both fields and houses being to all appearance heavily laden with snow. Three ladies have been lonely prisoners for some days at the hotel, but they hope to escape to the lowlands this morning under the guardianship of the English Chaplain, who is so obliging as to carry this letter for me to Brieg.

Amid these scenes we have just received and read the description of the battle of Tel-el-Kebir. Thank God "we are a people yet."

Your obedient servant

JOHN TYNDALL.

Alp Lusgen, Brieg, September 18.

One of the grandest things in having rights is that, being your rights, you may give them up.—[*George MacDonald.*

A GENERAL TABLE OF NEW & FULL MOONS

Shewing

The days of New & Full Moon untill the year 1900 with the Moons age on every day

						1825	1826	1827	1828	1829	1830	1831	1832	1833	1834	1835	1836	1837	1838	1839	1840	1841	1842	1843						
						44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62						
						63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81						
Jan.	Feb.	Mar.	April	May	June	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	1900	July	Aug.	Sep.	Oct.	Nov.	Dec.
1.31	0	1.31	30	29	28	12	22	4	☉	26	7	18	29	10	21	2	13	24	6	16	27	9	20	1	27	26	24	24	22	22
2	1	2	1	30	29	13	24	5	16	27	8	19	●	11	22	3	14	25	7	17	28	10	21	2	28	27	25	25	23	23
3	2	3	2	1.31	30	14	25	6	17	28	9	20	1	12	23	4	☉	26	8	18	29	11	22	3	29	28	26	26	24	24
4	3	4	3	2	1	☉	26	7	18	29	10	21	2	13	24	5	16	27	9	19	●	12	23	4	30	29	27	27	25	25
5	4	5	4	3	2	16	27	8	19	●	11	22	3	14	25	6	17	28	10	20	1	13	24	5	1.31	30	28	28	26	26
6	5	6	5	4	3	17	28	9	20	1	12	23	4	☉	26	7	18	29	11	21	2	14	25	6	2	1.31	29	29	27	27
7	6	7	6	5	4	18	29	10	21	2	13	24	5	16	27	8	19	●	12	22	3	☉	26	7	3	2	30	30	28	28
8	7	8	7	6	5	19	●	11	22	3	14	25	6	17	28	9	20	1	13	23	4	16	27	8	4	3	1	1.31	29	29
9	8	9	8	7	6	20	1	12	23	4	☉	26	7	18	29	10	21	2	14	24	5	17	28	9	5	4	2	2	30	30
10	9	10	9	8	7	21	2	13	24	5	16	27	8	19	●	11	22	3	☉	25	6	18	29	10	6	5	3	3	1	1.31
11	10	11	10	9	8	22	3	14	25	6	17	28	9	20	1	12	23	4	16	26	7	19	●	11	7	6	4	4	2	2
12	11	12	11	10	9	23	4	☉	26	7	18	29	10	21	2	13	24	5	17	27	8	20	1	12	8	7	5	5	3	3
13	12	13	12	11	10	24	5	16	27	8	19	●	11	22	3	14	25	6	18	28	9	21	2	13	9	8	6	6	4	4
14	13	14	13	12	11	25	6	17	28	9	20	1	12	23	4	☉	26	7	19	29	10	22	3	14	10	9	7	7	5	5
15	14	15	14	13	12	26	7	18	29	10	21	2	13	24	5	16	27	8	20	●	11	23	4	☉	11	10	8	8	6	6
16	15	16	15	14	13	27	8	19	●	11	22	3	14	25	6	17	28	9	21	1	12	24	5	16	12	11	9	9	7	7
17	16	17	16	15	14	28	9	20	1	12	23	4	☉	26	7	18	29	10	22	2	13	25	6	17	13	12	10	10	8	8
18	17	18	17	16	15	29	10	21	2	13	24	5	16	27	8	19	●	11	23	3	14	26	7	18	14	13	11	11	9	9
19	18	19	18	17	16	●	11	22	3	14	25	6	17	28	9	20	1	12	24	4	☉	27	8	19	15	14	12	12	10	10
20	19	20	19	18	17	1	12	23	4	☉	26	7	18	29	10	21	2	13	25	5	16	28	9	20	16	15	13	13	11	11
21	20	21	20	19	18	2	13	24	5	16	27	8	19	●	11	22	3	14	26	6	17	29	10	21	17	16	14	14	12	12
22	21	22	21	20	19	3	14	25	6	17	28	9	20	1	12	23	4	☉	27	7	18	●	11	22	18	17	15	15	13	13
23	22	23	22	21	20	4	☉	26	7	18	29	10	21	2	13	24	5	16	28	8	19	1	12	23	19	18	16	16	14	14
24	23	24	23	22	21	5	16	27	8	19	●	11	22	3	14	25	6	17	29	9	20	2	13	24	20	19	17	17	15	15
25	24	25	24	23	22	6	17	28	9	20	1	12	23	4	☉	26	7	18	●	10	21	3	14	25	21	20	18	18	16	16
26	25	26	25	24	23	7	18	29	10	21	2	13	24	5	16	27	8	19	1	11	22	4	☉	26	22	21	19	19	17	17
27	26	27	26	25	24	8	19	●	11	22	3	14	25	6	17	28	9	20	2	12	23	5	16	27	23	22	20	20	18	18
28	27	28	27	26	25	9	20	1	12	23	4	☉	26	7	18	29	10	21	3	13	24	6	17	28	24	23	21	21	19	19
29	28	29	28	27	26	10	21	2	13	24	5	16	27	8	19	●	11	22	4	14	25	7	18	29	25	24	22	22	20	20
30	29	30	29	28	27	11	22	3	14	25	6	17	28	9	20	1	12	23	5	☉	26	8	19	●	26	25	23	23	21	21

EXPLANATION

Look for the New or Full Moon, under the year, and to the right or left in the same line, under the month stands the day of New or Full Moon

Look under the month for the day of the month, and in the same line under the year, stands the Moons age for that day

Note. In leap years after February the New and Full Moons will happen a day sooner than given in the table.

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