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## Eighth Year. 1884.

WALKER

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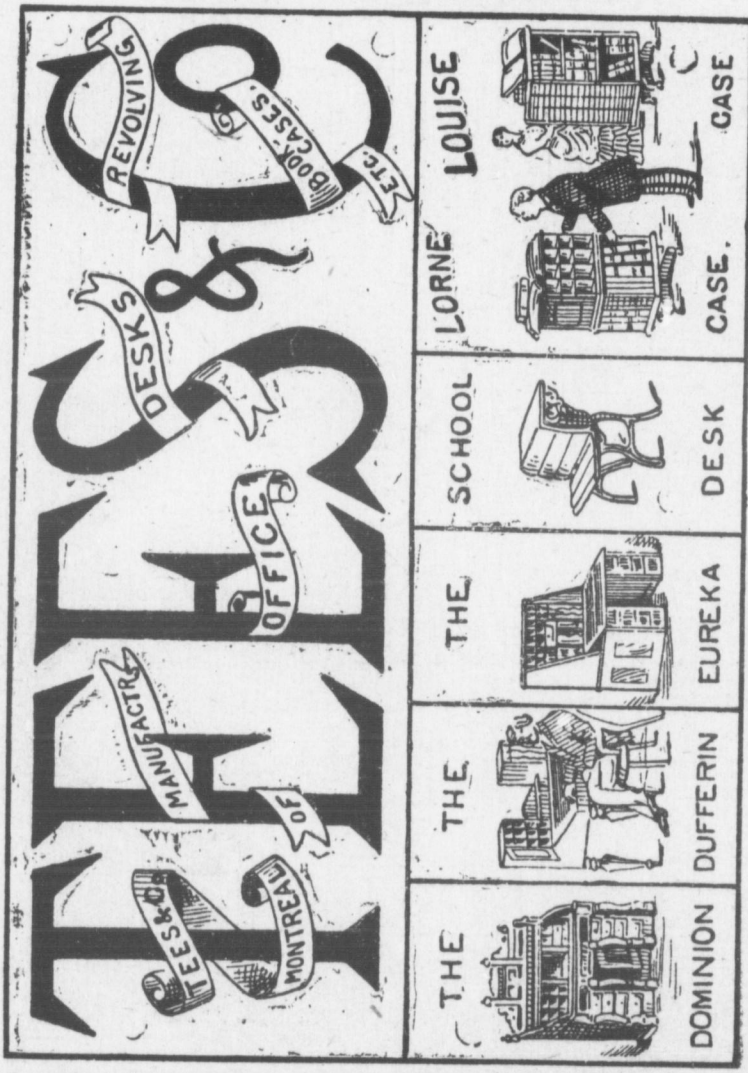


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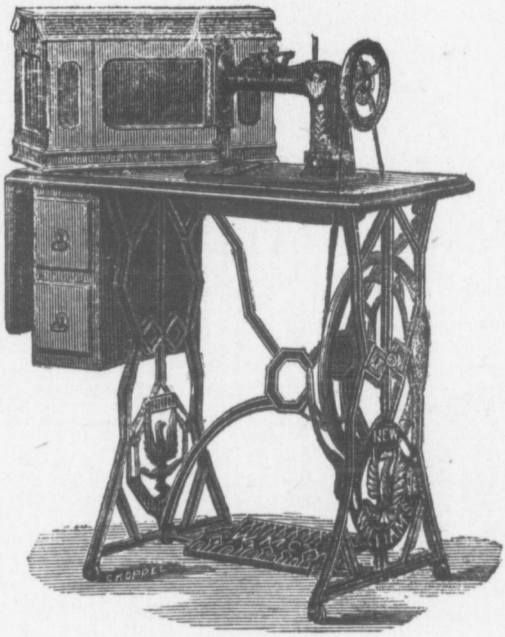

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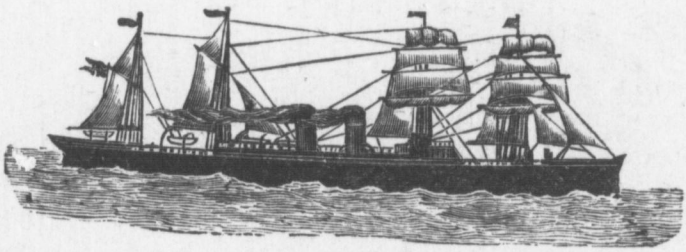

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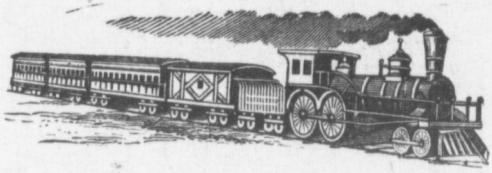

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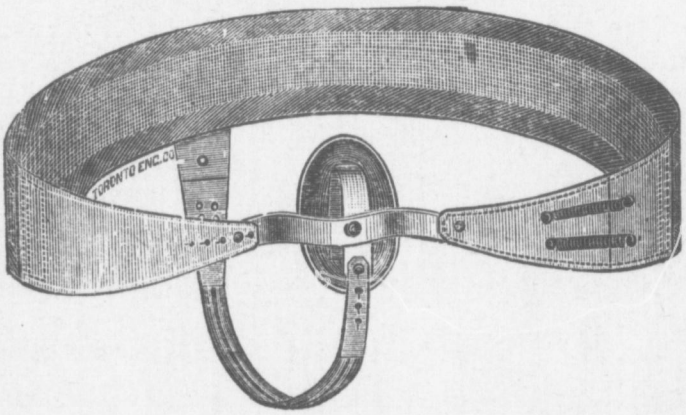


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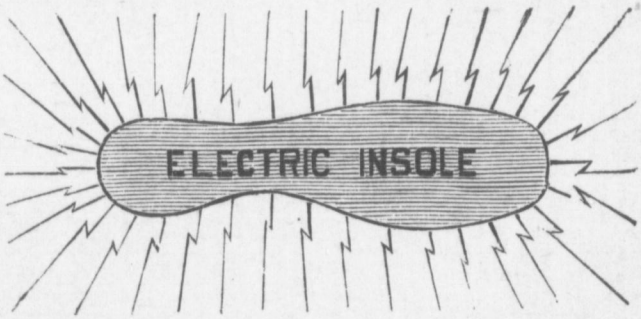


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FOURTH YEAR OF PUBLICATION.

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AND

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FOR

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# CONTENTS.

Ask for Clark's M. E. Q. Spool Cotton.



## SEVENTH ANNUAL ADDRESS.

Previous editions of this Annual having been so favorably received by the public, little need be said as an apology for introducing this, the seventh yearly volume. Considerable change, it is hoped for the better, has been made, by giving the book a far wider scope than ever before. Commencing in 1877 as a Weather Almanac, it has yearly increased in volume and variety, until it has at length become a most useful work, treating upon a vast number of interesting subjects.

The weather forecasts, it may be said, are not put forth in any spirit of dogmatic assertion, but are given in all modesty, although often the result of much labor, incessant watchfulness, careful selection and consideration. That the study of the weather and kindred subjects is advancing, and observations thereon improving our knowledge in matters relating thereto, year by year, in spite of opposition from avowed sceptics, cannot reasonably be doubted; indeed, it is but natural that such should be the case in a community like our own, mainly dependent on the weather. A favorable season means good crops, an unfavorable one, the reverse.

As an increased aid to the farming community, not only the probable weather has been dealt with, but suitable times carefully calculated according to the latest established rules of lunar influence on germination for the sowing of almost all kinds of farm crops. Any not specially mentioned may be obtained by addressing a stamped and directed envelope to the editors. Tables based on similar calculations have been in private use for several seasons, and are believed to have been of great service. It is now hoped that they will prove of utility to the general public.

Ask for Clark's M. E. Q. Spool Cotton.



Although knowledge continues to increase, still it is not pretended but that a great deal yet remains to be done in every portion of the great borderland of science treated of in this volume, especially in the part devoted to the system of planetary worlds by which our earth is surrounded and their probable influences. The perturbations caused by Neptune on the motions of Uranus at a distance of over one thousand millions of miles led to the discovery of a new planet, and the acceptance of the few facts herein advanced, trivial although they seem at first sight, may, nevertheless, lead in the near future to very respectable results. To those having nothing but vituperation and the relaxation of the broad muscels to adduce, no answer is given in refutation, still "There may be more things in heaven and earth than are dreamed of in our philosophy;" and mention is made even in Scripture of "a time to plant and a time to pluck up that which is planted;" also attention is called by Job to the "sweet influences of the Pleiades" (rain in spring), and the "bands of Orion" (frost).

A general desire to become better acquainted with the more simple and fascinating truths of astronomy is, no doubt, rapidly permeating the public mind on this continent, and to meet this demand the large portion of the Almanac devoted to astronomical matter has been prepared.

All our friends are kindly requested to introduce the VENNOR'S ALMANAC to their friends, thus improving its circulation and adding to its success.

HENRY G. VENNOR.
WALTER H. SMITH.

MONTREAL, September, 1883.

Ask for Clark's M. E. Q. Spool Cotton.



# ASTRONOMICAL AND OTHER NOTES.

## Fixed and Movable Festivals, 1884.

| | | | |
|---|---|---|---|
| New Years's Day / Circumcision. | Jan. 1 | Ascension Day— / Holy Thursday | May 22 |
| | " 6 | | " 24 |
| Epiphany | Feb. 10 | Birth of Queen Victoria | June 1 |
| Septuagesima Sunday | " 24 | Pentecost—Whit-Sunday | " 8 |
| Quinquagesima— / Shrove Sunday | " 27 | Trinity Sunday | " 12 |
| Ash Wednesday | Mar. 1 | Corpus Christi | " 20 |
| St. David | " 2 | Accession of Queen Victoria. | " 24 |
| First Sunday in Lent | " 17 | St. John Baptist— / Midsummer Day | " 29 |
| St. Patrick | " 25 | St. Peter and St. Paul | July 1 |
| Annunciation—Lady Day | Apr. 6 | Dominion Day | Sept. 29 |
| Palm Sunday | " 11 | Michaelmas Day | Nov. 9 |
| Good Friday | " 13 | Birth of Prince of Wales | " 30 |
| Easter Sunday | " 20 | St. Andrew | " 30 |
| Low Sunday | " 23 | First Sunday in Advent | Dec. 21 |
| St. George | May 18 | St. Thomas | " 25 |
| Rogation Sunday | | Christmas Day | |

## Principal Articles of the Calendar.

| | | | |
|---|---|---|---|
| Golden Number | 4 | Dominical Letters | F E |
| Epact | 3 | Roman Indiction | 12 |
| Solar Cycle | 17 | Julian Period | 6597 |

The first day of January of the year 1884 is the 2,409,177th day since the commencement of the Julian Period.

The year 5,645, of the Jewish Era, commences on September 20th, 1884.

Ramadân [Month of Abstinence observed by the Turks] commences June 25th, 1884.

The year 1302 of the Modammedan Era commences on Oct. 21, 1884.

---

## Holidays Observed in Public Offices.

Circumcision, Jan. 1st; Epiphany, Jan. 6th; Annunciation of the Virgin Mary, March 25; Good Friday, April 11th; Ascension Day, May 22nd; Queen's Birthday, May 24th; Corpus Christi, June 12th; St. Peter and St. Paul, June 29th; Dominion Day, July 1st; All Saints Day, November 1st; Conception of the Blessed Virgin, Dec. 8th; Christmas Day, Dec. 25th.

Bank Holidays in Ontario.—Sundays, Christmas Day, New Year's Day, Ash Wednesday, Good Friday, Easter Monday, The Queen's Birthday, and each day appointed by Royal Proclamation as a general Fast or Thanksgiving Day.

Ask for Clark's M. E. Q. Spool Cotton.



## Eclipses During the Year 1884.

There will be five eclipses during the year 1884, three of the sun and two of the moon.

1.—On the 26th of March, a partial eclipse of the sun will take place, invisible in Canada. It will be visible on the western coast of Denmark and Norway, the Shetland and Farœ Isles, Iceland and Greenland, ending three degrees south of the North Pole. Greenwich mean time of conjunction, March 26, 18h. 51 m. 33s.

2.—A total eclipse of the moon, April 9-10, invisible in Canada. It will be visible in the South Pacific Ocean, the Marquesas and Society Islands. Greenwich mean time of Opposition, April 9, 23h. 53m. 51s.

3.—A partial eclipse of the sun, April 25, invisible in Canada. It will be visible in the south Atlantic Ocean, Patagonia, Falkland Isles, Tristran d'Acunha and the Cape of Good Hope. Greenwich mean time of conjunction, April 25th, 2h. 17m. 17s.

4.—A total eclipse of the moon, Oct. 4, partly visible in Eastern Canada. The first contact occurs at 2h. 20m. p. m., Montreal time, the moon being below the horizon and invisible. The moon will rise eclipsed, and the last contact with the penumbra [end of eclipse], will take place at 7h. 51m., Montreal time.

5.—A partial eclipse of the sun, October 18, invisible in Canada. It will be visible in Siberia, Kamschatka, Alaska and the Northern Pacific Ocean. Greenwich mean time of Conjuction, October 18, 11h, 39m. 7s.

## Commencement of the Seasons.

Montreal mean time.

Spring begins March 19–20, 1884, at 12h. 6m., midnight, lasting 92 days, 20 hours and 1 minute.

Summer begins June 20, 1884, at 8h. 7m., evening, lasting 93 days, 14 hours, 55 minutes.

Autumn begins September 22, 1884, at 10h. 2m., morning, lasting 89 days, 7 hours and 8 minutes.

Winter begins December 21, 1884, at 5h. 10m., morning.

Tropical Year, 365 days, 5 hours and 45 minutes.

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## Signs of the Zodiac.

| | |
|---|---|
| ♈ Aries.....The Ram. | ♎ Libra.....The Balance. |
| ♉ Taurus.....The Bull. | ♏ Scorpio.....The Scorpion. |
| ♊ Gemini.....The Twins. | ♐ Sagittarius.....The Archer. |
| ♋ Cancer.....The Crab. | ♑ Capricornus.....The Goat. |
| ♌ Leo.....The Lion. | ♒ Aquarius.....The Water Bearer. |
| ♍ Virgo.....The Virgin. | ♓ Pisces.....The Fishes. |

## Signs of the Planets.

| | | |
|---|---|---|
| ☉ Sun. | ♂ Mars. | ☊ Ascending Node. |
| ☿ Mercury. | ♃ Jupiter. | ☋ Descending Node. |
| ♀ Venus. | ♄ Saturn. | ☌ Conjunction. |
| ☾ Moon. | ♅ Uranus. | □ Quadrature, 90°. |
| ☽ First Quarter. | ♆ Neptune. | ☍ Opposition, 180°. |
| ○ Full Moon. | N. North. | ° Degrees. |
| ☾ Last Quarter. | S. South. | ′ Minutes. |
| ● New Moon. | E. East. | ″ Seconds. |
| | W. West. | |

## MEAN TIME AS COMPARED WITH TWELVE O'CLOCK NOON AT MONTREAL.

### Places East of this Meridian.

| | P. M. | | P. M. |
|---|---|---|---|
| Madras, India | 10h 16m | Dublin, Ireland | 4h 29m |
| St. Petersburg, Russia | 6 56 | St. John's, Nfld | 1 23 |
| Constantinople, Turkey | 6 51 | Placentia Bay, Nfld | 1 19 |
| Vienna, Austria | 6 0 | Charlottetown, P.E.I. | 12 41½ |
| Berlin, Germany | 5 48 | Halifax, N.S. | 12 40 |
| Rome, Italy | 5 44 | St. John, N.B. | 12 30 |
| Paris, France | 5 4 | Boston, Mass. | 12 10 |
| London, England | 4 54 | Quebec City | 12 9 |

### Places West of this Meridian.

| | A. M. | | A. M. |
|---|---|---|---|
| New York City | 11h 59m | St. Paul | 10h 42m |
| Philadelphia | 11 54 | Winnipeg | 10 26 |
| Ottawa | 11 51½ | Sacramento, Cal | 8 51 |
| Kingston | 11 48 | San Francisco | 8 45 |
| Baltimore | 11 48 | Victoria, B.C. | 8 43 |
| Washington | 11 46 | Astoria, Oregon | 8 42 |
| Toronto | 11 37 | Owhyhee, Sandwich Islands | 6 35 |
| Hamilton | 11 35 | Sydney, Australia | 2 56 |
| Detroit | 11 22 | | |

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## THE CLOSE OF THE YEAR 1883; XMAS WEEK.

THE cool and stormy year 1883, is likely to end open and mild, with but little or no snow in any quarter, but possibly with rains and floods in western sections.

The entry of December (and close of November) may give or bring about a sudden plunge of the mercury to the *Zero* line, or even below, and there may be indications of an early and abrupt setting in of winter, but "Old Boreas" will relent again and, unexpectedly to most people, open, and mild weather again set in.

*Christmas* week is not likely to be a wintry week. I look for raw and cloudy weather with scattered rain and snowfalls and generally high temperature. Sleighing will be engaged in but few if any quarters, owing to absence of snow. Sleet and rains west. The month will end, possibly, with a frosty "nip," but this of brief duration.

A great contrast to the closing of the year 1882, when the whole country was well buried in snow.

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## GENERAL REMARKS ON JANUARY, 1884.

THE month is likely to be one of *temperature above the mean.* It will be full of "chop waves" or abrupt ups and downs, but the latter are not likely either to run extremely low, or to last very long. The month will, in all likelihood, enter with a "remarkable" New Year's day for brightness and balminess. Let us hope that this smiling entry may prove the precursor of a happy smiling year in every respect, both as touching the health and prosperity of the community. The scarcity or absence of "the beautiful" we have before experienced, and sleigh-builders will only have to enlarge their stock of wagons and carriages.

In Western Canada and United States precipitation in the form of rain is likely to be almost continuous, this changing into snowfall during the brief terms of low temperature.

Altogether, the month will be phenomenal but not disagreeable, with an unusual degree of warmth.

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## POSTAGE.

POSTAGE STAMPS, POST CARDS, ETC., ISSUED BY THE CANADIAN P. O. DEPARTMENT.

The stamps issued by the Canadian Post Office Department, are of the following denominations, viz.: postage stamps, ½ c., 1 c., 2 c., 3 c., 5c., 10 c., 21½ c. and 15 c.; registered letter stamps, 2 c and 5 c.

Post Cards are issued at one cent each, and may be sent to any address in Canada or United States. Post Bands are for sale at the rate of $1.25 per hundred. Post cards are also issued at two cents each for transmission to the United Kingdom, Newfoundland, St. Pierre et Miquelon, and certain foreign countries.

### RATES OF POSTAGE WITHIN THE DOMINION.

*Letters.*

To places within the Dominion of Canada, 3 cents per half oz. each. Letters paid less than one rate will not be forwarded. Other short paid letters will be taxed with double the amount of the deficient postage.

On letters posted at an Office to be delivered from it, commonly known as Local or "*drop letters*," the rate will be 1 cent per ½ oz.; to be in all cases prepaid by Postage Stamps affixed to such letter when posted.

Re-directed Letters will be forwarded without any additional charge if not taken from the office or if handed back at the moment of their delivery, but if taken from the office and subsequently re-posted they become subject to a new rate of postage, in default of which they will be sent to the Dead Letter Office, Ottawa.

*Newspapers and Periodicals.*

Newspapers and periodicals printed and published in Canada may be sent by Post from the Office of publication or news agency free, to regular subscribers or news agents in Canada.

Transient Newspapers and Periodicals addressed to places in Canada, will be sent at the rate of one cent per 4 ounces, which

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must be prepaid by postage stamp. Newspapers and Periodicals weighing less than one ounce may be posted singly, prepaid by postage stamp, one-half cent each.

*Miscellaneous Mail Matter.*

Periodicals, Books, Pamphlets, and occasional Publications, Books and Newspaper Manuscript, Circulars, Prices Current, Hand Bills, Maps, Prints, Drawings, Engravings, Music, Packages of Seeds, Cuttings, Roots, Scions, Grafts, Botanical Specimens, etc., and patterns or samples of merchandise.

To any place in Canada, 1 cent per 4 oz. each packet, Books, Circulars, Music, etc., must be put up open at both ends.

Prepayment of Matter of the above description is in all cases compulsory.

*Parcels.*

To any place within the Dominion 6 cents per 4 oz., which must be prepaid. Parcels must not exceed 5 lbs. in weight, excepting those addressed to British Columbia or Manitoba, the weight of which is limited to 2 lbs. 3 oz.

*Registration Fee.*

To places within the Dominion, 2 cents each letter or post card, and 5 cents each parcel or packet of sample.

## DOMINION CABINET.

HIS EXCELLENCY GOVERNOR-GENERAL THE MARQUIS OF LANSDOWNE.

| | |
|---|---|
| President of the Council (Premier) | Right Honorable Sir John A. Macdonald, K. C. B. |
| Minister of Finance | Sir S. L. Tilley, K. C. M. G. |
| Minister of Railways & Canals | Sir Charles Tupper, K. C. M. G. |
| Postmaster-General | Hon. John Carling. |
| Minister of Justice | Sir Alex. Campbell, K. C. M. G. |
| Minister of Public Works | Sir H. L. Langevin, K. C. M. G. |
| Minister Department of Interior | Hon. D. L. Macpherson. |
| Minister of Agriculture | Hon. John Henry Pope. |
| Minister of Customs | Hon. Mackenzie Bowell. |
| Minister of Militia & Defence | Hon. A. P. Caron. |
| Secretary of State | Hon. J. A. Chapleau. |
| Minister of Marine & Fisheries | Hon. A. W. McLelan. |
| Minister of Inland Revenue | Hon. John Costigan. |
| Speaker of the Senate | Hon. Wm. Miller. |
| Speaker House of Commons | Hon. George A. Kirkpatrick. |
| Without Portfolio | Hon. Frank Smith. |

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# 1st Mo. JANUARY. 31 Days.

| Moon's Phases. | Day. | Halifax. | Montreal. | Toronto. | Winnipeg. |
|---|---|---|---|---|---|
| | | H. M. | H. M. | H. M. | H. M. |
| ☽ First Quarter... | 5 | 5 19 eve. | 4 41 eve. | 4 23 eve. | 3 06 eve. |
| ○ Full Moon .... | 12 | 11 11 mor. | 10 33 mor. | 10 15 mor. | 8 58 mor. |
| ☾ Last Quarter... | 19-20 | 1 08 mor. | 0 30 mor. | 0 12 mor. | 10 55 eve. |
| ● New Moon..... | 27-28 | 0 45 mor. | 0 07 mor. | 11 49 eve. | 10 32 eve. |

*Sun Rises and Sets*—These times apply approximately to the whole Dominion.

## WEATHER FORECAST.

| Day of Month. | Day of Week. | | Montreal Sun rises H. M. | Montreal Sun sets H. M. |
|---|---|---|---|---|
| 1 | Tues. | **CIRCUMCISION.**—New Year's Day. | 7 42 | 4 27 |
| 2 | Wed. | New Year's mild: no snow; dust or mud in many sections — Waters quite open — Generally open weather in United States. Local rains or snow and sleet flurries. A great contrast to 1883 January. | 7 41 | 4 28 |
| 3 | Thur. | | 7 41 | 4 29 |
| 4 | Frid. | | 7 41 | 4 30 |
| 5 | Satur. | | 7 41 | 4 31 |
| 6 | **SUN.** | **EPIPHANY.** | 7 41 | 4 32 |
| 7 | Mon. | Scattered snow-falls and showers. Mild snow-falls more frequent this week and first sleighing in many sections—Rains in Canada West and Western United States—Generally open weather. Colder about and after the 10th; hard frost—possibly a sharp term in Northern sections—Very little snow in Canada—Waters quite open—A warm month. | 7 40 | 4 33 |
| 8 | Tues. | | 7 40 | 4 34 |
| 9 | Wed. | | 7 40 | 4 35 |
| 10 | Thur. | | 7 40 | 4 36 |
| 11 | Frid. | | 7 40 | 4 37 |
| 12 | Satur. | | 7 39 | 4 38 |
| 13 | **SUN.** | **First Sunday after Epiphany.** | 7 38 | 4 40 |
| 14 | Mon. | Scattered snow and rain-falls this week according to locality—Continued open mild weather—Heavy rains in Western sections about 18th and 19th—Waters still open—Snow-fall, so far, everywhere light—Indications of more wintry change towards close of week. | 7 38 | 4 41 |
| 15 | Tues. | | 7 37 | 4 42 |
| 16 | Wed. | | 7 36 | 4 43 |
| 17 | Thur. | | 7 36 | 4 44 |
| 18 | Frid. | | 7 35 | 4 46 |
| 19 | Satur. | | 7 35 | 4 48 |
| 20 | **SUN.** | **Second Sunday after Epiphany.** | 7 34 | 4 49 |
| 21 | Mon. | Colder weather—Abrupt changes from cold to rain and cloudy weather—Scattered snow-falls—No prolonged period of cold—Snow-fall generally below average in United States and Canada—Windy weather close of week. | 7 33 | 4 51 |
| 22 | Tues. | | 7 32 | 4 52 |
| 23 | Wed. | | 7 32 | 4 54 |
| 24 | Thur. | | 7 31 | 4 55 |
| 25 | Frid. | | 7 30 | 4 56 |
| 26 | Satur. | | 7 29 | 4 57 |
| 27 | **SUN.** | **Third Sunday after Epiphany.** | 7 28 | 4 58 |
| 28 | Mon. | General snow and rain-falls—Very high winds this week with some abrupt changes from frosty to mild and open weather—Month closes with but little or no snow in most sections of country. *Note.—A decidedly phenomenal January.* | 7 27 | 4 59 |
| 29 | Tues. | | 7 25 | 5 1 |
| 30 | Wed. | | 7 24 | 5 3 |
| 31 | Thur. | | 7 23 | 5 5 |

Note.—The time given for sun rises and sets are calculated for the sun's upper-limb at Montreal, but will answer approximately for the Dominion.

☞ The month of good resolutions. Begin the year well by subscribing for THE GAZETTE—$6 Daily; $1 Weekly—Each Eight Pages. Remit to

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ton.

## Days.

WINNIPEG.

| H. | M. | |
|---|---|---|
| 3 | 06 | eve. |
| 8 | 58 | mor. |
| 10 | 55 | eve. |
| 10 | 32 | eve. |

| | MONTREAL | | |
|---|---|---|---|
| | Sun rises | Sun sets | |
| | H. M. | H. M. | |
| | 7 42 | 4 27 | |
| | 7 41 | 4 28 | |
| | 7 41 | 4 29 | |
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| | 7 40 | 4 37 | |
| | 7 39 | 4 38 | |
| | 7 38 | 4 40 | |
| | 7 38 | 4 41 | |
| | 7 37 | 4 42 | |
| | 7 36 | 4 43 | |
| | 7 36 | 4 44 | |
| | 7 35 | 4 46 | |
| | 7 35 | 4 48 | |
| | 7 34 | 4 49 | |
| | 7 33 | 4 51 | |
| | 7 32 | 4 52 | |
| | 7 32 | 4 54 | |
| | 7 31 | 4 55 | |
| | 7 30 | 4 56 | |
| | 7 29 | 4 57 | |
| | 7 28 | 4 58 | |
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## MEMORANDA.

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# 2nd Mo. FEBRUARY. 29 Days.

| Moon's Phases. | Day. | Halifax. | Montreal. | Toronto. | Winnipeg |
|---|---|---|---|---|---|
| | | H. M. | H. M. | H. M. | H. M. |
| ☽ First Quarter... | 3-4 | 1 41 mor. | 1 03 mor. | 0 40 mor. | 11 28 eve. |
| ○ Full Moon ..... | 10-11 | 0 31 mor. | 11 53 eve. | 11 30 eve. | 10 18 eve. |
| ☾ Third Quarter.. | 18 | 10 56 eve. | 10 18 eve. | 9 55 eve. | 8 43 eve. |
| ● New Moon..... | 26 | 2 19 eve. | 1 41 eve. | 1 18 eve. | 0 06 eve. |

*Sun Rises and Sets*—These times apply approximately to the whole Dominion.

## WEATHER FORECAST.

| Day of Month. | Day of Week. | | Montreal Sun rises. H. M. | Montreal Sun sets. H. M. |
|---|---|---|---|---|
| 1 | Frid. | In all probability a mild entry of month, but on verge of change-Scattered snow-falls about 2nd, 3rd. | 7 22 | 5 06 |
| 2 | Satur. | CANDLEMAS. | 7 20 | 5 08 |
| 3 | **SUN.** | **Fourth Sunday after Epiphany.** | 7 19 | 5 09 |
| 4 | Mon. | Generally cold change—A "dip"—Much colder early portion of this week, up to 6th, afterwards moderating—Latter portion of week milder, with occasional snow, sleet and rain-falls—Indications of approach of soft weather. | 7 18 | 5 11 |
| 5 | Tues. | | 7 17 | 5 12 |
| 6 | Wed. | | 7 16 | 5 14 |
| 7 | Thur. | | 7 14 | 5 15 |
| 8 | Frid. | | 7 13 | 5 17 |
| 9 | Satur. | | 7 12 | 5 18 |
| 10 | **SUN.** | **Septuagesima Sunday.** | 7 10 | 5 19 |
| 11 | Mon. | Stormy—Rains or snow-falls—Probably a mild week, with rains in Western Canada and United States—Scattered snowfalls Eastern Canada and Lower Maritime Provinces—General snowstorms [on 16th. | 7 09 | 5 21 |
| 12 | Tues. | | 7 07 | 5 22 |
| 13 | Wed. | | 7 06 | 5 24 |
| 14 | Thur. | | 7 04 | 5 25 |
| 15 | Frid. | ST. VALENTINE. | 7 02 | 5 27 |
| 16 | Satur. | | 7 01 | 5 28 |
| 17 | **SUN.** | **Sexagesima Sunday.** | 6 59 | 5 30 |
| 18 | Mon. | Cloudy or stormy generally—Changeable week; abrupt alternations of mildness and frost, ice and slush—Cloudy and rain in Western sections, with snow and rain-falls—Much colder, with stormy indications towards end of week. | 6 58 | 5 31 |
| 19 | Tues. | | 6 56 | 5 33 |
| 20 | Wed. | | 6 54 | 5 34 |
| 21 | Thur. | | 6 53 | 5 36 |
| 22 | Frid. | | 6 51 | 5 37 |
| 23 | Satur. | | 6 50 | 5 39 |
| 24 | **SUN.** | **Quinquagesima—Shrove Sunday.** | 6 48 | 5 40 |
| 25 | Mon. | Some low temperatures—Probably the commencement of a cold week, with generally wintry weather, particularly westward & north-westward, | 6 47 | 5 41 |
| 26 | Tues. | SHROVE TUESDAY. | 6 45 | 5 43 |
| 27 | Wed. | ASH WEDNESDAY—First Day of Lent. | 6 43 | 5 44 |
| 28 | Thur. | | 6 42 | 5 46 |
| 29 | Frid. | | 6 40 | 5 47 |

ending in stormy weather and snowfalls a day or two prior to entry of March.

NOTE.—Average temp. of month above the mean. Scarcity of snow and ice.

The month on which good resolutions often 'weaken.' Those, however, who have subscribed for either the

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## MEMORANDA.

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# 3rd Mo. MARCH. 31 Days.

| Moon's Phases. | Day. | Halifax. | Montreal. | Toronto. | Winnipeg. |
|---|---|---|---|---|---|
| | | H. M. | H. M. | H. M. | H. M. |
| ☽ First Quarter... | 4 | 9 17 mor. | 8 39 mor. | 8 16 mor. | 7 04 mor. |
| ○ Full Moon..... | 11 | 3 24 eve. | 2 46 eve. | 2 23 eve. | 1 11 eve. |
| ☾ Last Quarter... | 19 | 6 58 eve. | 6 20 eve. | 5 57 eve. | 4 45 eve. |
| ● New Moon ..... | 26-27 | 1 31 mor. | 0 53 mor. | 0 30 mor. | 11 14 eve. |

*Sun Rises and Sets*—These times apply approximately to the whole Dominion.

## WEATHER FORECAST.

The month enters this year with general storms and more wintry weather.

| Day of Month. | Day of Week. | | Montreal. Sun rises. H. M. | Montreal. Sun sets. H. M. |
|---|---|---|---|---|
| 1 | Satur. | ST. DAVID. | 6 39 | 5 48 |
| 2 | **SUN.** | **Quadragesima, First Sunday in Lent.** | 6 37 | 5 49 |
| 3 | Mon. | | 6 35 | 5 50 |
| 4 | Tues. | Stormy weather generally 2nd and 3rd, giving way to mildness again, with rains and slush thro' | 6 34 | 5 51 |
| 5 | Wed. | the greater portion of week—Some abrupt periods | 6 32 | 5 53 |
| 6 | Thur. | of warmth during week—Stormy weather in Lower | 6 30 | 5 54 |
| 7 | Frid. | Maritime Ports and "Lake region"—Rains con- | 6 28 | 5 55 |
| 8 | Satur. | tinue at southern points | 6 26 | 5 57 |
| 9 | **SUN.** | **Second Sunday in Lent.** | 6 25 | 5 58 |
| 10 | Mon. | | 6 23 | 6 0 |
| 11 | Tues. | | 6 21 | 6 1 |
| 12 | Wed. | Mild and open weather—Mild and pleasant weather continuing through fore-portion of week: | 6 19 | 6 2 |
| 13 | Thur. | latter half clouded and unsettled, terminating in | 6 17 | 6 3 |
| 14 | Frid. | scattered rains and snow-falls—The 15th probably | 6 15 | 6 5 |
| 15 | Satur. | stormy generally. | 6 13 | 6 6 |
| 16 | **SUN.** | **Third Sunday in Lent.** | 6 11 | 6 7 |
| 17 | Mon. | | 6 9 | 6 8 |
| 18 | Tues. | ST. PATRICK. | 6 7 | 6 10 |
| 19 | Wed. | Scattered snow and rainfalls. | 6 6 | 6 11 |
| 20 | Thur. | Altogether a more wintry week in the majority of sections—Snow-storms likely in northern sec- | 6 4 | 6 13 |
| 21 | Frid. | tions 19th and 20th—Rains middle Atlantic States | 6 2 | 6 14 |
| 22 | Satur. | —Stormy weather in Great Britain. | 6 0 | 6 15 |
| 23 | **SUN.** | **Fourth Sunday in Lent.** | 5 58 | 6 16 |
| 24 | Mon. | Warmer and more settled weather—Generally | 5 56 | 6 17 |
| 25 | Tues. | ANNUNCIATION—LADY-DAY. | 5 54 | 6 19 |
| 26 | Wed. | a fine week, with local rains—Early warmth, with | 5 52 | 6 20 |
| 27 | Thur. | indications of advanced weather. | 5 50 | 6 21 |
| 28 | Frid. | Weather inclined to be stormy again on both sides Atlantic, Maritime Provinces and Gulf of St. | 5 48 | 6 22 |
| 29 | Satur. | Lawrence, with scattered snow-falls. | 5 47 | 6 24 |
| 30 | **SUN.** | **Fifth Sunday in Lent.** | 5 45 | 6 25 |
| 31 | Mon. | Cooler, with local frosts. | 5 43 | 6 26 |

NOTE.—This month will have its severe storms, but with no such snow-fa as in 1883.

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1 Days.

| | WINNIPEG. |
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| | 7 04 mor. |
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| | 4 45 eve. |
| | 11 14 eve. |

| | MONTREAL. | |
|---|---|---|
| | Sun rises. | Sun sets. |
| | H. M. | H. M. |
| | 6 39 | 5 48 |
| | 6 37 | 5 49 |
| | 6 35 | 5 50 |
| | 6 34 | 5 51 |
| | 6 32 | 5 53 |
| | 6 30 | 5 54 |
| | 6 28 | 5 55 |
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| | 6 6 | 6 11 |
| | 6 4 | 6 13 |
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## MEMORANDA.

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# 4th Mo. APRIL. 30 Days.

| Moon's Phases. | Day. | Halifax. | Montreal. | Toronto. | Winnipeg. |
|---|---|---|---|---|---|
| | | H. M. | H. M. | H. M. | H. M. |
| ☽ First Quarter... | 2 | 5 01 eve. | 4 23 eve. | 4 00 eve. | 2 48 eve. |
| ○ Full Moon..... | 10 | 7 28 mor. | 6 50 mor. | 6 27 mor. | 5 15 mor. |
| ☾ Last Quarter... | 18 | 11 38 mor. | 11 00 mor. | 10 37 mor. | 9 25 mor. |
| ● New Moon ..... | 25 | 10 41 mor. | 10 03 mor. | 9 40 mor. | 8 28 mor. |

*Sun Rises and Sets*—These times apply approximately to the whole Dominion.

## WEATHER FORECAST.

| Day of Month. | Day of Week. | | Montreal. Sun rises. H. M. | Montreal. Sun sets. H. M. |
|---|---|---|---|---|
| 1 | Tues. | Cloudy, cool and unsettled weather generally, with locol snow-flurries in northern and middle sections, through greater part of week—Frost in western sections of country—Strong winds. | 5 40 | 6 28 |
| 2 | Wed. | | 5 38 | 6 29 |
| 3 | Thur. | | 5 37 | 6 31 |
| 4 | Frid. | | 5 35 | 6 32 |
| 5 | Satur. | | 5 33 | 6 33 |
| 6 | **Sun.** | **Palm Sunday.** | 5 31 | 6 34 |
| 7 | Mon. | Showers about 6th and 7th—Generally natural April weather—Warm and showery—Possibly a cold change in Western sections about the 10th and 11th, with local snow-falls particularly in Lower Provinces and Gulf. | 5 29 | 6 35 |
| 8 | Tues. | | 5 28 | 6 37 |
| 9 | Wed. | | 5 26 | 6 38 |
| 10 | Thur. | | 5 24 | 6 39 |
| 11 | Frid. | **GOOD FRIDAY.** | 5 22 | 6 40 |
| 12 | Satur. | | 5 20 | 6 42 |
| 13 | **Sun.** | **Easter Sunday.** | 5 19 | 6 43 |
| 14 | Mon. | Fair and Warm—Seasonable—Generally favorable weather, with frequent rains—Altogether the wettest April in a period of years—Indications of early heat. | 5 17 | 6 45 |
| 15 | Tues. | | 5 15 | 6 46 |
| 16 | Wed. | | 5 13 | 6 47 |
| 17 | Thur. | | 5 11 | 6 48 |
| 18 | Frid. | | 5 10 | 6 50 |
| 19 | Satur. | | 5 8 | 6 51 |
| 20 | **Sun.** | **Low Sunday.** | 5 7 | 6 52 |
| 21 | Mon. | Summer-like weather, with some days of decided heat—Rapidly advancing vegetation. | 5 5 | 6 53 |
| 22 | Tues. | | 5 3 | 6 54 |
| 23 | Wed. | **ST. GEORGE.** "Showery April" to the letter this time. | 5 2 | 6 56 |
| 24 | Thur. | | 5 0 | 6 57 |
| 25 | Frid. | **ST. MARK.** Wind storms in Western States. | 4 59 | 6 58 |
| 26 | Satur. | | 4 57 | 6 59 |
| 27 | **Sun.** | **Second Sunday after Easter.** | 4 56 | 7 1 |
| 28 | Mon. | Unsettled weather—Change to cooler, with continued showery weather—Rather too much rain for farmers' views. | 4 54 | 7 2 |
| 29 | Tues. | | 4 52 | 7 4 |
| 30 | Wed. | | 4 50 | 7 5 |

Farmers lose money by not keeping themselves posted on the current prices.

THE WEEKLY GAZETTE.

Every issue gives a full report of the Butter, Cheese, Corn, Provisions and Wool markets, both of Canada and the States, and contains other information which every farmer should possess, besides the week's news down to date of publication. Eight pages for $1.00 per year. Remit to

RICHARD WHITE, *Man. Dir.*,
Gazette Printing Co., Montreal.

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| 9 | 25 | mor. |
| 8 | 28 | mor. |

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| Sun rises. H. M. | Sun sets. H. M. |
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Ask for Clark's M. E. Q. Spool Cotton.

## MEMORANDA.

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Ask for Clark's M. E. Q. Spool Cotton.

# 5th Mo. MAY. 31 Days.

| Moon's Phases. | Day. | Halifax. | Montreal. | Toronto. | Winnipeg. |
|---|---|---|---|---|---|
| | | H. M. | H. M. | H. M. | H. M. |
| ☽ First Quarter.. | 1—2 | 1 51 mor. | 1 13 mor. | 0 50 mor. | 11 38 eve. |
| ○ Full Moon.... | 9 | 11 51 eve. | 11 13 eve. | 10 50 eve. | 9 38 eve. |
| ☾ Last Quarter ... | 17—18 | 0 38 mor. | 11 59 eve. | 11 37 eve. | 10 24 eve. |
| ● New Moon..... | 24 | 6 20 eve. | 5 42 eve. | 5 19 eve. | 4 07 eve. |
| ☽ First Quarter... | 30—31 | 0 42 eve. | 6 2 eve. | 11 39 mor. | 10 27 mor. |

*Sun Rises and Sets*—These times apply approximately to the whole Dominion.

## WEATHER FORECAST.

| Day of Month. | Day of Week. | | Montreal. Sun rises. H. M. | Montreal. Sun sets. H. M. |
|---|---|---|---|---|
| 1 | Thur. | **MAY-DAY.** Every indication of early heat—Advanced vegetation—Unusually early summer weather—Possibly a local frost or two, with rains in Canada. | 4 49 | 7 6 |
| 2 | Frid. | | 4 47 | 7 7 |
| 3 | Satur. | | 4 46 | 7 9 |
| 4 | **SUN.** | **Third Sunday after Easter.** | 4 44 | 7 10 |
| 5 | Mon. | Fine, but frosty—Local snow-flurries—Weather continues on the whole favorable, with, in all probability, a little too much rain. | 4 43 | 7 11 |
| 6 | Tues. | | 4 42 | 7 12 |
| 7 | Wed. | | 4 40 | 7 13 |
| 8 | Thur. | Storms reported in Western sections latter part of week—Wet and stormy in majority of sections. | 4 39 | 7 15 |
| 9 | Frid. | | 4 37 | 7 16 |
| 10 | Satur. | | 4 36 | 7 17 |
| 11 | **SUN.** | **Fourth Sunday after Easter.** | 4 35 | 7 18 |
| 12 | Mon. | Favorable, fair and warm, with the usual wind and thunderstorms of the month of May—Periods of strong heat in central sections. | 4 34 | 7 19 |
| 13 | Tues. | | 4 32 | 7 21 |
| 14 | Wed. | | 4 31 | 7 22 |
| 15 | Thur. | | 4 30 | 7 23 |
| 16 | Frid. | | 4 29 | 7 24 |
| 17 | Satur. | | 4 28 | 7 25 |
| 18 | **SUN.** | **ROGATION SUNDAY.** | 4 27 | 7 26 |
| 19 | Mon. | More settled and hot weather—A warm week generally, with, perhaps, intense heat in Western sections—Scattered wind and hail storms—Alterations of sultry and windy weather. | 4 26 | 7 27 |
| 20 | Tues. | | 4 25 | 7 28 |
| 21 | Wed. | | 4 24 | 7 29 |
| 22 | Thur. | **ASCENSION DAY—Holy Thursday.** | 4 23 | 7 30 |
| 23 | Frid. | Altogether favorable weather. | 4 22 | 7 31 |
| 24 | Satur. | **QUEEN'S BIRTH-DAY.** Warm and windy. | 4 21 | 7 32 |
| 25 | **SUN.** | **Sunday after Ascension.** | 4 20 | 7 33 |
| 26 | Mon. | Thunder-storms and hail-storms—Change to cooler and windy weather, with scattered showers. Cold and bleak weather portion of week, with wind, rain and hail-storms in Canada and Western United States. | 4 19 | 7 34 |
| 27 | Tues. | | 4 19 | 7 35 |
| 28 | Wed. | | 4 18 | 7 36 |
| 29 | Thur. | | 4 18 | 7 37 |
| 30 | Frid. | Note.—Beyond May, we do not forecast details of weather in the Almanac.—*H. G. Vennor.* | 4 17 | 7 38 |
| 31 | Satur. | | 4 16 | 7 39 |

*A RELIABLE REPORT OF THE MARKETS*
—IS—
=WORTH FAR MORE THAN THE SUBSCRIPTION=
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MONTREAL DAILY GAZETTE,
—WHICH IS—
ONLY SIX DOLLARS!

otton.

1 Days.

| | Winnipeg. |
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| | H. M. |
| | 11 38 eve. |
| | 9 38 eve. |
| | 10 24 eve. |
| | 4 07 eve. |
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|---|---|---|
| | Sun rises. H. M. | Sun sets. H. M. |
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Ask for Clark's M. E. Q. Spool Cotton.

## MEMORANDA.

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# 6th Mo. JUNE. 30 Days.

| Moon's Phases. | Day. | Halifax. | Montreal. | Toronto. | Winnipeg. |
|---|---|---|---|---|---|
| | | H. M. | H. M. | H. M. | H. M. |
| ○ Full Moon..... | 8 | 3 33 eve. | 2 55 eve. | 2 32 eve. | 1 20 eve. |
| ☾ Last Quarter... | 16 | 10 18 mor. | 9 40 mor. | 9 17 mor. | 8 05 mor. |
| ● New Moon..... | 22—23 | 1 17 mor. | 0 39 mor. | 0 16 mor. | 11 04 eve. |
| ☽ First Quarter... | 29—30 | 1 58 mor. | 1 20 mor. | 0 57 mor. | 11 45 eve. |

*Sun Rises and Sets*—These times apply approximately to the whole Dominion.

## WEATHER FORECAST.

(ORDINARY WEATHER OF MONTH.)

| Day of Month. | Day of Week. | | Montreal. Sun rises. H. M. | Montreal. Sun sets: H, M. |
|---|---|---|---|---|
| 1 | SUN. | **PENTECOST—Whit-Sunday.** | 4 16 | 7 40 |
| 2 | Mon. | Generally fine, warm to sultry—Heat in Western and Southern sections—Local thunder and wind storms—Storms on "Lakes"—Rains in Illinois and Western corn belt—Cooler weather, with frosts in localities. | 4 15 | 7 41 |
| 3 | Tues. | | 4 15 | 7 42 |
| 4 | Wed. | | 4 14 | 7 43 |
| 5 | Thur. | | 4 14 | 7 44 |
| 6 | Frid. | | 4 13 | 7 44 |
| 7 | Satur. | | 4 13 | 7 45 |
| 8 | SUN. | **TRINITY SUNDAY.** | 4 12 | 7 45 |
| 9 | Mon. | Stormy weather in Western sections—Sultry weather—Still showery—Usual June storms—Possibly frosts in Ohio. | 4 12 | 7 46 |
| 10 | Tues. | | 4 12 | 7 47 |
| 11 | Wed. | | 4 11 | 7 47 |
| 12 | Thur. | **CORPUS-CHRISTI.** | 4 11 | 7 47 |
| 13 | Frid. | | 4 11 | 7 48 |
| 14 | Satur. | | 4 11 | 7 49 |
| 15 | SUN. | **First Sunday after Trinity.** | 4 11 | 7 49 |
| 16 | Mon. | Hot and windy weather, with scattered storms of wind and hail—Muggy heat—Rain and wind storms—A very ordinary month of weather—General outlook favorable. | 4 11 | 7 50 |
| 17 | Tues. | | 4 11 | 7 50 |
| 18 | Wed. | | 4 11 | 7 51 |
| 19 | Thur. | | 4 11 | 7 51 |
| 20 | Frid. | | 4 11 | 7 51 |
| 21 | Satur. | | 4 11 | 7 51 |
| 22 | SUN. | **Second Sunday after Trinity.** | 4 12 | 7 52 |
| 23 | Mon. | Strong winds—Evenings and nights cooler. | 4 12 | 7 52 |
| 24 | Tues. | **ST. JOHN BAPTIST—Midsummer Day.** | 4 12 | 7 52 |
| 25 | Wed. | Local frosts probable, and Western wind storms. | 4 12 | 7 52 |
| 26 | Thur. | | 4 13 | 7 52 |
| 27 | Frid. | Heat in most quarters—Wind and hail storms in Western sections. | 4 14 | 7 52 |
| 28 | Satur. | | 4 14 | 7 52 |
| 29 | SUN. | **Third Sunday after Trinity**—St. Peter [and St. Paul. | 4 15 | 7 51 |
| 30 | Mon. | Heavy rains at southern points. | | |

Note.—Predictions beyond June are not to be relied upon, being merely experimental. There is, however, a probability of corrections in first six months of year. There is likely to be generally wet weather throughout New England and in Middle Atlantic States during Summer.—H.G.V.

☞ IF you want Full Reports of Wool and other Markets the World over, subscribe for THE DAILY GAZETTE, Montreal.

ton.

Days.

WINNIPEG.

| H. | M. | |
|---|---|---|
| 1 | 20 | eve. |
| 8 | 05 | mor. |
| 11 | 04 | eve. |
| 11 | 45 | eve. |

| MONTREAL. | | | |
|---|---|---|---|
| Sun rises. | | Sun sets: | |
| H. | M. | H, | M. |
| 4 | 16 | 7 | 40 |
| 4 | 15 | 7 | 41 |
| 4 | 15 | 7 | 42 |
| 4 | 14 | 7 | 43 |
| 4 | 14 | 7 | 44 |
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| 4 | 15 | 7 | 51 |

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Ask for Clark's M. E. Q. Spool Cotton.

# 7th Mo. JULY. 31 Days.

| Moon's Phases. | Day. | Halifax. | Montreal. | Toronto. | Winnipeg. |
|---|---|---|---|---|---|
| | | H. M. | H. M. | H. M. | H. M. |
| ○ Full Moon..... | 8 | 5 56 mor. | 5 16 mor. | 4 53 mor. | 3 41 mor. |
| ☾ Last Quarter... | 15 | 5 24 eve. | 4 44 eve. | 4 21 eve. | 3 09 eve. |
| ● New Moon ..... | 22 | 8 40 mor. | 8 00 mor. | 7 37 mor. | 6 25 mor. |
| ☽ First Quarter... | 29 | 5 47 eve. | 5 07 eve. | 4 44 eve. | 3 32 eve. |

*Sun Rises and Sets*—These times apply approximately to the whole Dominion.

## WEATHER FORECAST.

| Day of Month. | Day of Week. | | Montreal. Sun rises. H. M. | Montreal. Sun sets. H. M. |
|---|---|---|---|---|
| 1 | Tues. | **DOMINION DAY.** Fine and hot—Local storms. | 4 15 | 7 52 |
| 2 | Wed. | | 4 16 | 7 51 |
| 3 | Thur. | Sultry weather, with scattered storms of wind, hail and rain—Periods of heat. | 4 16 | 7 51 |
| 4 | Frid. | **INDEPENDENCE DAY.** | 4 17 | 7 51 |
| 5 | Satur. | | 4 18 | 7 50 |
| 6 | **SUN.** | **Fourth Sunday after Trinity.** | 4 19 | 7 50 |
| 7 | Mon. | | 4 19 | 7 49 |
| 8 | Tues. | | 4 20 | 7 49 |
| 9 | Wed. | Heat and storms—Hot weather continues through | 4 21 | 7 49 |
| 10 | Thur. | proportion of week—Close of week cooler, with | 4 22 | 7 48 |
| 11 | Frid. | showers; possibly with local frosts. | 4 23 | 7 48 |
| 12 | Satur. | | 4 23 | 7 47 |
| 13 | **SUN.** | **Fifth Sunday after Trinity.** | 4 24 | 7 47 |
| 14 | Mon. | | 4 25 | 7 46 |
| 15 | Tues. | **ST. SWITHIN.** | 4 26 | 7 45 |
| 16 | Wed. | Generally fair weather—Warm—Hot week, with | 4 27 | 7 44 |
| 17 | Thur. | wind, thunder and rain storms in many quarters— | 4 28 | 7 44 |
| 18 | Frid. | Generally favorable weather—Rather dry in portions of Canada. | 4 29 | 7 43 |
| 19 | Satur. | | 4 30 | 7 42 |
| 20 | **SUN.** | **Sixth Sunday after Trinity.** | 4 31 | 7 41 |
| 21 | Mon. | | 4 32 | 7 40 |
| 22 | Tues. | Thunder, wind and hail storms prevalent—Windy | 4 33 | 7 39 |
| 23 | Wed. | and somewhat unsettled weather at fore portion of | 4 34 | 7 38 |
| 24 | Thur. | week, followed by hot and sultry weather, with | 4 35 | 7 37 |
| 25 | Frid. | local storms—Cooler weather, with rains at close of week. | 4 36 | 7 36 |
| 26 | Satur. | **ST. JAMES.** | 4 37 | 7 35 |
| 27 | **SUN.** | **Seventh Sunday after Trinity**—St. Jos. | 4 38 | 7 34 |
| 28 | Mon. | Cloudy and showery—An unsettled week—Cool | 4 39 | 7 33 |
| 29 | Tues. | and showery in most sections—Intervals of sultriness and heat—Stormy in Western sections. | 4 40 | 7 32 |
| 30 | Wed. | | 4 41 | 7 31 |
| 31 | Thur. | Note.—Altogether a warm and favorable month, with probably fewer storms than usual for July. | 4 42 | 7 30 |

Steamboat and Railway Managers
SHOULD SECURE THE SUCCESS OF THEIR
SUMMER EXCURSIONS
— BY —
THOROUGH ADVERTISING.

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Ask for Clark's M. E. Q. Spool Cotton.

# 8th Mo. AUGUST. 31 Days.

| Moon's Phases. | Day. | Halifax. | Montreal. | Toronto. | Winnipeg. |
|---|---|---|---|---|---|
| | | H. M. | H. M. | H. M. | H. M. |
| ○ Full Moon..... | 6 | 6 52 eve. | 6 12 eve. | 5 49 eve. | 4 37 eve. |
| ☾ Last Quarter... | 13 | 10 54 eve. | 10 14 eve. | 9 51 eve. | 8 39 eve. |
| ● New Moon..... | 20 | 5 40 eve. | 5 00 eve. | 4 37 eve. | 3 25 eve. |
| ☽ First Quarter... | 28 | 11 27 mor. | 10 47 mor. | 10 24 mor. | 9 12 mor. |

*Sun Rises and Sets*—These times apply approximately to the whole Dominion.

## WEATHER FORECAST.

| Day of Month. | Day of Week. | | Montreal. Sun rises. H. M. | Montreal. Sun sets. H. M. |
|---|---|---|---|---|
| 1 | Frid. | **LAMMAS DAY.** Probably heat and sultriness | 4 43 | 7 28 |
| 2 | Satur. | again, with storms. | 4 45 | 7 26 |
| 3 | **SUN.** | **Eighth Sunday after Trinity.** | 4 46 | 7 25 |
| 4 | Mon. | Storms in Western sections—Storms and heat | 4 47 | 7 24 |
| 5 | Tues. | throughout Canada and United States—Heavy rains | 4 48 | 7 23 |
| 6 | Wed. | in majority of sections 7th, 8th and 9th—Storms in | 4 50 | 7 21 |
| 7 | Thur. | Massachusetts and Maine (U.S.) **NAME OF JESUS.** | 4 51 | 7 19 |
| 8 | Frid. | | 4 52 | 7 18 |
| 9 | Satur. | Cooler towards end of week—Frosts West. | 4 53 | 7 16 |
| 10 | **SUN.** | **Ninth Sunday after Trinity.** | 4 54 | 7 14 |
| 11 | Mon. | Reported storms and rain-fall everywhere— | 4 56 | 7 13 |
| 12 | Tues. | Cooler weather general fore-part of week—Fair | 4 57 | 7 11 |
| 13 | Wed. | and pleasant weather most of week—Week ending | 4 58 | 7 9 |
| 14 | Thur. | with heat and storms again, particularly West- | 4 59 | 7 8 |
| 15 | Frid. | ward. **ASSUMPTION B. V. M.** | 5 0 | 7 7 |
| 16 | Satur. | | 5 2 | 7 6 |
| 17 | **SUN.** | **Tenth Sunday after Trinity.** | 5 3 | 7 4 |
| 18 | Mon. | | 5 4 | 7 2 |
| 19 | Tues. | | 5 5 | 6 59 |
| 20 | Wed. | Sultry and scattered storms—Cooler again, and | 5 6 | 6 58 |
| 21 | Thur. | very favorable weather—Nights quite chilly about | 5 8 | 6 56 |
| 22 | Frid. | 20th and 21st—Fair, but windy weather—Gales | 5 9 | 6 54 |
| 23 | Satur. | probable in England. | 5 10 | 6 52 |
| 24 | **SUN.** | **Eleventh Sunday after Trinity.** | 5 11 | 6 51 |
| 25 | Mon. | | 5 12 | 6 49 |
| 26 | Tues. | | 5 14 | 6 48 |
| 27 | Wed. | A week in all probability of storms on North | 5 15 | 6 46 |
| 28 | Thur. | Atlantic, Gulf St. Lawrence, and Lower Provinces, | 5 16 | 6 44 |
| 29 | Frid. | also in England and Scotland—Very wet weather | 5 17 | 6 42 |
| 30 | Satur. | in Southern United States—A good deal of rain in | 5 18 | 6 41 |
| 31 | **SUN.** | majority of sections—Cool to cold weather. **Twelfth Sunday after Trinity.** | 5 20 | 6 40 |

Now Prepare for the Fall Business.

IF YOU DO NOT TAKE A GOOD MONTREAL DAILY PAPER

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THE GAZETTE.

—{ *It will save you many a dollar by keeping you posted on markets.* }—

ton.

Days.

WINNIPEG.

| H. | M. | |
|---|---|---|
| 4 | 37 | eve. |
| 8 | 39 | eve. |
| 3 | 25 | eve. |
| 9 | 12 | mor. |

| | MONTREAL. | |
|---|---|---|
| | Sun rises. H. M. | Sun sets. H. M. |
| ss | 4 43 | 7 28 |
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| at | 4 47 | 7 24 |
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# 9th Mo. SEPTEMBER. 30 Days.

| Moon's Phases. | Day. | Halifax. | Montreal. | Toronto. | Winnipeg. |
|---|---|---|---|---|---|
| | | H. M. | H. M. | H. M. | H. M. |
| ○ Full Moon..... | 5 | 6 01 mor. | 6 04 mor. | 5 38 mor. | 4 26 mor. |
| ☾ Last Quarter... | 12 | 4 02 mor. | 3 22 mor. | 2 59 mor. | 1 47 mor. |
| ● New Moon .... | 19 | 5 23 mor. | 4 43 mor. | 4 20 mor. | 3 08 mor. |
| ☽ First Quarter... | 27 | 6 09 mor. | 5 29 mor. | 5 06 mor. | 3 51 mor. |

*Sun Rises and Sets*—These times apply approximately to the whole Dominion.

## WEATHER FORECAST.

| Day of Month. | Day of Week. | | Montreal. Sun rises. H. M. | Montreal. Sun sets. H. M. |
|---|---|---|---|---|
| 1 | Mon. | **ST. GILES.** | 5 21 | 6 39 |
| 2 | Tues. | | 5 22 | 6 37 |
| 3 | Wed. | Cool entry of month—Probably sharp frosts | 5 23 | 6 35 |
| 4 | Thur. | during first week in Province of Quebec, Canada, | 5 24 | 6 33 |
| 5 | Frid. | and in sections of New York and New England | 5 26 | 6 31 |
| 6 | Satur. | Stormy in Atlantic—Brief periods of heat. | 5 27 | 6 29 |
| 7 | **SUN.** | **Thirteenth Sunday after Trinity.** | 5 28 | 6 27 |
| 8 | Mon. | | 5 29 | 6 25 |
| 9 | Tues. | | 5 30 | 6 23 |
| 10 | Wed. | In all probability, rains in Eastern Canada and | 5 32 | 6 22 |
| 11 | Thur. | Northern and Middle States, followed by fine and | 5 33 | 6 20 |
| 12 | Frid. | much cooler weather, with warmer period towards | 5 34 | 6 18 |
| 13 | Satur. | and at close of week—Scattered frosts. | 5 35 | 6 16 |
| 14 | **SUN.** | **Fourteenth Sunday after Trinity.** | 5 36 | 6 14 |
| 15 | Mon. | | 5 38 | 6 12 |
| 16 | Tues. | | 5 39 | 6 10 |
| 17 | Wed. | Probably heavy rain-falls in West and in lower | 5 40 | 6 8 |
| 18 | Thur. | lake region—Fair, pleasant and seasonable weather | 5 41 | 6 6 |
| 19 | Frid. | through greater part of week—More unsettled to- | 5 42 | 6 4 |
| 20 | Satur. | wards close of week, with heavy rains in sections— | 5 44 | 6 2 |
| 21 | **SUN.** | High winds—Stormy in Gulf. | 5 45 | 6 0 |
| 22 | Mon. | **Fifteenth Sunday after Trinity.** | 5 46 | 5 58 |
| 23 | Tues. | | 5 47 | 5 56 |
| 24 | Wed. | Cool weather—Fall-like temperature — Windy, | 5 48 | 5 54 |
| 25 | Thur. | with cool evenings and nights in Northern and | 5 50 | 5 53 |
| 26 | Frid. | Western sections—A good deal of rain in North- | 5 51 | 5 51 |
| 27 | Satur. | West and West—Stormy in Gulf St. Lawrence and | 5 52 | 5 49 |
| 28 | **SUN.** | North Atlantic. | 5 53 | 5 47 |
| 29 | Mon. | **Sixteenth Sunday after Trinity.** | 5 55 | 5 45 |
| 30 | Tues. | **MICHAELMAS.** | 5 56 | 5 43 |
| | | Wet and stormy in majority of sections—Bad weather in Lower Maritime Provinces and Newfoundland. | | |

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# 10th Mo. OCTOBER. 31 Days.

| Moon's Phases. | Day. | Halifax. | Montreal. | Toronto. | Winnipeg. |
|---|---|---|---|---|---|
| | | H. M. | H. M. | H. M. | H. M. |
| ○ Full Moon..... | 4 | 5 46 eve. | 5 06 eve. | 4 43 eve. | 3 31 eve. |
| ☾ Last Quarter... | 11 | 10 15 mor. | 9 35 mor. | 9 12 mor. | 8 00 mor. |
| ● New Moon..... | 18 | 8 17 eve. | 7 37 eve. | 7 14 eve. | 6 52 eve. |
| ☽ First Quarter... | 26—27 | 0 40 mor. | 0 00 mor. | 11 37 eve. | 10 25 eve. |

| Day of Month. | Day of Week. | *Sun Rises and Sets*—These times apply approximately to the whole Dominion. WEATHER FORECAST. | Montreal. Sun rises. H. M. | Montreal. Sun sets. H. M. |
|---|---|---|---|---|
| 1 | Wed. | Local wind and rain storms—Some sharp frosts in Northern sections. | 5 57 | 5 41 |
| 2 | Thur. | | 5 59 | 5 39 |
| 3 | Frid. | | 6 0 | 5 37 |
| 4 | Satur. | | 6 1 | 5 35 |
| 5 | **Sun.** | **Seventeenth Sunday after Trinity.** | 6 3 | 5 34 |
| 6 | Mon. | Cool and frosty weather—Easterly winds and cloudy. | 6 4 | 5 32 |
| 7 | Tues. | | 6 5 | 5 30 |
| 8 | Wed. | | 6 6 | 5 28 |
| 9 | Thur. | Generally fine and favorable—Change to unsettled and cool weather. | 6 8 | 5 26 |
| 10 | Frid. | | 6 9 | 5 25 |
| 11 | Satur. | | 6 11 | 5 23 |
| 12 | **Sun.** | **Eighteenth Sunday after Trinity.** | 6 12 | 5 21 |
| 13 | Mon. | Wet in most sections—Dark, wet, and windy weather—Heavy rains in Western States and Province of Ontario (Canada)—Cloudy, cold weather. | 6 13 | 5 19 |
| 14 | Tues. | | 6 15 | 5 17 |
| 15 | Wed. | | 6 16 | 5 16 |
| 16 | Thur. | | 6 18 | 5 14 |
| 17 | Frid. | | 6 19 | 5 12 |
| 18 | Satur. | ST. LUKE. | 6 20 | 5 10 |
| 19 | **Sun.** | **Nineteenth Sunday after Trinity.** | 6 21 | 5 8 |
| 20 | Mon. | Fair to cloudy and cool, with showers—Showery and cool, with local frosts—Generally seasonable weather—Probably a storm period at close of week, with cold weather and snow-flurries. | 6 23 | 5 7 |
| 21 | Tues. | | 6 24 | 5 5 |
| 22 | Wed. | | 6 25 | 5 3 |
| 23 | Thur. | | 6 26 | 5 1 |
| 24 | Frid. | | 6 28 | 5 0 |
| 25 | Satur. | | 6 29 | 4 58 |
| 26 | **Sun.** | **Twentieth Sunday after Trinity.** | 6 31 | 4 57 |
| 27 | Mon. | ST. SIMON AND ST. JUDE. Changeable weather, with rains and reported snow-flurries—Stormy weather in Lower St. Lawrence and Gulf. | 6 32 | 4 55 |
| 28 | Tues. | | 6 33 | 4 53 |
| 29 | Wed. | | 6 35 | 4 52 |
| 30 | Thur. | | 6 36 | 4 50 |
| 31 | Frid. | | 6 38 | 4 49 |

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# 11th Mo. NOVEMBER. 30 Days.

| Moon's Phases. | Day. | Halifax. | Montreal. | Toronto. | Winnipeg. |
|---|---|---|---|---|---|
| | | H. M. | H. M. | H. M. | H. M. |
| ○ Full Moon..... | 3 | 4 22 mor. | 3 42 morn. | 3 19 mor. | 2 07 mor. |
| ☾ Last Quarter... | 9 | 6 58 eve. | 6 18 eve. | 5 55 eve. | 4 43 eve. |
| ● New Moon ..... | 17-18 | 1 57 eve. | 1 17 eve. | 0 54 eve. | 11 42 mor. |
| ☽ First Quarter... | 25 | 6 01 eve. | 5 21 eve. | 4 58 eve. | 3 46 eve. |

| Day of Month. | Day of Week. | *Sun Rises and Sets*—These times apply approximately to the whole Dominion. | Montreal. Sun rises. H. M. | Montreal. Sun sets. H. M. |
|---|---|---|---|---|
| 1 | Satur. | ALL SAINTS DAY. | 6 39 | 4 47 |
| 2 | **SUN.** | **Twenty-First Sunday after Trinity.** | 6 41 | 4 46 |
| 3 | Mon. | General Grant elected President of U.S., 1868. | 6 42 | 4 44 |
| 4 | Tues. | American Declaration of Rights, 1774. | 6 44 | 4 43 |
| 5 | Wed. | Gunpowder Plot, 1605. | 6 45 | 4 41 |
| 6 | Thur. | Abraham Lincoln elected President, 1864. | 6 47 | 4 40 |
| 7 | Frid. | Stewart's body stolen, 1878. | 6 48 | 4 39 |
| 8 | Satur. | John Milton died, 1674. | 6 50 | 4 38 |
| 9 | **SUN.** | **Twenty-Second Sunday after Trinity.** | 6 51 | 4 37 |
| 10 | Mon. | (9th) Prince of Wales born, 1841. | 6 53 | 4 35 |
| 11 | Tues. | MARTINMAS. | 6 54 | 4 34 |
| 12 | Wed. | Battle of Sheriffmuir, 1715. | 6 55 | 4 33 |
| 13 | Thur. | J. P. Curran, died, 1817. | 6 57 | 4 32 |
| 14 | Frid. | Look for Meteors. | 6 58 | 4 31 |
| 15 | Satur. | Kepler died, 1630. | 7 0 | 4 30 |
| 16 | **SUN.** | **Twenty-Third Sunday after Trinity.** | 7 1 | 4 29 |
| 17 | Mon. | Ogdensburgh cannonaded, 1812. | 7 2 | 4 28 |
| 18 | Tues. | Cape of Good Hope discovered, 1497. | 7 4 | 4 27 |
| 19 | Wed. | President Garfield born, 1831. | 7 5 | 4 26 |
| 20 | Thur. | Earl of Elgin died, 1840. | 7 7 | 4 25 |
| 21 | Frid. | Princess Royal born, 1840. | 7 8 | 4 24 |
| 22 | Satur. | Lord Clive died, 1774. | 7 9 | 4 23 |
| 23 | **SUN.** | **Twenty-Fourth Sunday after Trinity.** | 7 10 | 4 22 |
| 24 | Mon. | John Knox died, 1572. | 7 12 | 4 21 |
| 25 | Tues. | ST. CATHERINE. Tasmania discov., 1642. | 7 13 | 4 21 |
| 26 | Wed. | Cowper born, 1731. | 7 14 | 4 20 |
| 27 | Thur. | Hoosac Tunnel opened, 1873. | 7 15 | 4 20 |
| 28 | Frid. | Canada Invaded, 1812. | 7 16 | 4 19 |
| 29 | Satur. | Horace Greeley died, 1872. | 7 18 | 4 19 |
| 30 | **SUN.** | **ST. ANDREW—First Sunday in Adv't** | 7 19 | 4 18 |

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# 12th Mo. DECEMBER. 31 Days.

| Moon's Phases. | Day. | Halifax. | Montreal. | Toronto. | Winnipeg. |
|---|---|---|---|---|---|
| | | H. M. | H. M. | H. M. | H. M. |
| ○ Full Moon..... | 2 | 2 45 eve. | 2 05 eve. | 1 42 eve. | 0 30 eve. |
| ☾ Last Quarter... | 9 | 7 16 mor. | 6 36 morn. | 6 13 mor. | 5 01 mor. |
| ● New Moon ..... | 17 | 9 10 mor. | 8 30 morn. | 8 07 mor. | 6 55 mor. |
| ☽ First Quarter... | 25 | 9 07 mor. | 8 27 morn. | 8 04 mor. | 6 52 mor. |

| Day of Month. | Day of Week. | *Sun Rises and Sets*—These times apply approximately to the whole Dominion. | Montreal. Sun rises. H. M. | Montreal. Sun sets. H. M. |
|---|---|---|---|---|
| 1 | Mon. | Princess of Wales born, 1844. | 7 20 | 4 18 |
| 2 | Tues. | Battle of Austerlitz, 1805. | 7 21 | 4 18 |
| 3 | Wed. | Madrid captured, 1808. | 7 22 | 4 17 |
| 4 | Thur. | Carlyle born, 1795. | 7 23 | 4 17 |
| 5 | Frid. | Authorized vers'n of Eng. Bible issued, 1611. | 7 24 | 4 16 |
| 6 | Satur. | ST. NICHOLAS. Rebellion in Canada, 1837. | 7 25 | 4 16 |
| 8 | **SUN.** | **Second Sunday in Advent.** | 7 26 | 4 16 |
| 8 | Mon. | Church at Santiago bt., 2,000 lives lost, 1863. | 7 27 | 4 16 |
| 9 | Tues. | Milton born, 1608. | 7 28 | 4 16 |
| 10 | Wed. | Plevna captured, 1877. | 7 29 | 4 16 |
| 11 | Thur. | Judge N. F. Uniacke died, 1846. | 7 30 | 4 16 |
| 12 | Frid. | Edwin Forrest died, 1872. | 7 31 | 4 16 |
| 13 | Satur. | Lord Ellenborough died, 1818. | 7 32 | 4 16 |
| 14 | **SUN.** | **Third Sunday in Advent.** | 7 33 | 4 17 |
| 15 | Mon. | (14th) Prince Consort died, 1861. Washington | 7 34 | 4 17 |
| 16 | Tues. | Boston Tea party, 1773. [died, 1799. | 7 35 | 4 17 |
| 17 | Wed. | Boliva died, 1830. | 7 36 | 4 17 |
| 18 | Thur. | Abolition of slavery in United States, 1867. | 7 36 | 4 18 |
| 19 | Frid. | Battle of Niagara, 1813. | 7 37 | 4 18 |
| 20 | Satur. | South Carolina secedes, 1860. | 7 37 | 4 19 |
| 21 | **SUN.** | **ST. THOMAS—Fourth Sunday in Adv't** | 7 38 | 4 19 |
| 22 | Mon. | "George Eliot" died, 1881. | 7 38 | 4 20 |
| 23 | Tues. | Isaac Newton born, 1642. | 7 39 | 4 20 |
| 24 | Wed. | Treaty of Ghent, 1814. | 7 39 | 4 21 |
| 25 | Thur. | CHRISTMAS. Champlain died, 1635. | 7 40 | 4 21 |
| 26 | Frid. | Upper Canada made a Province, 1791. | 7 40 | 4 22 |
| 27 | Satur. | Sir Francis Drake died, 1595. | 7 40 | 4 23 |
| 28 | **SUN.** | **Innocents**—First Sunday after Christmas | 7 40 | 4 23 |
| 29 | Mon. | Gladstone born, 1809. | 7 41 | 4 24 |
| 30 | Tues. | Steamer "Caroline" burnt, 1837. | 7 41 | 4 24 |
| 31 | Wed. | Lord Beaconsfield born, 1805. | 7 41 | 4 25 |

*** Year closes with mild weather. but a good quantity of snow throughout Canada and Northern United States. Cold weather at entry of New Year, 1885. Plenty of snow and sleighing.

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## THE WINTER OF 1883-4.

WHAT THE PLANETARY POSITIONS FORESHADOW. EVERY PROSPECT OF A MILD WINTER. PROBABLE STORM DATES.

BY WALTER H. SMITH, MONTREAL.

AFTER a wet and windy autumn season, December, 1883, bids fair to show a continuance of unsettled weather. This is adduced from the several strong aspects occurring during the month between the two boisterous blusterers, Uranus and Mercury. The last month of the year will probably enter with some downfall, after this a favorable interval of fine weather, changing about the sixth day to wind and storm. Towards the eleventh another unsettled term may be looked for, continuing for a day or two, or up to the thirteenth, cloudy with considerable wind, and if accompanied by snow there will be drifts in many places. At the winter solstice (20, 21, and 22), there is every indication of a very unsettled and stormy time. Uranus reaches the square of the sun on the first-named date. Winds high and boisterous will, no doubt, prevail, accompanied by snow in some sections. This blustery term will be followed by clearing to fine weather. The 27th and 28th promise once more a variable time with a bit of wind, the year ending with a spell of colder weather. The temperature of December, however, as of the rest of the winter season, will range above the average.

### JANUARY, 1884.

The principal astronomical position during January, 1884, will be the opposition of Jupiter to the sun; this, according to Kepler favors serenity, or a quiet state of the atmosphere. Maginus declares the strong aspect of Jupiter undoubtedly rebates or remits the cold of the season. Against this, however, we have the declaration of Goad, that Jupiter is "many times in a cold fit." The general testimony is for remission of cold, and the days immediately after the aspect, 20th, 21st and 22nd, are likely to show more warmth than the days preceding. The month of January, 1884, will probably open cold, and change by the 2nd or 3rd to stormy, the stationary aspect of Uranus at this time bringing a storm, or, at any rate, bleak, unsettled weather. January will not differ from the previous winter month, in this, that the mean temperature will most likely be higher

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than usual. About the 9th, cloudy weather, with wind, and possibly snow. 11th. Considerable downfall with a thick atmospheric condition may be expected, changing by the 13th to fine weather and a bright cold term, which will in all probability be quite severe, and show some pretty low readings of the thermometer. 14th. Changeable, unsettled. 18th and 19th again unsettled, with considerable bluster, snowdrifts, and wind. This will, in all probability, be followed by a quieter time, with a change of temperature and remission of cold by the 20th and 21st, downfall beginning on the 21st, the mild spell continuing with puffs of wind. Fog possible. 27th. Windy, with snow. 29th. Cloudy to fine. 31st. Wind and snow.

Most of the aspects it will be seen favor a mild, and although somewhat blustrous, yet a comparatively open January, with only a few sharp spells.

Weather at past oppositions of Jupiter with the sun were as follows at Montreal:—

1880—October ....7.—Cool, strong wind. 8th. Fine, warm, continuing thus for four days.

1881—November 13.—Cold, clearing. 14th. Fair and mild weather, which continued without interruption for a week.

1882—December 18.—Fine, windy. 19th. Calm, fine, foggy. 20th. Dull, much rime, misty. Dull and mild to end of year.

## FEBRUARY.

The principal astronomical aspect during this month is the opposition of Mars. This planet, says the meteorologist Goad, sits uneasy in icy chains, and will take opportunity to strike fire out of the cold steel of winter. Hard and dry though the nature of Mars be, yet infinite intelligence moves the spheres in harmony, and the harsher notes are oftimes interrupted by pauses and respites. At the time of opposition the sun is in Aquarius and Mars in Leo; this looks like unusual warmth for the season, for, says our last-named authority, Mars will bring heat be it dry or wet. Thus it would not surprise the writer if a thunderstorm should occur in February, or, at any rate, some

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dashing rain or sleet and violent winds (Ptolemy.) Remiss of cold, says Raphael; fog and hazy atmosphere, say the Arabian writers. Goad sums it all up in a few words by the following:—Mars at opposition gives "dryth with an aptitude to storm." Take the astro-meteorological possibilities of the earlier part of February, 1884, and they are certainly unfavorable for both the coal-dealers and the ice harvesters, and the latter had better "make their hay" beforehand if possible. To localise the probabilities, 1st to 4th, remiss of cold; 4th and 5th, colder, probably fog; 6th, cloudy, snow; 7th and 8th, cloudy, probably snow; 9th, fair; 10th, variable; 13th to 15th, downfall, windy; 16th, warmer interval; 22nd, snow; 25th, wind and probably snow; 26th, downfall; 29th, wind and snow.

The following broad rules used by astro-meteorologists may be found interesting when attempting to prognosticate future weather:—

*Sun with Neptune*—Cold weather, fair to cloudy.

*Sun with Uranus*—Bleak air, rapid changes, high winds, hail. In winter, hard frost, stormy, with snow.

*Sun with Saturn*—Cold, bleak winds, downfall. In summer, rain, thunderstorms. In winter, snow, drifting, bleak and stormy weather.

*Sun with Jupiter*—Bright, windy, warm. In winter, mild weather.

*Sun with Mars*—Dry and windy; great heat in summer with thunder. In winter, dry and mild for the season.

*Sun with Venus*—In summer, showery, moist. In winter, fog, rime, rain or snow.

*Sun with Mercury*—Variable, unsettled, showery. In winter, windy, with snow.

*Uranus with Saturn*—Squalls and high winds.

*Uranus with Mars*—Changeable, high winds; thunder in summer.

*Saturn with Mars*—Thunder and considerable rain.

*Jupiter with Venus*—Very fine weather.

*Mars with Venus*—Rain or snow.

*Mars with Mercury*—Rain, wind, thunder, in summer. Winter, wind and snow.

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## FARMERS' NOTES.

FEBRUARY is the trying month for cattle, and most of the animals that pine and die in the spring months have really been sacrificed long before. Feed well at this season, not overmuch, but judiciously. Calves and young stock will not thrive on dry hay alone; they require the hay to be cut and mixed with meal, crushed grain, or mill stuff of some sort. All animals at this season should have roots, especially young stock. If fed entirely on dry feed their first stomach will be so distended that they will lose all shape, and never afterwards be presentable in the exhibition ring. More serious results than this follow, for when spring time comes the animals will be sure to scour, get thin, aud possibly die. Ignorant farmers wonder why so many animals die. Intelligent farmers are as apt to wonder why so many live. Let us enquire briefly into the *rationale* of feeding. All the food of animals consists of several bodies having distinct properties, and it is to the relative proportions of these that different food materials owe their differences in feeding value. Hay, besides woody matter which is nearly useless, contains starch, sugar, gum, oil; these are *non-nitrogenous;* and maintain the warmth of the body and produce fat. It also contains albuminous bodies, which are *nitrogenous;* these repair waste and afford material for the growth of the flesh. Hay, grain, straw, roots, vegetables, all contain these fat-formers and flesh-formers; if we wish to produce fat on an animal we feed Indian corn or some other food rich in fat-formers; if the object is to produce flesh, on the other hand, we feed oats or wheat rich in flesh-formers. For milk, the best of all food is green grass, or in winter time, hay, well made from young grass, supplemented by succulent roots such as mangels.

MARCH.—This is the month of preparation for actual culture of the soil, which is still hard and covered with snow. As soon as manure can be carted out into the frozen fields, let it be done. In bad weather see to the repair of implements. Calculate what seeds and artificial manures will be required, and send your orders to reliable houses. If you wait until the time for planting or sowing comes, you may be disappointed. In order to

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raise early plants for vegetable and garden beds, a hot bed should be started this month. If hay should become scarce, give your cattle some middlings or bran with their cut fodder.

APRIL.—This is the month when the cultivation of the soil actually begins; the operations of ploughing, harrowing, rolling, planting, cultivating, have now to be attended to as the season advances and as the weather may permit. The theory of cultivation of the soil may well claim more than a passing reflection from the intelligent farmer. All soils consist of a mixture of clay and sand, the clay holds water, the sand allows it to filter through. When the clay is in excess we have a clayey soil, when sand is in excess we have a sandy soil, and when both are equal we have a loam, which is best of all for general purposes. There are other substances, which form but a very small proportion of the soil, but are essential for its fertility. The principle ones are (1) phosphoric acid, (2) potash, and (3) ammonia. They are removed in greater or less quality by every crop, and, when they are taken out, the soil, whether clayey, sandy, or loamy, becomes barren. To keep up fertility they must be restored. In stable manure we restore all three to the soil. The first may be restored in the form of bone dust or superphosphate of lime; these are special manures for turnips and grains, which take up a large quantity of phosphoric acid. The second ingredient of the soil, potash, often exists in an insoluble form, and is set free by processes of cultivation, liming, and exposure to the action of the atmosphere; it may be added in the form of plant ashes or kainit, a potash-soda mineral imported from Germany. The third substance, ammonia, is abstracted from the rain water by the soil, and may be added in form of tannery waste, guano, gas water, blood, wool, hair, and feathers. By keeping these facts in view, the farmer will be better able to judge what kinds of manure to employ on his fields for the various crops. Potatoes require an unusually large amount of potash for the tuber and lime for the tops. All green crops require ammonia, and all grains phosphoric acid, which exists as a phosphate of magnesia in barley and wheat.

MAY.—With the general improvement in our agriculture it is hoped that a taste for rural ornamentation will grow. Every

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farm house should have its flower garden well stocked with perennials that last over winter and come up in spring. The general seed-sowing is usually done this month, in fact, this is one of the busiest seasons of the whole year with the farmers of Canada. Those wishing to experiment will find what are believed to be the most excellent times, given in full, on another page.

JUNE.—All seed crops not yet committed to the soil should be put in without delay. After the first week in June it is not too early to sow any kind of seed suitable to our climate. The drill crops put in during April and May will now require attention, first, in the way of hand-hoeing, where this has to be done, and secondly, by the use of the horse-hoe or cultivator. Put out cabbages and cauliflowers, but let the soil have been previously well worked and well enriched. The *Haltica*, or turnip flea, is the great enemy of the cabbage; all efforts at his destruction have failed, and the only effective way of waging war with him is to treat him generously by sowing, between the cabbage rows, common white mustard, the young seedling plants of which are far more palatable to the flea than cabbage. Tomatoes also may be set out later in the month. Ground cherries do best when they come up from seed in the soil, which they will do for years. Finish planting everything now in field and garden, such as Indian corn, bush and pole beans, cucumbers, squashes, turnips. Tender plants may now be put out in the flower beds. Do not touch strawberry plants by weeding or hoeing, and do not now hoe around raspberry canes, otherwise the fruit will not form. Celery may be planted out at the end of the month. If there are still any "farmers" who are not members of an Agricultural Society, or if no such society exists in their district, then let them either join or organise a new one.

JULY.—Notwithstanding what has been said of June, yet turnip sowing may sometimes be done in July. Soft turnips for immediate feeding need not necessarily be sown till July. The ground should have undergone a thorough pulverization. Light sandy soil is the best for turnips. They start best after the ground is warm, but the bulbs swell most rapidly during

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the cool dewy nights of autumn. The soil cannot be worked too deep or made too fine for turnips. Town manures are valued for this crop; and crushed bones have been applied with the best effects, either when covered in the drills in the manner of ordinary dung, or when sown by machine along with the seeds, so as to be in immediate contact with the latter. Guano has been largely used of late years. Superphosphate is very efficacious. One point of turnip culture that is often neglected is that the seed should be put in the moment the soil is prepared. If the earth of the prepared drill gets dried up before the seed is sown, how can it be expected to germinate? Hoeing and weeding of all drill crops should be carried on actively this month, and completed prior to hay-making. Haying is an important matter, and the secret of good hay-making is fine weather. If the day is clear and the temperature high, do not be tempted to mow too much; wait till the rain is clearing away and the air is cool.

AUGUST.—Farmers in Canada are naturally working into a mixed husbandry, so that their cattle may not have to feed all through the winter and pasture in the summer, but feed in winter on straw and roots and coarse grain, and in summer partially or wholly on green fodder in-doors. This is the only way to enrich a farm, or to attain to anything like high farming. We, therefore, recommend our readers to note at this season how convenient it is to have a field of tares or green oats or barley or Indian corn or rape, or any other green eatable thing for the cattle to grow or fatten upon when the pastures are all burnt up. After haying there will be work in the garden, and especially in the orchard. Look after the ripening of fruit, destroy caterpillars, if any still remain; pick the early August apples, and send them into market. When the rains come, beds of strawberries may be made up. See that the ground is well drained and enriched with old manure. Mushrooms now appear iu the horse pastures. The calving of cows for the season will now be over. All thoroughbred calves should be registered in the official stock register of the Board of Agriculture.

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SEPTEMBER.—This is exhibition month, and if exhibition committees made their arrangements in time, each Provincial and Dominion exhibition might be duly noted in the calendar of this Almanac. Exhibitions are to be encouraged, as they afford to the farmer the opportunity of seeing what improvements in implements and cultivation are being introduced; what progress is being made in the improvement of stock; what new agricultural plants and vegetables are coming into use, and they also enable him to sell stock and seed grain or whatever he has to sell, and to buy stock or seed, or exchange with friends; but they also enable him to show that he can do something better than any of his neighbors, and they give him the opportunity to give his family a treat, and such a one as to interest them in the agricultural profession.

OCTOBER—The harvesting of root crops is one that requires great attention, and, as the culture of them is extending, we would impress upon all who have not had long experience the *necessity* of attending to the points noted below:—To take up and store roots successfully is a simple art when properly understood, but the frequent destruction of roots in the cellar shows that it is not always understood or carried out. Potatoes should be dug in dry weather, and allowed to dry completely on the surface before being put together in heaps or in the cellar; the best way is to put them on a barn floor and exclude the light, otherwise they will become green and acquire a bitter taste and poisonous qualities. Mangels, turnips, and carrots should be topped and the fine root fibres cut off. Before storing they should, in like manner, be exposed to dry air that the wounds may heel over; if put at once into the cellar, the wounded tissue will begin to ferment, and a large portion of the roots will be rotted by contact. If facts such as these are kept clearly in view, no farmer need lose his roots. Of course the cellar must be kept well-aired, cool, and dry, and frost carefully excluded. When the root crops have been secured, the whole strength of the farm should be thrown into fall ploughing, which may continue, if the season allows, into November. This is an important operation, whether we view it as a means of preparing the soil for the future crop, or as a convenience to enable the farmer

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to have spring time for proper spring work. The addition of manure to a soil is not enough, the pulverisation, mixture, freezing, thawing, and rain-washing of the soil are the processes by which its fertility is secured. Let us illustrate this:—Bone receives the rain water which contains carbonic acid gas; this changes a portion of the bone into carbonate of lime, and the rest into bi-basic phosphate, which gradually dissolves and becomes available to the plant. If the rain water drains away over the hard surface, or if the soil lies soaked in stagnant water, and there is no passage of rain through it, this change cannot take place. When lime is added to the soil it quickly acts on the organic matter, but the lime must be diffused completely through the soil otherwise it becomes inert before it has had an opportunity of doing its work by being brought into actual contact with soil particles. The clay of the soil is a silicate of alumina; with lime, if the particles be brought together in presence of water, a double silicate of lime and alumina is formed. If soda be brought into contact with this the lime gives way and a double silicate of soda and alumina is formed. If potash be added, the soda gives way, and we have now a double silicate of potash and alumina; and lastly, potash will yield to ammonia, and thus ammonia will be collected from the air and rain, and become fixed in the soil so as to be available for plant growth.—*Abridged from Belcher.*

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Earthquake Shocks are not improbable in portions of Canada and the Northern and Middle United States.

Mount Washington, in New Hampshire, 6,293 feet above the sea, is the highest eminence in the North American area swept by ice in the glacial era, hence observers have examined it carefully with reference to the discovery of evidences of ice action; because it has seemed to stand alone in the midst of the glacial sheet, and enabled us to place bench-marks upon it to show the height of the flood. The unanimous consent of all observers previous to the present moment has been in favor of its isolation in the glacial sea, the ice reaching different altitudes according to different authors.—*Hitchcock.*

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## LUNAR INFLUENCE ON VEGETATION.

ASTRONOMY AND AGRICULTURE—PROPER AND IMPROPER TIMES FOR SOWING SEEDS—VALUABLE HINTS TO FARMERS.

BY WALTER H. SMITH, MONTREAL.

FEELING confident that hundreds of persons on this Continent will be found willing to experiment, I put forth the following, simply requesting the readers of this Annual to "prove all things, and hold fast that which is good."

Lnnar influence is admitted by every person, the tides of the ocean being positive proof that such exists. Up to this point indeed, all have "agreed together to agree," beyond this, opinions vary. But it is surely a more difficult matter to move immense bodies of water like the Pacific and Atlantic Oceans, than to set in motion the juices of a herb or plant. Heat is found in the rays of the moon when the light is concentrated. Yet some of the wisest men of this essentially scientific generation deny the theory of lunar influence on vegetation. And yet it is possible that there may be more in the theory than many are prepared to admit, and if my readers will only attempt a few experiments, they will have but small cause for regret. One thing may be taken for granted, those who doubt most are unable to disprove, having never attempted a solution of the question for themselves.

I now intend giving minute instructions for the use of all who have a desire to test by experiment the truth or fallacy of this branch of a fascinating science. The careful observance of the proper times to plant and sow is perhaps worth more than all else in the yearly routine work of an agriculturist, success at seed time usually means a bountiful harvest. Marked beyond question have been my own successes hitherto, so much so indeed, that every returning Spring I am beseiged with enquiries from an ever-increasing circle of friends anxious to experiment. No farmer living but must have noticed the difference often existing between two neighboring fields of similar cereals, and not only so, but even between parallel rows sown in the same ground. Zodiacal influence accounts for this. The seed in question has been sown at different times, and different germinating influences have been brought to bear

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upon it. Quick germination is the first thing needful, the critical time of every known seed being the first few days after fructification. Put in wheat with Virgo rising and a miserable crop is generally the result, no seed, and scarcely any straw: the same with the sign Gemini, except that a slightly better straw will be obtained. Why, a short time ago, I had a letter from an old farmer residing in the "Empire State," in which he declared that there could be no doubt but that planting by sign was "better than phosphates." Let me relate a little of my own experience. In 1882 I planted one portion of a lot of Madeira vine bulbs, selecting the healthiest and strongest for the first sowing. I put them in the ground when the moon was in Capricorn, considered a non-germinating sign. Four weeks later the refuse were sown, that is, all the small, mean-looking bulbs left over from the previous planting. These were put in when the moon was running through the equinoctial sign Libra, believed to be a favorable one for quick germination. And thus it proved, for mark the result:—three weeks later the second lot had far outstripped the first, looking stronger and healthier every way, remaining ahead all through the season. Take another instance:—Vegetable marrow seeds were sown when the earth's satellite was in Libra, on May 27, in the open ground, and fruit was cut from the vines for the table on Aug. 5, ten weeks after sowing. No artificial aid was used. The same vine, seeds of which were planted when the Moon was in Aries, and Virgo rising, with artificial heat under glass, took twelve weeks to come to perfection; the vines being long and scraggy all through the season, as is the nature of the sign Aries. Watching the fruitings of this vine it was found irregular, for instance, after the Moon's third quarter less and less flowers opened each morning until on the day preceding the lunation not a single bud opened into flower. Two days after the new Moon no less than fourteen flowers were counted. It is therefore necessary in every case to chose a favorable time for

### SOWING THE SEED.

Seeds of all kinds should always be sown during the Moon's increase, that is, between the time of new and full moon.

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Destroy weeds, dig, harrow, plough and hoe from the full moon until the new, that is, during the moon's decrease. As the moon increases in light, the most suitable sign for germination has next to be selected. The best Spring signs are undoubtedly Taurus, Cancer, and Libra; the moon must therefore be in one of these, and it is also best that one of these be rising on the eastern horizon. Cancer and Libra are preferable to Taurus. As very little out-of-door work can be done in Canada or the more northerly portions of adjacent States before the month of April, I begin calculations with that month.

SPRING, 1884.

*April*—The 29th and 30th, from 7.30 to 9.00 a.m. are best suited for sowing beets, parsnips, carrots, early lettuce, &c. The 29th and 30th, from 3.00 to 4.30 p.m., are favorable for Spring wheat, barley, oats, &c. The Moon is in Cancer on these dates.

*May.*—The 6th, 7th, and 8th, from 7.10 to 9.00 a.m. These three mornings are very suitable for transplanting and pruning of all fruit bushes, vines, shrubs, &c ; likewise for planting of early potatoes. The Moon is in Libra, with Cancer rising. The 6th and 7th, from 2.30 to 4.00 p.m., are very suitable times to commence sowing beans, peas, Indian corn, cabbage, &c. The Moon will then be rising in the sign Libra. The 27th and 28th from 6.00 to 8.00 a.m., will again see the Moon in Cancer, rising, this time is very favorable for late sowings of beets, carrots, and most other farm crops, except potatoes. Now for cucumbers and the squash family. The 27th, from 2.15 to about 4.00 p.m., I consider the most favorable period during the whole season for squash, cucumbers, melons, tomatoes, and all running vines. Try it and see. The Moon is at the time in Cancer, above the earth, and Libra is rising in the East.

*June.*—The 2nd, 3rd, and 4th are favorable times for putting in the turnip crop, beginning at 5.45 a.m. Cancer continues rising until about 7.15 a.m. This is also a good moment for late potatoes. The afternoons of the same dates are good for turnip sowing, but not for potatoes, from 2.00 to 3.30 p.m.

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FALL, 1884.

*September.*—The 4th, 5th, and 6th days of this month are the best from 7.00 to 8.30 a.m., when the Moon is in Pisces, and Libra rising.

*October.*—The 2nd and 3rd days from 6.00 to 8.00 a.m. The Moon is once more in Pisces.

Of course it will be impossible to get in the whole of a large sowing between the times named, but by all means commence operations at the hours given. Be careful likewise not to begin before the times indicated, else you will have one of the non-germinating signs rising, and the last degrees of Virgo ascending, for instance, cannot be expected to influence seed sown like the beginning of the germinating sign Libra.

The times above given suit the whole of Eastern Canada, from Nova Scotia to Lake Superior, and in most instances will answer for the Canadian North-west. A little practice will convince the 'most credulous that Solomon was right when he declared long ago 'To every thing there is a season, and a time to every purpose under heaven; a time to be born, and a time to die; a time to plant, and a time to pluck up that which is planted."

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SUN SPOTS.—Prof. Langley's lectures on the sun, at the Lowell Institute, Boston, have proved of interest. In one lecture the solar spots were carefully explained. "Vapors exist," said he, "at an extremely high temperature, the cool and heated portions changing continually. Were it not so the sun would cool off and the existence of the human race be a matter of days. Sun spots are cyclones. On Nov. 16th 1882, a new and great spot was seen. The action in it was terrific. On the next day a great magnetic storm prevailed on the earth, with interruption of telegraphic business and grand auroral display. It may be assumed with good reason that the storm of the 17th was due to the solar disturbance seen first on the 18th. Observations for 150 years tend to prove these spots have cycles, and their period is 11 and 1-10 years. Darkenings of the sun recorded in by-gone centuries are clearly traceable to the prevalence of these spots. All the compasses on the earth move in sympathy with the solar spots.

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## SUN SPOTS AND AURORA.

NUMEROUS INSTANCES OF THEIR APPEARING AT THE SAME MOMENT. CYCLONES ON THE SUN FOLLOWED BY CYCLONES ON THE EARTH.

By Walter H. Smith, Montreal.

In that desolate region far away to the north of Hudson's Bay, in lat. 79° N., and Long. 96° 43′ W., is situated the home or birthplace of the Aurora Borealis, and a corresponding point far to the south sends forth its companion, the Aurora Australis. Here, "where shaggy forms o'er ice-built mountains roam," are its greatest splendors discovered through the long night of an Arctic winter. Here the dip of the magnetic needle is greatest, and turns directly to the earth, whereas at points near the equator the dip is sometimes nil. That Auroras are of magnetic origin is certain, because the magnetic needle is always strangely excited when they appear, varying and trembling so that it becomes practically useless.

But whence come these displays? An answer is attempted in the following. At intervals, that wonderful orb, the sun, which is all in all to us dwellers on the earth, undergoes strange perturbations; cyclones, the vastness of which we can have no conception, sweep across his surface, and fiery protruberances rush wildly out oftimes to a height of 90,000 miles. These prominences consist, according to the eminent Lockyer, of glowing hydrogen gas, projected upon all sides. Some of these solar gales have moved at a rate of 120 miles per second! Young of Dartmouth watched a mass of hydrogen move upward from the sun's surface at the rate of 100,000 miles in 10 minutes, about 600 times faster than a cannon ball! An ordinary storm was watched by myself on March 23-26 last, consisting of fifteen spots, or cyclone centres, covering hundreds of millions of square miles, and after deducting the sun's true hourly motion, which carries any spot across his disc in about two weeks, it was found that this identical storm must have moved at the very lowest estimate, 300,000 miles in forty-two hours. This gave it a motion of 7,169 miles per hour, or 120 miles per minute, representing a rate of speed that would move from San Francisco to Montreal in about 20 minutes. Now, having proved that the sun propels dense masses

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to such distances, may it not be possible that some portions of these storms reach the earth? Especially so as when last winter four other planets were ranged in line attracting the solar energy in our direction. Space, if it transmits light, cannot be vacuity, hydrogen is found in greater quantities in the upper strata of our atmosphere, increasing in proportion as we ascend, thus a volatile ether may extend throughout infinity, else how could light transmit itself from stars, the individual rays of which have taken thousands of years to reach the earth? Roscoe bears out this statement, when he says: "attenuated atmosphere probably extends largely throughout space." Sun spots were dealt with by the elder Herschel in the last century and considered breaks in the solar atmosphere, or gaseous envelope through which he conceived the dark body of a less luminous sun appeared. But scientists of the present day accept what appears a more rational theory, "the sun is like a fiery furnace," say they, a furnace 882,000 miles across where metals exist as vapours. Upward movement is accepted as revealed in the bright spots called faculæ, and downward motion is generally that of the dark spots. These sun spots are considered metallic clouds, of cooler vapour, ejected to enormous heights from the sun's surface.

Let us now attempt to connect the sun storms with Auroral displays, earthquakes and volcanic activity. An immense spot was discovered by Secchi in 1859, at the same time as an extraordinary display of Aurora occurred. Two years since, in Nov. 1880, great spots occurred, and the answering record on the earth was as follows:--On the 3rd, Auroras burst forth, beautifully brilliant and lasting, especially at Orkney, in Scotland. On the 9th, an extreme shock of earthquake extended from the Mediterranean, through Austria to Bosnia. Every house in Agram was injured. On the 5th the mighty Mauna Loa, the great Volcano atHawaii broke out into unwonted activity. Two days afterward Vesuvius joined forces, great lava streams outflowing. Mt. Baker in Washington territory became active, all three declaring sympathy with the solar orb. Storms, many and of great destructive force, swept this planet, and the ocean passages were amongst the worst recorded. Missouri, (Dec. 4.) was wrecked by a cyclone with thunder and earthquake. Snow storms followed, and waves of arctic cold travelled down into southern

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latitudes. Far beyond the earth's orbit the planet Jupiter was greatly disturbed, belts and spots showing unusual activity. An observation of my own upon Jupiter in April last discovered his belts considerably agitated, Auroras bursting forth at the same moment. Severe storms of wind and rain followed, unusual even for the showery month. Cold weather and heavy storms came in the wake of the Aurora of Aug. 4, 1882. Several years generally elapse before earthquake commotions are stilled. Those beginning in 1811 lasted till 1813. This series began in Peru in 1879, the great Chios earthquake following a month later.

Snow is believed to accumulate in much greater quantities on the Himalaya Mountains during years of least sun spots. This is caused by the increased temperature of those years, producing greater evaporation from the rivers of the plains and the Bay of Bengal. This condenses and precipitates in higher altitudes. It has also been assumed that icebergs are very common immediately after sun spot activity, but this is doubtful. It may be suggested that the above records are old and not easily comparable, distance always lending enchantment to the view, in fact this is above all others an age of contradiction and uncertainty. Kenelm Chillinglys "astonished at their own identity," are far from rare, and there is no theory however probable, but it receives discredit. Let me take therefore some of the lessons taught by the past winter, for further instruction. The winter of 1882-3 may be said to have commenced with a sun-storm of unusual dimensions. On Nov. 15, an immense cyclonic spot whirled out from the sun, drawings of the central portion resembling a gigantic figure 6, spreading to such an extent that it became visible to the unaided eye, and a few foolish folks wrote to the papers that a new planet was in transit. This rare phenomenon was quickly followed on the earth by grand magnetic activity. On the night of Nov. 17, the brightest and farthest reaching auroral display for many years occurred, extending all over this continent of North America, and travelling across the equator, it delighted the inhabitants of South America as far down as Rio Janeiro. This, while it lasted, almost annihilated telegraphic communication. Auroras continued until the 22nd,

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and heavy weather began immediately after, commencing with rain, sleet and high winds on the 24th. All over the Dominion snow fell to a greater extent than for years. Frigid waves rolled from the Arctic Ocean with such frequency that it might truly be asserted no genuine thaw was experienced all winter. Snow storms penetrated into southern latitudes, as late as March 27th, three feet of snow (unprecedented) was reported at Raleigh, N.C. Telegraph lines were down and houses sinking under the weight of snow. The Connecticut River was frozen solidly over for the longest period for over 20 years. Lake Champlain was thicker encrusted than for many years. Terrible floods devastated the Mississippi and Ohio Valleys, Cincinnati being at one time isolated.

Storms of great severity and disastrous gales occurred, notably in Newfoundland and Great Britain, railway traffic being entirely suspended in the North of Scotland, as late as March 28, 1883. St. Peter's dome at Rome also glistened with a mantle of snow—the first time in thirteen years.

Nor have internal commotions (as might be expected), proved wanting. All through the winter reports came in from time to time. Earthquake shocks were experienced along the Welland Canal last December, and have prevailed at widely separated points ever since; Etna giving vent to its pent up fires on March 23, 1883, when a new crater opened, threatening the destruction of Nicolisi and other villages.

A summer——of what? A summer, eminently of tornadoes, followed, such, in fact, as is scarcely remembered by living man. These funnel-shaped clouds came up north and wrought destruction, wrecking parts of Minnesota, their destructive fury being felt even in this Dominion. Cool spells of weather prevailed, proving that the sun's heat cannot suffer diminution and the earth not also feel the change. Electrical disturbances were naturally very frequent, and altogether the branch of Astro-Meteorology, commonly designated "sun spottery" may be said to have received numerous and conclusive proofs of its plausibility during the past two years.

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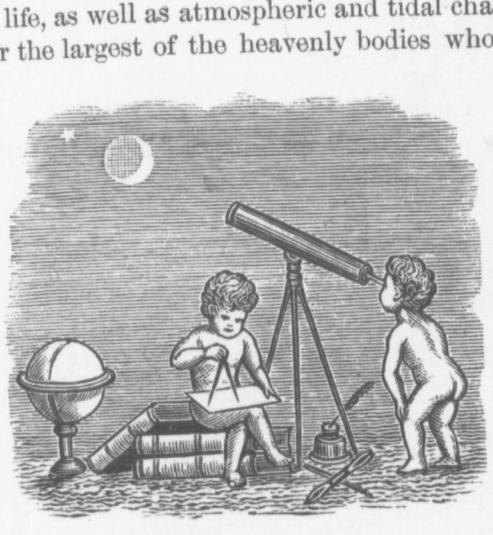
# THE SOLAR SYSTEM.

SUN, MOON AND PLANETS—THEIR DISTANCE, SIZE AND APPEARANCE IN THE TELESCOPE—WHEN SEEN TO BEST ADVANTAGE DURING 1884—PROBABLE INFLUENCE ON THE WEATHER OF THE EARTH.

## The Sun (☉).

The sun, placed in the centre of the solar system, is the dispenser of light and heat, governing all the planetary motions, and without its influence life would become a blank. It is the parent of vegetable life, as well as atmospheric and tidal changes. The sun is by far the largest of the heavenly bodies whose dimen-



The Young Astronomers.

sions have been anything like definitely measured and its diameter is believed to approximate 886,000 miles. It is therefore about fourteen hundred times larger than the earth, and the human mind with its utmost effort fails to grasp or form any adequate conception of its dimensions. Its mean distance from the earth is usually set down as between ninety-two and ninety-three millions of miles, and when viewed through a telescope, properly shaded by smoked or colored glass in order to protect the eye, presents the appearance of an enormous globe of fire, sometimes violently agitated; and dark spots of irregular form pass in rapid succession over its disc from east to west, in a period of about fourteen days. These blemishes are but rarely

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visible to the unaided eye, but when they are, must be at least fifty thousand miles in diameter. Since the beginning of the eighteenth century scarcely a year has passed in which spots have not been visible in greater or less numbers. The latest received theory accounting for these ebullitions is that violent explosions are continually taking place at the sun's surface and being projected outwards for hundreds of thousands of miles. The outbreak or storm grows somewhat cooler as it traverses space, appearing in its descent once again into the sun in the shape of a dark mass, or cyclonic cloud. Spots have continued very numerous during the whole of 1883, and are thought to be of periodic occurrence, reaching their maximum and minimum every 11-12 years. Frequent observations upon these almost regular outbreaks has already led the writer to suppose some mighty influence at work, outside of the limits of this solar system, controlling the nebulous star which we call the sun, but this can only be proved by repeated observations upon the variable stars and nearest binary or double systems. It is more than probable that sun spots influence the weather of this earth to a considerable degree, producing cyclones and electrical—especially auroral—disturbances. This fact is treated at length elsewhere. The earth is nearest the sun in December and January (Perigee), and farthest therefrom in June and July (Apogee), owing to the irregular or elliptical shape of the earth's orbit.

### Mercury (☿).

The supposed planet Vulcan, first thought to have been discovered by Lescarbault in France several years since, having failed to put in an appearance, although diligently sought after during the total eclipses of 1882 (Egypt) and 1883 (Caroline Isles), leaves the twinkler Mercury in indisputed possession of his former place of honor as nearest the throne of the god of day. Mercury is the smallest of the primary planets except the asteroids, having a diameter of about 3,140 miles, its bulk being consequently sixteen times less than the earth's. Like all the planets, Mercury revolves on its axis, taking about 24 hours and five minutes for a revolution, and its day is consequently very similar in length to our own. Its year, from being placed

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so much nearer the sun, and moving much faster, is very much shorter, occupying about 88 days at a distance from the sun of 37,000,000 miles. At the beginning of the year 1884 Mercury may be looked for, and will be seen low on the horizon immediately after sunset, being of a twinkling, dazzling brightness, arriving at its point of greatest elongation east of the sun on January 4. On the 11th January it becomes stationary amongst the stars and rapidly approaching the sun grows invisible, arriving at inferior conjunction with the orb of day on the twentieth. It now becomes a morning star and is stationary again on February 1st, becoming visible and illuminating the early morning sky until a few days after the western elongation on Feb. 13. The planet rapidly approaches superior conjunction and becomes invisible. The other favorable times for observing this very beautiful little planet are April 25, Aug. 23, and December 17, as an evening star. Visible as a morning star June 12 and October 5. Rather high magnifying power is needed to show the phases of Mercury. A three inch aperture refracting telescope, with a power of 75 or 100 being necessary, when the planet at eastern elongation will appear similar to the Moon at first quarter, and at its greatest western elongation similar to the moon at last quarter.

The surface of Mercury is believed to be very mountainous, Schroeter asserting that mountains of over ten miles in height exist in the southern hemisphere. This planet, owing to the smallness of its orbit, cannot reach a greater distance from the sun than 28° 48.′ Mercury being nearer the sun than the earth, sometimes crosses the sun's disc, these passages are called transits, the last of which occurred Nov. 8, 1881, and the next will take place May 10, 1891. The transits of May occur in the 16° of Taurus, and those of November, in the 16° of Scorpio. Astro-meteorologists, from Kepler down, consider Mercury as having great influence on the atmosphere of the earth when near it, in any aspect to the sun, strong winds are usually generated, and in the northern hemisphere, if Jupiter be also north of the equator, the wind, even in summer time, will be cool, blowing from the N. and W.N.W. The summer of 1883, gave several instances of this.

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## Venus (♀).

Venus, brightest of all the stars that glow from the depths of the firmament, is easily distinguished from all others when visible, reigning supreme in brightness. None gaze upward upon this beautiful orb without noticing the supreme brilliancy of its rays, as also their splendid silvery appearance. The orbit of Venus lying between the Earth and Sun produces the phenomena of morning and evening star similar to Mercury. Revolving in that orbit in about 224 days, at a mean distance of 68,000,000 miles, at a rate of 80,000 miles per hour, she turns also on her axis once every 23h. 21m., and has a day almost equal to ours. The year of Venus is equal to about 32 of our weeks. When nearest the earth Venus is distant about 26,000,000 miles, and were the whole of her illuminated disc then turned towards us, would appear as large as a small moon. When at superior conjunction, away behind the sun, this planet's distance is about 164,000,000 miles. She continues alternately morning and evening star for a period of about 292 days each time. The phenomena of seasons upon each planet depends on the inclination of the axis to its orbit; the inclination of Venus is understood to be about 75°, thus at each pole the sun would continue half a year without setting in summer, and as long without rising in winter. The north pole of Venus inclines towards the 20° of Aquarius, the Earth's to the first degree of Cancer, consequently the Northern Hemisphere of Venus enjoys summer when the Earth has winter. Venus will be evening star from the beginning of the year, having passed superior conjunction with the sun on September 20th, 1883. She continued oscillating on her eastern course all through the autumn and winter, and will arrive at a point exactly halfway, called her greatest eastern elongation on May 2nd, lighting up the evenings of spring with her radiance, and appearing in the telescope like the Moon at first quarter. Rapidly approaching the earth she will grow brighter each evening until June 3, when the point of greatest brilliancy will be reached, and the planet present in an "optic glass" the faint crescent-like appearance of the three or four days' old Moon. Inferior conjunction, July 11. Disappearing, to emerge a few weeks later on the opposite side of the sun and fill the role of morning star for the

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rest of the year. At greatest brilliancy once more on August 17th, reaching the farthest point west on September 21st, of 46° 5′. A power of 50 on a good two-inch lens will show these most beautiful changes. Astronomers, up to the time of Copernicus, were wont to consider Venus as two different spheres, calling her Hesperus when east of the Sun in the evening sky, and Lucifer when west in the morning. Venus also exhibits, telescopically, a variety of inequalities, dark spots, brilliant shades, hills and valleys. Her highest mountains are in the Southern hemisphere. Her atmosphere is believed to be extremely dense, which fact was further confirmed at the last transit over the suns disc, on Dec. 6, 1882. This planet's influence on the atmosphere is said to conduce to moisture, the Arabians, according to Albumazar, affirm that Venus in aspect to the Sun is reckoned moist; Ptolemy declares it "to favor many and fruitful showers," and Kepler says "at the conjunctions of Sol and Venus, rain lasts long and fog continues." Goad declares upon such aspects "gluts of rain do fall." This has been confirmed by observation in Canada, results being as five for to one against. From this we might expect in all reason, a steamy, showery month for July, 1884.

### The Moon (☾).

Lunar influence having been fully dealt with elsewhere, only a few brief notes regarding observations on this planet's disc need be inserted here. The Moon, by reason of her proximity to the earth, is the most entertaining object defined by the telescope, a low power (say 2 inches, power 50) will resolve quite a number of interesting features on the Moon's surface. Ranges of mountains, ring-like circumvallations, and broad depressed portions, the beds of ancient seas, are seen, presenting with her many changes, numberless objects of interest. About two days after new Moon, a circular spot, called the Crisian Sea, may be seen near the illuminated edge, and should be examined at such times, Mr. Jackson, of Philadelphia, having recently noticed considerable changes therein. About the 6th and 7th days of the Moon's age her south limb will appear a heterogeneous mass of mountains, being full of light and shadow, the

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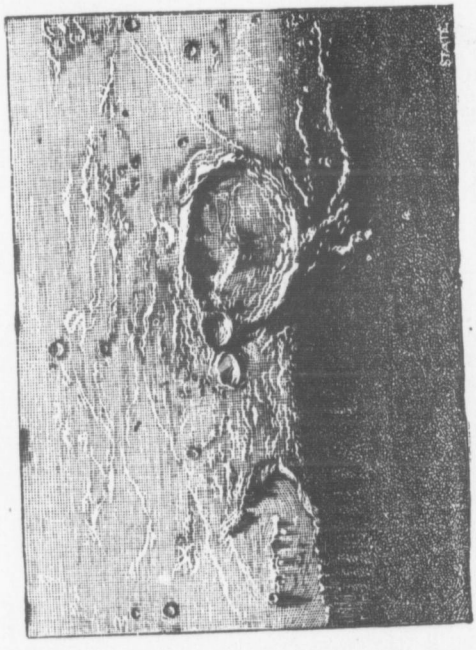
mountain ranges, called the Lunar Alps and Apennines, are also then seen to advantage north of the Moon's equator. The largest of all Lunar Mountains is called Tycho, and is first seen about the 8th day. At full, peculiar streaks radiate from this mountain, over a considerable part of the Moon. These are thought to be of lava formation.



A Lunar Crater.—Gassendi.

A few observations will convince the amateur astronomer that life, as now existing on the earth, is an utter impossibility on the Moon, being, as it is, *sans* air, *sans* water, *sans* everything that harbors life.

The Moon is considered by Astro-Meteorologists to exercise considerable influence on the weather of this earth by reason of her proximity. As the Moon passes every month from one hemisphere to another, it is but reasonable to suppose that she influences the directions of the atmospheric currents. These changes are intimately connected with the prevailing moisture and dryness of each season. The distance of the Moon from her primary, the Earth, varies yearly, and, according to Parville, who has studied the matter closely, the "meteorological character of a series of years appears to be mainly dependent upon the inclination when the extreme limits have been touched. The rainy years, the cold winters, the hot summers, all return periodically, and coincide with certain declinations of the Moon. They are usually separated from each other by periods of three

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and six years. Dry summers occur in the years when the Moon's greatest declination is about the mean, viz., 21 and 23 degrees."

## Mars (♂).

Mars is the first exterior planet, its orbit lying outside the Earth. He appears to the eye of a fine ruddy color, resembling in magnitude and shade the stars Antares and Aldebaran, which latter he approaches during his opposition this Winter. Mars revolves around the Sun in one year ten months and a half at a distance of 145,000,000 miles. Daily rotation, 24 hours, 39 minutes, which makes the Martian day a little longer than ours. The planet is about seven times less than the earth, its diameter being 4,400 miles. The seasons of Mars are similar to the Earth. Small telescopes are useless when brought to bear on this planet, anything less than a 4-inch lens and a magnifying power of at least 200 will only disappoint the amateur. Very powerful telescopes had first to be constructed before much could be learned of this earth in miniature. It has now been ascertained that its surface consists of land (chiefly) and water, similar to our earth. Mars has seasons, his polar axis being aslant, and round the Martian poles great masses of ice are clustered. This has been proved by the spectroscope. The land regions are distinguished from the seas, by their ruddy color, the seas being greenish. A French astronomer having considered the red color as caused by the red vegetation of the Martian forests, has been thus happily rendered in the "Star Clouds and Wind Clouds" of the poet Holmes—

> "The snows that glittered on the disc of Mars
> Have melted, and the planet's fiery orb
> Rolls in the crimson summer of his year."

This ruddy tinge is also explained by the possibility of much less vapor existing in the atmosphere of Mars during the Summer season. "All that is known about the planet," says Proctor, "tends to show that the time when it attained that stage of planetary existence through which our earth is passing, must be set millions of years ago. The planet of war resembles

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a battle-field, and I fancy there is not a single region of the earth now inhabited by man which is not infinitely more comfortable as an abode of life than the most favored regions of Mars at the present time would be for creatures like ourselves." During the night of August 16, 1877, Mars was only about 35,000,000 miles distant from the Earth, and Prof. Hall, of the U.S. Observatory at Washington, was fortunate enough to discover a small speck of light near the planet, which upon further observation proved to be a satellite. On August 18th another was seen, smaller and nearer the planet than the first. Phobos, the latter, is not much more than ten miles in diameter, its

MARS, 1860, JULY 6, AT 11H. 33M.

revolution being completed in 30 hours 14 min. Diemos, the other, is smaller still, and moves in an orbit yet nearer the primary. Mars reaches opposition at 6 a.m. Montreal time on the morning of February 1st, being a morning star from the beginning of the year until that date, when he becomes evening star for the remainder of 1884.

When near the earth in the winter season, astro-meteorologists look for a remission of cold, thus the latter part of January and greater portion of February, 1884, may be expected to show some temperatures above the average. Considerable downfall may also be looked for in the shape of snow or rain, the prevalent wind being westerly, will bring some

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"blizzards" in its wake unexpectedly; and very sudden changes of temperature may occur.

### THE ASTEROIDS—VESTA (4).

Ascending outward beyond the orbit of Mars we reach the region of about 250 small telescopic planets called Planetoids or Asteroids. It is possible that these are fragments of a large planet disrupted, the three larger having been its moons. The first of these was discovered by Piazzi on the first day of the present century, and named Ceres. The others have nearly all been found between 1845 and the present date. Their orbits are exceedingly eccentric and cross each other, their diameters however, are all very small. During 1884, the principal planetoid, named Vesta, will arrive at opposition, or nearest the earth, appearing like a star of the fifth or sixth magnitude, shining with a pure steady radiance. Vesta is the only one that is ever visible to the unaided eye. Her opposition occurs August 6th, 1884, in Right Ascension 21h. 19m. Declination 22° 46′ South. This places her in the constellation Capricorn, a little below the Ecliptic. A line drawn from Altair, in Aquila, to Fomalhaut, in Pisces Australis, will then pass a little north of the place of this minor planet.

### JUPITER (24.)

The fair quintuple system next of Jove
And Medicis' fair stars I visited,
That whitest, brightest gem in night's fair crown,
His form encircled round with rosy bands,
And flecked with colored markings, lovely sight!
To see these things how Galileo toiled.

Jupiter, largest of all the planets, arrives at opposition, or nearest the sun at 10 o'clock p.m. on the 19th of January. He is then about 408,000,000 miles distant, and rising at sunset, will culminate or pass overhead at midnight, setting about day dawn. Superlatively white to the eye, he assumes a far more lovely hue in the telescope, glowing like molten gold, with four bright beads of light (his moons) supporting him at every step, drifting serenely along through the star groups. These satellites were first seen by "the starry Galileo" on the night of

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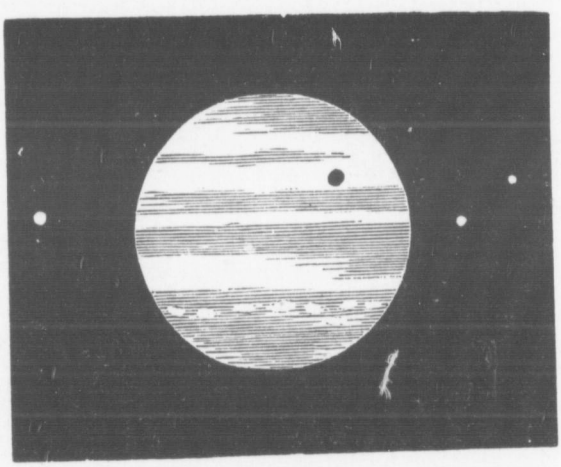
January 8th, 1610. The planet in the telescope appears considerably flattened at the polar regions and distended at the equator, owing doubtless to his rapid rotation, his day being only about ten hours long. The moons are visible in a spy glass having a not less aperture than 1¼ inches and a magnifying-power of 25. In a large telescope Jupiter is a splendid object, his disc being crossed with belts near the equator, and flecked with spots suggestive of scudding clouds. These spots continue to puzzle astronomers. Professor Hough, of Chicago, after having carefully observed Jupiter for three years, gave it as his



JUPITER AT OPPOSITION.—TRANSIT OF THE FOURTH SATELLITE.

opinion that some of the markings noticed were of a permanent nature, especially the "great red spot" which was for several years a noticeable feature. But since then the great red spot has faded and proved its non-permanent nature by ceasing to exist. Jupiter is doubtless as yet in an incandescent state, glowing with fervent heat, continually a prey to cyclic storms. If we wish to seek for life outside of this earth, it is not to be found on the planet itself but rather on his satellites. Jupiter, seen from his nearest moon, appears a thousand times larger than our moon does to us, exhibiting also on a scale of inconceivable magnificence, the varying forms of a

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crescent, a half moon, a gibbous phase, and a full moon every forty-two hours. Thus, Jupiter being in all probability a secondary sun, supplies his satellites with heat [our sun giving light], for it has been computed that the present condition of Jupiter resembles the condition of our earth, about 34,000,000 years ago. Our Moon at that period probably sustained life, and the moons of Jupiter may reasonably be considered as supporting life at this moment.

Jupiter is a morning star until January 19th, an evening star until August, 7th, and a morning star again the rest of the year. Brightest, about January 20th. His moons will become invisible on July 8th, owing to his approaching proximity to the Sun, again becoming visible on September 5.

"Fair weather," says Job, "cometh out of the North" and Jupiter, when strongly aspected by the Sun, generally brings a spell of fine dry weather, accompanied with north-west winds. From observations on the climate of Canada, it is found that Jupiter usually remits the cold when at opposition in the winter season, as instances of this the followiag may be noted:—

Dec. 18, 1882.—♃ ☍ ☉. Fine, windy. 19th, calm, fine, fog. 20th dull, rime and mist. From this forth dull and mild to end of year.

Nov. 13, 1881.—♃ ☍ ☉. Clearing, fine. 14th, fair, mild weather afterwards, fine mild weather for a week following.

Oct. 7, 1880.—Windy, fine. 8th, Fine and warm. Mild weather continued several days.

## Saturn (♄).

"Saturn, whose course hath so wide for to turn,
Hath more power than wot any man."—*Chaucer.*

Saturnian skies,
O'erwhelm my soul with wonder, belts and rings,
Circling in equipoise, orb set in orb
A system's self of satellites; our year
Counts on this sphere but as two stately weeks
In his celestial circuit.

Saturn, about nine hundred millions of miles from the sun, is the most beautiful of the Sun's family of worlds. To the eye he appears somewhat like the star Aldebaran in Taurus, being of a

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dull orange color, but see him in the telescope and his appearance is unparalleled. He alone of all the planets is surrounded with a triple ring, very thin and broad. Seven hundred times larger than this earth, his year is equal to 29½ of ours, his day being only 10½ hours long. Belts and spots are found on his disc. A telescope having a power of 50 with an aperture of 2 inches, will show the planet cradled in his rings; but powers of 100 or more on a 3 inch lens is necessary if a sight of even the largest of his moons be desired. These, eight in number, are named as follows:—Japetus, Hyperion, Titan, (the largest, diameter 4000 miles, and larger than the primary planet Mercury), Rhea, Dione, Thetis, Enceladus and Mimas. Another has been suspected but the discovery has not been confirmed. The rings themselves are possibly nothing but clusters of small satellites or meteors; others have considered them fluid, and likely at some future period to precipitate themselves on the planet, causing a deluge similar to that of Noah on this earth. During the spring of 1884 the rings will be well spread open, as seen from the earth, from the surface of Saturn they must appear like two gorgeous arches of light, bright as our full moon, spanning the heavens like a stupendeous rainbow, thirteeen times a wide as the Moon. The various apsects of the eight moons, one rising, another setting, a third approaching the meridian; one entering into an eclipse, and another emerging from one: one as a crescent, another having a gibbous phase, and sometimes the whole of them shining together in one bright assemblage make up a picture of which we, with our solitary satellite, can have no conception. A night scene on Saturn must be the most gorgeous spectacle to be found within the limits of the Solar system.

Saturn passed his opposition with the Sun on Nov. 29th, 1883, and will be well advanced as an evening star when the year opens. He will lead the other superior planets, Jupiter and Mars, on their march toward conjunction with the sun, which he will reach on June 3rd, after which he becomes a morning star until December 12th, when he arrives at opposition, and is once more an evening star.

In astro-meteorology, Saturn, when aspecting the Sun, prognosticates cold weather, clouds and dark air, with considerable

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snow or rain, according to the season. [Nov. 29, 1883. Feb. 22, June 3, Sep. 15 and Dec. 11, 1884]. Cold winds are often experienced at these aspects as well as the above phenomena.

### URANUS. (♅.)

Uranus, the next in order, was discovered by Sir William Herschel in 1781, and for that reason is sometimes called Herschel by astronomers. The planet had in reality been previously seen as far back even as 1690 by Flamsteed, of England, who catalogued it as a fixed star. The apparent size of Uranus never exceeds that of a sixth magnitude star, and can only be seen by practised eyes when near opposition. A small telescope, however, will easily assist an observer to find him, but the most powerful lenses have to be brought into requisition to show his satellites, four in number, and named respectively, Ariel, Umbriel, Titania and Oberon. No spots have as yet been seen on his surface, but his length of day is usually accepted as about 9½ hours. The satellites revolve in from four to twelve days in most peculiar orbits, that is, perpendicular to the plane of the ecliptic, the same as if our moon should rise in the south, pass at right angles to the sun and planets and cross near Polaris, dipping below the northern horizon. At Uranus' distance the very existence of such a far away and insignificant atom as this earth would be undiscoverable, the only planets of which cognizance would be taken being Saturn (who would be alternately morning and evening star for a period of over fifteen years), and Neptune, with any that may lie beyond, as yet to us undiscovered. Uranus, during 1884, will be morning star until March 16th; evening star until September 20th, and morning star the rest of the year. The best time for observation is toward the end of March. His time of revolution about the Sun equals 84 of our years. Uranus has considerable effect in an astro-meteorological sense, producing sudden winds and cyclonic disturbances when aspecting the Sun, especially if, as often happens, Mercury be not far away from the Sun at the time. Severe equinoctial gales during the past few years have occurred, and may be with confidence attributed to the strong aspect of Uranus on the Sun and Moon at the times mentioned, especially when, as was the case in 1882-3, the

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three were on the equator, the Moon and Sun crossing from South to North Latitude, or *vice versa*. The strong aspects of Uranus during 1884 are March 15, June 14, September 21st and December 24th; on these dates, or immediately following them, atmospheric and electrical disturbances may be expected with some confidence.

### Neptune (♆).

This, the most distant planet yet discovered, makes one revolution around the Sun in 164¼ years. If a railroad train travelled thirty miles an hour continually day and night it would not reach Neptune in less than twenty thousand years.

The influence of Neptune so perturbed the motions of Uranus in his path through the Zodiac that astronomers were led to seek for Neptune, and his discovery took place on September 1st, 1846. On the 12th October of the same year a satellite was discovered attending the newly found orb, this is undoubtedly the largest moon existing in the solar system. Only the best telescopes will show the Neptunian satellite, and no markings have thus far been discerned on the parent orb. Neptune is totally invisible at all times to the unaided eye. Neptune is at opposition to the Sun Nov. 13; Quadrature, Feb. 7 and Aug. 15. Conjunction, May 10th.

The aspects of Neptune with the Sun in summer time conduce to fine weather, in winter the cold is lessened but clouds predominate. His conjunction in May will probably produce a cool term at that season. Any influence he may have is necessarily small owing to his great distance, but what there is of it is beneficial.

———:o:———

Sirius is the brightest of all the fixed stars, and is situate in the constellation Canis Major, the Great Dog; it is a double star, and is best seen in the winter months. Its probable distance from the earth is estimated at from eighty to one hundred millions of millions of miles. Its probable size exceeds our Sun about fifteen times.

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## EARTHQUAKES.

NOTABLE ONES SINCE THE CHRISTIAN ERA—THEIR GREAT NUMBER AND FREQUENCY—JAVA 1883—PROBABLE CAUSE.

Between 6,000 and 7,000 separate earthquakes are recorded as having taken place at all parts of the globe between the years 1606 B.C. and 1850 A.D.

The most notable and remarkable are, Judea 31 B.C., which caused the death of 10,000 persons, according to Josephus. That which occurred at the Crucifixion is said to be authenticated elsewhere than in the sacred records, and a darkness like the one there spoken of was also noticed on Jan. 22, 1835, in Central America. The earthquake of A.D. 63 resulting in the partial overthrow of Pompeii and Herculaneum, was followed sixteen years later by the bursting forth of Vesuvius, when the desruction was completed. Other notable earthquakes were:—Italy 526 A.D., when 120,000 persons perished; Sicily 1693, when 60,000 people lost their lives. Gibbon says about 542 and preceding or following years, each was marked by repeated earthquakes, Constantinople being shaken for over forty days, and at Antioch 250,000 persons are said to have perished. During this period the superior planets were in perihelion. The Arabian and Persian chronicles record one hundred and eleven earthquakes between the eighth and ninth centuries; some of these lasted seventy days, nearly all being accompanied by winds and floods. Readers of the "Relations des Jesuites" will probably remember the great earthquakes spoken of which shook and tossed the earth all over Canada from Gaspé to Montreal for a space of six months during the year 1663. These earthquakes rivalled the one in the Mississippi Valley in 1811. The severest earthquake ever remembered on the Atlantic coast in this region was that of November 1755, an echo of the convulsion that overthrew Lisbon. On October 19, 1870, occurred the most considerable shock observed in North America during the present century. The source of this disturbance was traced to the volcanic region from 50 to 100 miles N.E. of Quebec. From that place it spread to St. John, N.B., thence was felt westward to Chicago and southward to

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New York. The velocity of the wave was about 14,000 feet per second. The occurrence of the shock was telegraphed to Montreal by operators of the Telegraph Company in time to call attention of those in the latter city before the shock reached them.

Java is a seat of almost perpetual volcanic and earthquake activity, a great catastrophe took place there in 1772, but the most remarkable earthquake and volcanic eruption for many years past took place there in August, 1883, commencing on the 25th of that month. North Bantam was covered with ashes, crops ruined, roads and bridges destroyed. Tidal waves swamped the city of Batavia, and swept across the Pacific Ocean, were noticed at San Francisco. The temperature of the sea off the coast of Java rose 30° owing to the steam ejected into the sea. Seventeen volcanoes were in active operation at one time. Fifteen waterspouts were noticed together. The Island of Serung was completely inundated. A mountain disappeared and the sea now flows over where it once stood. Seventy-five thousand lives were estimated as having been lost. A range of mountains entirely disappeared.

Earthquakes are very far from being of rare occurrence. Hein having estimated that at least two occur on an average daily on the earth. At Cabul thirty-three have been felt in a single day. At Honduras during the year 1856 one hundred and eight were counted in seven days. At Hawaii in 1868, two thousand occurred in a single month.

The greatest number of earthquakes are usually recorded about the middle of each century and a second epoch, less powerful than the first, usually occurs nearer the close of the century.

What these tremors arise from has not yet been definitely settled, some consider them results of severe cold, contracting the rocks; but most authorities at present ascribe them to the presence of underground lava, volcanoes very often becoming active at the same time. Professor Alexis Perry, of Dijon, traces a relation between earthquakes and the age of the moon. By very careful analysis he established the fact that earthquakes occur more frequently at perigee than at apogee, also their

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frquency increases at the syzygies and diminishes at the quadrates. "The shocks are generally experienced," he says, "when the Moon is on the Meridian." Perrey, another authority, favors the theory and thinks the solar equinoxes and solstices give the largest number of shocks. Mallet found the winter solstice—[Naturally enough.—Ed.]—to give the largest number.

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## THE BROOKS' COMETS.

Two Discovered by Mr. Brooks in 1883. A Keen Observer.

One of the keenest astronomers on this continent is, undoubtedly, Mr. William R. Brooks, of Red House Observatory, Phelps, N.Y. His continued vigilance has been proved by the discovery of no less than two comets during the past year. The first was noticed on February 24th, as a small bright object in the constellation Pegasus, the flying horse. Dr. Swift, of Warner Observatory, saw the comet the same evening forty-five minutes later. Subsequent observations were made on this body at Harvard, and its orbit calculated. It was at once found to have passed perihelion, and to be moving rapidly away from sun and earth. It was only for a very short time a conspicuous object, its perihelion passage having taken place on February 17, 1883.

Mr. Brooks discovered a second comet on the evening of September 2, and at once telegraphed its position in the heavens to Dr. Swift, at Rochester, N.Y., who was enabled to verify the new comer two days later. At that time it was near *Eta*, in the constellation of the Dragon, and passed the meridian late in the afternoon, being well placed for observation during the evenings of September. It was then minus a tail, and although bright and defined in a large telescope, was quite invisible to the unaided eye. Parkhurst, of New York, considered the comet to be distant from the earth on the above date from 150,000,000 to 200,000,000 miles. It was then approaching the sun, and might possibly become an aspirant for popular distinction by the beginning of the new year, 1884.

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## MYSTERIES OF ICE IN SUMMER.

The density of ice differs very much with the longitude. Now, ten pounds of ice in Burlington, Iowa, is about three feet square; in Cincinnati it is about the size of a soap box; in Pittsburg it is as big as a stove-pipe hat; in Philadelphia it has to be put in the ice-chest directly from the waggon, or it will all melt away before you can run into the house with it, and in New York, if you ask a dealer for ten pounds of ice, he laughs in a hollow manner and says he never heard of such a thing. You can take fifty pounds or nothing, and then he weighs it on a letter scale. —*Hawkeye.*

—o—

## CANADA'S CLIMATE.

Sir A. T. Galt, during his visit to Scotland, was interviewed by an Edinburgh reporter. On being questioned as to whether the climate of Canada was not very severe he said:—

"There are people here who make a bugbear of the climate of Canada, and many ask me if it is not so cold that we can scarcely live! My reply is, that I would not exchange a winter day in Canada for one in Scotland. The cold is no doubt very severe in winter, but the weather is dry, beautiful and sunny. Every kind of outdoor work can be done during a greater number of days in the winter in Canada than is the case in Scotland, and with less risk of getting cold and disease. Many persons whom I have met here think that we have a Russian climate in Canada, but they are greatly mistaken. The summer weather is as nearly perfection as it can be. We get rains in May and June; and after that the weather settles down into bright, sunny, warm weather, with a much higher temperature than is known in Scotland. The thermometer will range, day after day, about 90 in the shade. As a consequence the crops come forward with wonderful rapidity. The wheat is put into the ground towards the latter end of April, and harvested before the 1st of September. The root crops are perfectly marvellous. I never saw anything to equal the crops of mangold wurzel, potatoes and other vegetables, grown in Manitoba."

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## EARTH IN METEORIC SHADOW.—FROSTS IN APRIL AND MAY.

It was in the earlier part of 1882, if I remember rightly, that a treatise on the above subject appeared ln *Longman's Magazine*, from the prolific pen of RICHARD A. PROCTOR. His Theory, which seems feasible when actual weather records are compared, adopts partially the explanation of ERMAN, and is as follows:— "The exceptionally cold weather, occurring all over the globe at definite periods, requires its explanation from extra terrestrial causes." In the months of February, April and May almost every year a fall of temperature occurs, traceable to the sun, or rather to the solar corona. This corona, seen only in total eclipses, is conceded by many astronomers to consist of meteor streams, similar to those attracted into the earth's atmosphere in August and November. Not that these veritable streams ever play any part in the production of these cold spells, therein Erman was at fault, because their orbits forbid them to pass athwart the earth. Much denser streams are believed to be the true cause. Such bodies passing between the sun and earth, may reasonably be considered as intercepting and absorbing a considerable amount of heat, leaving the earth for some three or four days without its usual share. Temperature falls somewhat from this cause and produces the commonly called "Borrowed Days," which occur Old Style, April 1, 2, 3, New Style about 10 or 12 days later. Most persons are familiar with the lines:

"March borrows from April
Three days, and they are ill;
The first is full of wind and weet,
The second, it is snaw and sleet,
The third one it is sic a freeze,
It gars the birds stick to the trees."

Almost every year therefore the temperature falls from about February 7th to 12th, April 10th to 14th and May 9th to 14th, such are the dates when frosts are to be most looked for and guarded against. Noted in Europe first, proved a fact on this continent frosts also occur in Australasia. As it has been noticed at different places and times, the theory stands out boldly as an

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actual fact. The whole earth feeling the chilly interposition of these meteor streams.

Taking the Meridian of Montreal I find that the February "dip" has only failed once in seven years, viz., in 1881. The April "cold spell" has appeared every year true to its appointed time. I therefore advise readers interested in frost dates to take every precaution. May, as might be expected, is more fickle, yet it gives five cold periods in seven revolutions.— *Walter H. Smith in "Vennor's Bulletin."*

## WEATHER HINTS.

If the sun sets in crimson clouds and rises brilliant, or if the stars are numerous and bright, we know in a general way, that we may reckon on a duration of fine weather.

Dews and white morning fogs are symptoms of clear days.

A dark and vapory sun, and a sickly-looking moon with blunt horns, and a circle round her; or pallid, big and non-scintillating stars are all signs of approaching rain.

If the sun comes up pale and then turns red, or if the moon is large and ruddy, with sharp black horns we may count on wind.

The Chickweed is called "the poor man's barometer" because it shuts up its flowers when wet is approaching.

The aurora borealis, when very bright forebodes stormy, moist, unsettled weather.

A haze around the sun indicates rain; it is caused by fine rain or mist in the upper regions of the atmosphere.

A large part of America takes the exact shade of its character for each day from the weather which it finds when it opens its eyes in the morning. It is true that in the majority of cases, we are almost unconscious of the subtle influence which is at work upon us, not only because its effects are usually too minute to attract our attention, but also because we are so accustomed to them that unless they happen to be exceptionally marked, it does not occur to us to investigate their cause. This indifference applies, however, to a good many other things besides weather, and the fact of its existence no more indicates that the action of weather on us is not real, than our forgetfulness that we are always breathing implies that we could do without air.

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## MEASUREMENT OF THE GREAT LAKES.

The following measurements of the great lakes will be found interesting and are absolutely correct, having been taken by Government surveyors.

The greatest length of Lake Superior is 335 miles; the greatest breadth is 160 miles; mean depth 688 feet; elevation 627 feet; area, 82,000 square miles.

The greatest length of Lake Michigan is 300 miles; its greatest breadth, 108; mean depth, 690 feet; Elevation, 506 feet; area, 23,000 square miles.

The greatest length of Lake Huron is 300 miles; its greatest breadth is 60 miles; mean depth, 00 feet; elevation, 274 feet; area, 20,000 square miles.

The greatest length of Lake Erie is 250 miles; its greatest breadth is 80 miles; its mean depth is 84 feet; elevation 261 feet; area 6,000 square miles.

The greatest length of Lake Ontario is 180 miles; its greatest breadth is 65 miles; its mean depth is 500 feet; area, 6,000 square miles.

The total of all five is 1,265 miles, covering an area of upwards of 135,000 square miles.—*Chicago Times.*

—o—

In the Laurentian country to the north of the Ottawa river, the highest hill or mountain is Trembling or Devil Mountain on the waters of the Rouge River. This is about 2060 feet above the level of the sea, and its summit and flanks show in a very marked manner the striations of the great glacial sheet.

The mighty Mississippi as it rolls on towards the great ocean, bears with it sediments constituting "a whole museum of soils, gathered from the fertile farms of New York and Pennsylvania, from the sandy cliffs of the great Kenawha—from the clayey slopes of Cincinnati—from the slimy borders of Lake Pepin—from the melon-patch of a Cheyenne squaw, and from the beetling cliffs of the Yellowstone."

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## 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 anyding und you don't like it, you gets your money back or something else in exchange, you know. Vas you a farmer?" "Yes, sir, I live up on Red River." "Vell, den, you need a pair of pants like dese," said Hoffenstein, pulling out a sky-blue pair from a pile of clothing on the counter; "dey vas de genervine doeskin, und will last de whole year oud, you know." The countryman took the pantaloons to the light, examined the texture of the 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 und 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 vears a pair uf dem. Do you know, my frent, these bants vill tell you exactly vat the vedder vill be. Ven it vas going to be vet und cold dose 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 Vilkins, 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 de segred uf Vilkin's success, und at de beginning uf zeeding, you know, dey comes for dirty miles around und uf de see Vilkins bants crawling up his legs dey hold off und vaits or a change, but if his bants vas down dey goes right back home, and put in de crop. Dink uf it, my frent. Mit de dermometer bants you can dell exactly ven to put in cabbage seed und wheat dwice as better as mit any almanac, besides ven de vedder gets so cold und vet dat de bants goes under your arms, you can sew buttons on de front und vear dem as a vest." When Hoffenstein finished his yarn concerning the pantaloons the countryman smiled, and

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turning abruptly on his heel, left the store. "Did you see de vay 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."

———:o:———

## THE STORMS AND DISTURBANCES OF JUNE, 1883.

The year 1883 will be kept in memory as a "cyclone year." June was remarkable in this respect, as was also the same month in 1882. The following is but an incomplete list of the most formidable of these storms:

June 3—Storms in Newfoundland,
4—Town of Greenville, Texas, partly destroyed by a wind-storm.
6, 7—Severe wind-storms in parts of Province of Quebec, Can., and at Albany, N. Y.
8—Cyclone in Barbour County, Ala.
10—Cyclone at Vernon, a town fifty miles south of Indianapolis, Ind.
11, 12—Furious wind-storms in Fayette County, Ill., Beloit, Wis., and in parts of Iowa.
14—Beebetown in Iowa destroyed; only one house left standing, and wind-storm on Long Island, N.Y.
17—Town of Missouri Valley, Ia., nearly destroyed; storm in Harrisburgh, Pa.
18—Steubenville and Millersburgh, Ohio, suffered; also Chatham in Ontario, Can.
19—Fierce wind-storms near Atlantic seaboard in Pennsylvania and New Jersey.
21—Terrible thunder-storm at Boston and Machias, Me.
24—Thunder-storms in England; considerable damage.
25—Cold wave Chicago and West.

In Canada, rain was incessant and generally cool to cold weather was experienced, while in Virginia droughts were reported. —*Vennor's Weather Bulletin.*

———:o:———

A THOUSAND MILLION SUNS similar to our own sun, is only a mean estimate of the number composing the visible universe. If every sun has a planetary system equal to the one of which this earth is a part, there are no less than eight thousand million worlds like this.

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## THE MOONLIGHT EVENINGS OF 1884.

SUGGESTIONS TO EXCURSIONISTS.

The prime necessity after a large and pleasant company has been secured, for the thorough enjoyment of an evening's outing, be it a snow-shoe tramp in winter or moonlight excursion in summer, is the accessory of brilliant moonlight, to this end evenings should always be chosen when the earth's satellite is above the horizon between the hours of six and twelve o'clock in the evening. Yet very few when contemplating the organization of a so-called "moonlight excursion" really take proper cognizance of the Moon's rising and setting. Sometimes a pitch-dark night is selected, considerably to the chagrin of the guests. To the end that all skating and tabogganing parties in winter, and moonlight excursions during the summer months may easily ascertain at a glance the most favorable evenings for the same; the following dates are inserted, and if only proper note is taken of these, the anomaly of a moonlight excursion, minus a moon, will cease to exist in the future.

1884.

January.—Moonlight evenings are those from the 5th to the 14th, That is, from the moon's first quarter, when she souths about 6 p.m., and sets at midnight, until two evenings after the full, when she rises about two hours after sunset.

February.—The evenings giving a maximum of moonlight are those from the 4th uutil the 12th inclusive.

March.—During March the moonlight evenings are those from about the 4th until the 12th or 13th.

April.—The most favorable nights occur between April 2nd and 12th.

May.—During this month the moonlight evenings are those between the 2nd and 13th.

June.—During this month from the beginning until about the night of the 9th or 10th, and again from the 29th until the close of the month.

July.—The evening of Dominion Day will be a moonlight one,

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as also that of Independence Day, the favorable evenings lasting until the 9th or 10th, and again from the 29th until the end.

August.—From the 1st until the 10th, and once again from the 28th to the month's end.

September.—From the 1st until the 6th evening, and also between the 26th and 30th.

October.—From the 1st until the 7th good moonlight obtains, after that take the evenings between the 26th and 31st.

November.—From Nov. 1st to the 4th, and from 25th to end of month.

December.—From 1st to 4th evening, then from Christmas until after the entry of the New Year, 1885.

———o———

## SHOWERS OF IRON.

On the night of the 29th of March, 1880, there was a fall of meteoric dust, accompanied with rain, at Catania, in Sicily. This dust, besides having the red color, mineral and organic particles, and minute infusoria, frequeutly observed before on similar occasions, was especially interesting, because it contained a considerable quantity of iron, either in a pure metallic state, or in metallic particles surrounded by oxydized crust. The fragments were of sizes varying from one to ten hundredths of a millimeter. Some were of an irregular; others, of a perfectly spherical shape, as if they had been suddenly fused. All were immediately attracted by the magnet. This fact, (discovered for the first time in dust gathered on board a ship in the Indian Ocean on the night of the 24th of January, 1859, and afterwards confirmed by Professor Nordenskjöld on the "Vega" in the Arctic and other seas), as a scientific writer remarked at the time, is "of immense importance to physical and geological science, as proving that iron, which is not known in a pure metallic state on the surface of the earth, is to be regarded as of extra-terrestrial or cosmic origin, establishing a link between the earth and the chaotic material dispersed over the universe, and as being also in strict relation with the phenomena of aerolites and meteors."—*Popular Science News.*

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## A LARGE COMET EXPECTED.

ASTRONOMERS are expecting, and have already begun to search for a first glimpse of a large comet, viz., the one discovered by Pons, at Marseilles, July 20, 1812, which passed its perihelion on September 15th of the same year. It is possible that the comet may make its appearance by the close of 1883, the period being, according to Encke, about seventy years. Rigorous calculations have lately been entered into by Messrs. Schulhof and Bossert, these gentlemen having fixed the expected date for the perihelion passage—literally, its nearest approach to the Sun—on September 3rd, 1884. But it must be remembered that comets are very unreliable bodies, and it is more than probable that by the beginning of 1884 some astronomer, "viewing the heavens from his watch tower high," may announce its arrival. If it should appear, and the periodic star in Cassiopeia break forth at the same time, astronomers will have a gala season. [NOTE.—This comet is now believed to be approaching the sun, being thought identical with the one noted elsewhere as having been discovered by Prof. Brooks.]

———:o:———

DECISIVE EVIDENCE now exists to show that the glacial ice moved over the top of Mount Washington.

MOON AND PLANT GROWTH.—M. Musset writes in a recent journal upon the influence of the moon upon the direction of plant growth. "Plants of phototropic sensibility were grown from seeds in pots in a very dark place, then on three nights exposed at a window to direct moonlight, the stems bent over towards the moon, and followed in its course."

THE VAST GLACIAL SHEET which once covered the northern parts of the North American continent, probably extended from the Arctic Ocean to the northern limits of North Carolina and Tennessee, and from ocean to ocean, producing a marked change both in the climate and the fauna and flora of the continent.

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## EXPLANATION OF ASTRONOMICAL TERMS.

CONJUNCTION [☌]. A planet is in Conjunction with another body when it has the same longitude and is seen in the same direction in the heavens. This may happen to all the Planets, those whose orbits lie between the Sun and the Earth, as well as those whose orbits are exterior to that of the Earth,—the former class being called *inferior*, the latter *superior* Planets. In the case of the Inferior Planets [Mercury and Venus] this conjunction is of two kinds: the one when the planet is between the Earth and Sun, called *inferior* Conjunction, and the other, when at the opposite point of its orbit, with the Sun between the Planet and the Earth, called *superior* Conjunction. The latter is the only kind of Conjunction that can happen to the superior Planets, Mars, Jupiter, Saturn, Uranus and Neptune, because their orbits are outside that of the Earth's.

QUADRATURE [□] is the position of one heavenly body in respect to another when distant from it 90° of longitude, or a quarter of the whole circle of the heavens; as the Moon, when at an equal distance from the points of conjunction and opposition.

OPPOSITION [☍].—A Planet is said to be in Opposition when it is distant from the Sun 180° of longitude, at which time it is most brilliant, souths about midnight, and is generally speaking at its least distance from the Earth. This can only be said of Planets whose orbits are exterior to that of the Earth.

ELONGATION.—The Inferior Planets, in their revolutions around the Sun, appear to swing like a pendulum, from side to side, being alternately East and West of the Sun. The greatest elongation is the termination of one of the swings, either east or west. At these times the planet appears, when viewed through a telescope, like the Moon in her first quarter, if the elongation be east, and like her last quarter, if it be west. Mercury and Venus exhibit these Phases, passing from new to full while moving from inferior to superior conjunction, and from full to new again while passing from superior to inferior conjunction.

OCCULTATION.—It sometimes happens that the Moon in her orbital motion passes before, and hides from a spectator on the

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Earth some of the Fixed Stars, and occasionally one or another of the Planets; these occurrences are called *Occultations.*

SOUTHING—The time of southing is the time at which a heavenly body passes the Meridian, and is so called because it is then due south. The Meridian being a great circle passing through the Pole and Zenith of the place, the southing will also be the time when they attain their greatest altitude above the horizon.

APHELION signifies that point of a planet's or comet's orbit which is most distant from the Sun; the opposite [nearest] point is called the PERIHELION.

APOGEE.—That point in the Moon's orbit which is most distant from the earth.

PERIGEE.—That point in the Moon's orbit which is nearest the earth.

———:o:———

## HOAR FROST AND DEW.

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

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## PROBABLE ORIGIN OF DOUBLE STARS.

The Sun, with this earth and his attendant system of worlds, is moving in the direction of the Star, *a Centaurii*, at the rate of three hundred miles per minute. At this speed it will take some 130,000 years to accomplish a conjunction or to reach the nearest point of approach to the above star, which is also a sun, and has a system of attendant worlds. Is it not possible that this may be one of the causes from whence arises the phenomena of double stars? When the two orbs become sufficiently near enough to attract each other, their orbits may change and each begin to circle the other, move out on a new orbit in space, carrying with them their attendant systems. Here are changes suggested, of which the human mind can have no conception, new orders of things would obtain, arising out of new necessities. This earth would have two suns, both visible together at times, and we should have new planets moving across a new ecliptic path. Day and night would be entirely altered and our seasons changed. Ought we to look any farther for an explanation as to the probable cause of double or binary stars?

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Mark Twain says there is something very fascinating about science,—it gives you such wholesale returns of conjecture for such trifling investments of fact.

A "Classical student" says, "You ask, 'If Atlas supported the world, what supported Atlas?' The question, dear sir, has often been asked, but never, so far as we are aware, satisfactorily answered. We have always been of the opinion that Atlas must have married a rich wife, and got his support from her father."

Muskrat Meteorology.—Dr. Abbot, of Trenton, N. J., has destroyed another old belief in weather lore. For twenty years he has kept a record of the building of their winter houses by the muskrats, the storing of fruits by squirrels, and other habits of the mammals, which are commonly regarded as indicating the character of the coming winter. His conclusion is, that the habits referred to have no connection with the rigor or mildness of the approaching season.

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## WET WEATHER TALK.

It ain't no use to grumble and complain:
It's jest as cheap and easy to rejoice;
When God sorts out the weather and sends rain,
W'y, rain's my choice.

Men generally to all intents—
Although they're ap to grumble some—
Puts most their trust in Providence,
And take things as they come—
That is, the commonality
Of men that's lived as long as me
Has watched the world enough to learn
Thy're not the boss of this concern.

With some, of course, it's different—
I've seed young men that knowed it all,
And didn't like the way things went
On this terrestrial ball.
But, all the same, the rain some way
Rained just as hard on pic-nic day:
Or when they really wanted it
It maybe would not rain a bit!

In this existence, dry and wet
Will overtake the best of men—
Some little skift 'o clouds'll shet
The sun off now and then.
But maybe, as you're wonderin' who
You've fool-like lent your umbrell' to,
And want it—out'll pop the sun,
And you'll be glad you ain't got none.

It aggravates the farmers, too—
There's too much wet, or too much sun,
Or work or waitin' round to do
Before the plowin's done.

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And maybe, like as not the wheat,
Jest as it's lookin' hard to beat,
Will ketch the storm—and jest about
The time the corn's a-jinin' out!

These here cy-clones a foolin' round—
And back'ard crops—and wind and rain—
And yet the corn that's wallered down!
May elbow up again!
They aint no sense, as I can see,
For mortals, such as you and me,
A-faultin' nature's wise intents
And lockin' horns with Providence.

It ain't no use to grumble and complain;
It's jest as cheap and easy to rejoice;
When God sorts out the weather and sends rain,
W'y, rain's my choice.

—*J. W. Riley.*

———:o:———

## CHALLENGE TO GARDENERS.

"I challenge any gardener," says the eminent meteorologist, Dr. Simmonite, "to disprove any of the assertions that follow:"—

1. That if fruits and herbs are set after the moon is fifteen days old, or past the full, they are neither so rich in flavor, nor so strong and healthy, as when planted when the moon is between three and fourteen days old.

2. Vines pruned during the moon's increase will spread farther than when pruned during her wane.

3. Shrubs planted during the moon's increase in ♊, ♋, or ♒, will take little root and shoot straight up.

4. Shrubs planted when the moon is in ♉, ♍, ♑ on the decrease, will take deep root and strike downwards —*The Meteorologist.*

———:o:———

THE EASTERN SIDE of the Atlantic is warmer at the same latitude than the western side.

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## ST. VALENTINE.

February welcome, tho' still cold and bitter,
Thou bringest Valentine, Pancake and Fritter.

Alluding to St. Valentine's Day, Collop Monday and Shrove Tuesday. Searching the elder poets we find several allusions to birds pairing on this Saint's anniversary:

Ye know well, how on St. Valentine's Day,
By my statute and through may governaunce
Ye do chose your mates, and after flie away.

—*Chaucer.*

Listen to another on the same subject:—

"————St. Valentine is past,
Begin these wood-birds but to couple now?"

—*Shakespeare.*

The following is from an elegant French writer:—

"Look how, my dear, the feathered kind,
By mutual caresses joined
Bill, and seem to teach us two
What we to love and custom owe."

—*Boileau imitated.*

But Herrick, in his Hesperides. probably has the happiest allusion to the popular belief:—

"Oft have I heard both youth and virgin say
Birds choose their mates, and couple too, this day,
But by their flight I never can divine
When I shall couple with my Valentine."

This poetical description gives some rural ceremonies used on St. Valentine's Day morning, 18th century, early portion:—

"Last Valentine, the day when birds of kind
Their little loves with mutual chirpings find,
I early rose, just at the break of day,
Before the sun had chased the stars away:

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Afield, I went, amid the morning dew,
To milk my kine (for so should house-wives do),
The first I spied, and the first swain we see,
In spite of Fortune, shall our true love be."

—*Gay.*

Goldsmith, again, in the "Vicar of Wakefield," says the rustics sent each other truelove knots on Valentine morning.

We conclude with a quotation from the most popular Almanac (a veritable Vennor) of the 17th and 18th centuries:—

"This month bright Phœbus enters Pisces
—Always when the sun comes there.
Valentine's Day is drawing near,
And both men and maids incline
To choose them each a valentine."

*Poor Robin's Almanac*, 1757.

———:o:———

## USEFUL NOTE.

A Practical Astronomer's hint to Lumber Merchants.

The students of lunar influence have arrived at the conclusion that timber should be felled during the decrease of the moon, between last quarter and new being best, for at those times much less sap is ascending. In the extensive forests of Germany, this rule is usually followed. Sauer, a district superintendent, assigns the following as its physical cause. He considers the ascensional force of the sap is much greater during the increase than during the decrease of the earth's satellite, and infers that the timber which is felled between the first and third quarter of the moon, when the vessels are more filled with sap, will be spongy, and more ready to succumb to the attacks of worms, that it will be more difficult to season; and that it will warp and split by exposure to very slight variations of temperature; but that, on the contrary, timber felled in the last quarter, when the sap ascends with diminished force, will be more dense and durable, and fitter in every way for the purpose to which it is designed.

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## THE STAR OF BETHLEHEM.

A SUPPOSED "SUNBURST."—OVERDUE.—WHERE TO LOOK FOR IT.

In an article on the planet Jupiter, I attempted to show the possibility of systematic birth, life and death taking place continually in every portion of the universe.

In the so-called "Star of Bethlehem," we have another proof of this theory. Stars that are always bright, emitting constantly the same amount of light, like our own sun, may be considered in their prime of youth, others waxing and waning at certain intervals of a few days or weeks may be classed as suns in the earlier stages of dissolution, and others growing brilliant after exceedingly long periods are much nearer decrepitude and death.


THE CONSTELLATION—CASSIOPEIA.

It is over two-thousand years since that HIPPARCHUS was led to construct his first chart of the heavens, moved thereto by the bursting forth of a bright star, where none before had existed. More remarkable still, since it deals with a date comparatively recent, was the star which shone forth in 1572 from the constellation Cassiopeia. First seen by SCHULER, at Wittemberg in August, it was noticed soon after by TYCHO BRAHE, who was priviliged to watch it increase until its brightness surpassed Jupiter's, becoming visible in daylight. It was then white, but rapidly fading it dulled to yellow, then red, it grew azure tinted, faded and vanished altogether in March, 1574.

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Astronomers have assigned a periodic brilliancy to this star which bursting forth near *Caph*, the eastern brilliant in Cassiopeia, astonished all Europe. Its time is given as 310 or 312 years. This corresponds to the present time for its possible reappearance. It has been called the "Pilgrim," but is generally known as the "Star of Bethlehem," and that it was so is not improbable. Holy Writ affirms no special creation, and a very short sum in simple multiplication will show the nearness of its return to the date fixed as the commencement of the Christian Era.

The previous return would nearly correspond with the age of HIPPARCHUS. I have also searched more recent records and find that in the year 975, A.D., near when it should have been seen, "a star appeared during harvest, high in the heavens, a new star in the firmament."

Several theories are advanceable to account for these "sun bursts." Cometary downfalls, occultations by opaque bodies, and very eccentric orbits have each played their part in elucidating what still seems unexplained. Appearances like these were as startling and irresistable to the astronomers of the sixteenth as to the astrologers of the first centuries.

But can we identify this emanation, noticed by TYCHO BRAHE with the star seen by the wise men? "They came from the east." If we believe the star shone out from Cassiopeia in each case, that constellation toward the middle and end of December, makes its meridian passage and is exactly overhead a little before sunset, and pursuing a westward course, nears its northern or lower meridian transit about daybreak. Thus it would seem "to stand over where the young child was." It seems hardly credible so grand an object shone for one night only, for these men came long distances, probably travelling for weeks or even months, and they "saw the star" before commencing their journey westward. They came most likely from Arabia—early home of celestial study—declaring they had "seen His star in the east and had come to worship Him." The Monks of the middle ages, with their usual flowery additions declare these men kings; they were much more likely careful watchers of the stars and their terrestrial influence, *i. e.* Astrologers. Such men living in the present day, when every school-boy is willing to toss up his cap at the

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declared grand progress in the march of enlightenment, would surely have received ridicule from an unbelieving generation, far otherwise, however, their reception by the CHILD OF BETHLEHEM, else had their enthusiastic act of homage found no place in the Apostolic records, or their gifts been graciously accepted.—*Walter H. Smith in Vennor's Weather Bulletin.*

———:o:———

## AEROLITES.

The largest in any museum in the United States is in the National Museum. It was found in Northern Mexico, the region where most of the aerolites have been found. Its weight is 3,000 pounds. The second largest is the Gibbs aerolite, in the museum of Yale College, weighing 1,600 pounds; and the third in size is also in the National Museum, its weight being 1,400 pounds The last is called the "Tucson aerolite." The government also owns a heavy mass of iron found in the interior of Greenland, which for a time was believed to be a monster aerolite. Several smaller aerolites are to be found in the Smithsonian Institution and other museums of the country.

———:o:———

## WIT AND WISDOM OF JOHN PLOUGHMAN.

Keep such company as God keeps.

Old foxes are caught at last.

To desire happiness is natural; to desire holiness is supernatural.

A good friend is better than a near relation.

Boast not of your wisdom; Satan knows more than you.

If the love of God sets us at work, the God of love will find us wages.

Fretting cares create grey hairs.

Keep your hand out of the fire and yourself out of a quarrel.

When an old dog barks there's a reason for it.

Open doors invite thieves.

The breath of prayer comes from the life of faith.

Make your pudding according to your plums.

Be not all rake nor all fork, all screw nor all cork.

If you say nothing nobody will repeat it.

Do not blow hot and cold with the same breath.

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## SUN WORSHIP.

By Richard A. Proctor.

In old times, men worshipped the sun as a god. They knelt in adoration before his glorious orb and raised their voices in supplication to him, as to a being who could hear their prayers and grant them what they wished. How widely prevalent that religion of sun worship was, we cannot now tell; but there are traces in the purer religions of later times, of that old system. Even in our own time, quite a number of ceremonial observances can be referred back to the time when the rising and setting sun, was regarded as a god, when the annual movement of the sun, carrying him now below, now above the equator, was followed as the motion of a deity; now, withdrawing anon renewing his favoring glances, while the critical epochs when the sun-god was passing the equator, ascendingly or descendingly, were celebrated as religious festivals, of which the Feast of the Passover (and our own Easter in its seasonal or astronomical aspect) and the Feast of Tabernacles are adumbrations, though associated now with purified religious ideas. We are apt to smile at these old faiths, if we do not utterly contemn them; but in a sense they were reasonable enough at the time when they prevailed. If under any circumstances men might forget the Creator and worship the creature, it was in the case of sun-worship. To say truth, there is no apter emblem of the Deity than the sun. Too glorious to be regarded save as through a veil. The sun is the source of every form of force existing on this earth. His might is exerted for our benefit, even when we see him not. In the night hours, as well as throughout the day the sun is at work holding not only the earth, but his whole family of planets, at their due distance to receive his rays. When he is hidden behind dense clouds, when darkness encompasses the earth, he is still at work for us. Nay, the very clouds which hide his rays are due to his labour on our behalf; even when their gloom seems greatest, they are preparing under his beneficient beams to drop fatness on the earth. Science, however, which has shown the sun as the true source of clouds and rain, hail and snow, wind and storm, of all the material forces at work in the air, on the sea, and on land,

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the nourisher of vegetation and of every form of life, shows that he works according to natural laws. Sun-worship, is shown by science to be a gross materialistic religion. It has been rejected as unworthy of reasoning men, understanding what the sun really is. In this science has done what over and over again science has had to do, and has been reproached for doing—until, with the advance of knowledge it has been seen that in pointing out what is material and unworthy in the cruder forms of worship, science has not been materialistic, but the reverse. Science leaves what lies at the back of each even of these imperfect religions, and the mystery which must exist in all forms of worship, if they be true for those who hold them. Nor need we fear that, as science shows the real nature of what in earlier times had been mysterious, the mysteries of Nature will be rendered fewer or less impressive. On the contrary, behind each law which scince has interpreted, each mystery explained (if in truth science can be said really to explain anything) are even found greater mysteries, inasmuch that it may be doubted whether the human mind, as at present constituted, could bear the contemplation of the overwhelming mysteries lying (we may be well assured) behind those which science now confronts—the mysteries of universal attraction and universal repulsion, of the infinitely great and of the infinitely little, of infinite space and infinite time, of infinite variety, and, in fine, of infinite power.—*Knowledge.*

## OUR EARTH COMPARED WITH THE FIXED STARS AND PLANETS.

Of all the first magnitude stars only three or four have been found to show any appreciable parallax. It is not, unlikely therefore, that some of them greatly exceed Sirius in magnitude. On the other hand, as we know that some of the faint stars are much nearer than most of the brightest it is probable that some are comparatively near, and therefore small as compared with our sun. Indeed, it would seem that, just as within the bounds of the solar system the interplanetary spaces are sown with meteors graduated all the way down from an asteroid to specks of dust, so stellar space is sprinkled with globes of every conceivable size.

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While it is convenient and helpful in forming a conception of the universe to think of the stars as suns surrounded each by its retinue of worlds like the planets of our system, we are not warranted in supposing anything more than a general analogy. There are other worlds than ours, no doubt, but it is not every great globe that makes a habitable world. In our system it is possible that Venus and Mars and the moons of Jupiter and Saturn support life. Of the other planets great and small, scarce any one would venture such an opinion. Only a few of the lesser globes appear to be inhabitable. But these great planets have a prospective value as life-producing worlds. Computations of the orbits of thirty double stars show in most instances high eccentricities, their orbits resembling those of comets. From this point of view it is hard to see how one-tenth of these systems can maintain organic existences. The amount of light and heat at one part of the course of the companion of Sirus is fifty times what it is at another, and as the access of heat and cold is cumulative through periods of twenty-five years, the climate of that sphere, must as far as we can judge, make life forever impossible. This is to be said with much diffidence. Perhaps the conditions of life as we know it are not at all the absolute conditions. In all the innumerable myriads of worlds there may not be one in which a single plant or animal with which we are familiar, exists. Nature has fathomless resources of design and never needs to repeat herself. Our conviction then is that this earth, though not large relatively to many cosmical masses, is unique. In all creation there is not another like it. For those who live upon it is the best of all worlds, the only world in which they could have had existence, and the gem of the planets.—*Rev. N. M. Mann.*

——‡o‡——

IN THE POLAR REGIONS, where the snow lies unmelted from year to year, it assumes a ruddy color, and sometimes becomes red like blood. In Spitzbergen it sometimes assumes a green hue. This, it has been ascertained, is caused by an exceedingly minute vegetable resembling a mushroom, which never flourishes at a temperature exceeding that of melting ice.

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## TAKE NOTES.

We have repeatedly recommended the systematic keeping of weather notes. A few notes written each evening in a book kept for the purpose will in course of time form a volume of most valuable items that may some day be largely drawn from by some writer on the climatology of our country. If we do not keep in mind the weather of past years, we enter each month of the year in perfect ignorance of how it is likely to act, and are totally unprepared for what we might, at any rate to a certain extent, have anticipated.

## CHRISTMAS DAY ON SUNDAY.

How often does Christmas fall on Sunday? a pretty question of mental arithmetic, and which few are able to answer correctly off hand. Some will answer boldly every seven years, because there are seven days in the week, and the 25th of December comes one day later in the week every year. Others will remember that leap year is a disturbing element in the calculation, and will say the answer is every six years, deducting one for the effect of leap year. A smaller number of persons will remember that as leap year occurs every fourth year, it must sometimes occur twice before the seven days of the week are passed over. Fewer still bear in mind that leap year must sometimes make Christmas jump over Sunday. Those who think it out will find that the event occurs in a series of 11, 6, 5, and 6 years, and that this series is regularly repeated. In other words the years on which Christmas falls on Sunday, will be 1870 *plus* 11, *plus* 6, *plus* 5, *plus* 6—that is, in 1881, 1887, 1892, 1898; then *plus* 11, etc., as before. So in reality it occurs four times in twenty-eight years, or, *on an average*, once in seven years.

At Jakutsk, in 62° 2′ north latitude, it has been determined by actual excavation that the earth is frozen to a depth of 382 feet, and this stratum of permanent frost increases as we advance northward.

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## THE TWELVE SIGNS.

ARAGO'S INTERPETATION OF THEIR MEANING.

The Zodiac is an imaginary belt, or broad circle, extending quite around the heavens. It is divided into twelve equal parts called the signs of the Zodiac. The sun apparently passes through these twelve constellations every year. We say apparently, because the sun in respect to the earth really stands still, his apparent yearly course being caused by the earth's annual revolution. Each of the twelve signs of the Zodiac are divided into thirty smaller parts, called degrees; each degree into sixty equal parts, called minutes, and each minute into sixty parts called seconds.

The division of the zodiac into signs is of exceedingly ancient date, each sign having also received the name of some animal, or object, which the constellation, forming that sign was supposed to resemble. The signs have each a special name and symbol, for which the following explanation has been decided upon by the Egyptian Institute, which considers them as derived from comparisons made by the ancient Egyptians between celestial and terrestrial phenomena, being principally of a local nature, and belonging exclusively to their own country.

CAPRICORNUS.—( ) The first month of summer, extending from June 20 to July 20. He begins the year and leads the celestial animals, as the goat is the leader of the flock.

AQUARIUS.—(♒) The second month of summer, when the inundation of the Nile is at its full extent.

PISCES.—( )-( ) The third month of summer, when the rise of the waters causes the fish to move about.

ARIES.—(♈) The first month of autumn, extending from September 20 to October 20. As the waters subside, the ram returns to the pastures. leading the flocks which have heen held captive by the inundation.

TAURUS.—(♉) The second month of autumn, denoting the period of tillage in Egypt.

GEMINI.—(♊) The third month of autumn. when the seeds germinate.

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CANCER.—(♋) The first month of winter, extending from December 20th to January 20th. The motion of the crab indicates the retrograde motion of the sun at the winter solstice.

LEO.—(♌) The second month of winter. The king of animals, typifies the strength and grandeur of nature at this period.

VIRGO.—(♍) The third month of winter. The sign denotes beauty.

LIBRA.—(♎) The first month of spring, extending from March 20th to April 20th. Allusion is made to the vernal equinox, when the days and nights are equal.

SCORPIO.—(♏) The second month of spring, when the heat stimulates venomous reptiles, and induces disease and pestilence.

SAGITTARIUS.—(♐) The last month of spring, the centaur drives all before him; the course of the year is drawing to a close.

## LAW OF GENERAL COMPENSATION.

The following may be of interest to those of our readers who watch the weather. It is an illustration of the manner in which the law of general compensation in our yearly weather log is fulfilled:—

The year 1875 entered cold and with plenty of snow; it went out mild and rainy.

The year 1876 entered mild and wet; it ended with heavy snow-storms.

The year 1877 entered snow and storm; ended with mild and no snow.

The year 1878 entered cold and bare; it ended with plenty of snow.

The year 1879 entered plenty of snow; it ended with mild and rainy.

The year 1880 entered mild and wet; it ended with cold and deep snow.

The year 1881 entered cold and deep snows; it ended with mild and no snow.

The year 1882, entering cold with but little snow; ended dull and mild.—*Vennor's Weather Bulletin.*

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## OUR MARCH THROUGH THE HEAVENS.

It is difficult to comprehend that, in addition to the earth's motion around the sun, the latter is also moving through space at the rate of 160,000,000 miles in a year. The astronomers of the last century discovered that our solar system was flying through space in the direction of the constellation Hercules; in other words, if the spectator were to take a stationary point in the heavens, he would see our sun with its attending planets passing through the space at the rate of nearly 450,000 miles per day. Six thousand years ago, it is computed, our solar system was a million millions of miles farther from the stars of Hercules than it is to day. The region in which we are entering is more thickly studded with stars—that is, with suns of other solar systems—than the heavenly regions we have left behind us. What a marvellous universe we live in! When we travel on a railway car at the rate of fifty miles an hour, it makes our head swim; but when we call to mind that the earth revolves on its axis once in twenty four hours and around the sun, 92,000,000 miles distant, in 365 days, and that that sun is flying through space 160,000,000 miles in a year, human consciousness cannot comprehend the mad whirl of worlds by which we are surrounded. What fairy tale or Arabian Nights story is half so marvellous as the simplest and most ordinary facts in astronomy?

## ARE OUR SUMMER CLIMATES CHANGING?

A St. Louis paper advances the opinion that the summers in the west are certainly cooler than they were thirty years ago and the summers in the East are hotter. The summer of 1883, it says, was quite as cool as that of 1882. Although no conclusive facts are presented to support the theory, it may be well to test it by thermometric records covering a long series of years.

About thirty years ago Dr. Engelman published a summary of thermometer observations continued twenty-two years at St. Louis, from 1833 to 1855. During this period the average temperature for June was 73° for July 78° and for August 76 degrees.

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To test the variation of mean summer heat in later years we may take the published government weather date, covering a period of seven years including 1875 and 1881. In this more recent period the averages were:—For June 73.7, for July 79.6, and for August 76.7. It will be seen that those thermal means all slightly exceed those obtained by Dr. Engelmann from the old records. It would therefore appear that instead of growing cooler the St. Louis summers have changed but little, and that little if anything, is on the side of hotter weather.

It would be a calamity to the Upper Mississippi Valley if its mean summer temperature were reduced even a very few degrees. But the occurrence of maximum temperature exceeding 104 degrees in 1881 shows that such a climatic change, which would be unfavorable to agricultural interests, especially grain producing, is not to be expected.

In the East also there is no evidence that any decided change in summer heat has taken place within recent years. The isothermal line of 75 degrees, calculated from official temperature observations on the Atlantic seaboard running from 1871 to 1880, extends during the three summer months to the average latitude of 39 degrees 40 minutes. The old isothermal of 75 degrees extends not quite so far north. But the thermal difference indicated by the two lines is insignificant, and when allowance is made for the probably greater inaccuracies of the older observations even this trivial difference may be regarded as imaginary.

Still, future investigation may show that the summer climate both of our interior and seaboard States is appreciably affected by the clearing and deforesting of vast continental tracts. This has been often asserted, but as often questioned by the best experts.—*N. Y. Herald.*

WHEN STORMS sweep over the country during the latter part of January, the same conditions may be looked for in the same sections at the close of February.

THE MEAN TEMPERATURE of the northern hemisphere is higher than that of the southern.

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## YEARS OF HEAVY SNOWFALL.

December, 1830, 1831 and 1834, on the island of Montreal, showed a fall of 26, 50, 27, 45 and 27, 70 inches respectively. In February, 1831, there was a fall 23. 30 inches; in 1882, 25. 85 inches; and in 1835, 21. 80 inches, but these are exceptions, for February has not generally been characterized by heavy snow-falls.

The heaviest fall of snow on record, in the neighborhood of Montreal occurred on the 17th and 18th of January, 1827, when from 60 to 70 inches of snow fell, drifts in the country roads were from 12 to 15 feet high.

1861 was a year of great snow-fall in Canada. At Montreal the total depth which fell was about 99. 58 inches. In 1868, 105. 27 inches fell, chiefly in November and and December.

The winter of 1868-69 was characterized by exceedingly heavy snow-falls.

## THE CLIMATE.

Figures gleaned from the observation points of forty-nine States and Territories show that the hottest places in the Union are Florida, Louisiana and Arizona, the mean annual temperature of which is 69. Texas ranks next at 67, Alabama 66, Mississipi 64, Arkansas 63, South Carolina 62, Indian Territory 60, North Carolina 59. Georgia and Tennessee stand on a par at 58, Virginia 57, Kentucky 56. The mean temperature of 55 prevails in California, Missouri and the District of Columbia; 54 in Maryland and Pennsylvania, 53 in Delaware, Ohio and Oregon, 52 in Idaho, Utah and West Virginia. 51 in Indiana, Kansas, New Mexico and Washington Territory, 50 in Connecticut, Illinois, Nevada and New Jersey, 49 in Iowa and Newraska; Massachusetts ranks with Rhode Island, New York and Colorado at 48; Michigan and Dakota are equal at 47; Alaska is not the coldest place of the Union, but stands with New Hampshire at 46; colder than these are Maine and Wisconsin at 45, Montana and Vermont at 43, Minnesota at 42, and coldest of all, Wyoming at 41.

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## RULES FOR FARMERS.

1. Do not over-crop yourself; or in other words, do not undertake more than you can accomplish with ease.
2. Have a regular system in all you do, and do everything with a clear understanding as to result and effect.
3. Keep your lands well up to a good standard by a proper fertilizing and a judicious rotation of profitable crops.
4. Keep none but a good stock, and see to it that said stock is kept in good condition.
5. Take good farm papers, together with a few standard farm books written by practical men, who deal only in facts.—*Southern World.*

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## GREAT NUMBER OF METEORS IN SPACE.

Meteoric particles are striking the earth all the time. Some astronomers estimate that as many as 10,000,000 particles strike the earth each day, while the lowest estimate puts the number at 7,500,000 per day. Many more of these particles strike the earth in the morning than at night, and frequently observing persons in their morning walks can plainly see evidences of the meteoric showers. The meteoric particles seem to be circulating in space, and the earth as it now moves in its orbit strikes against them. Some of the meteoric showers are very copious and very bright. One writer has likened a meteoric shower that he saw to a snow storm, the flakes being of fire instead of congealed vapor. Astronomical observers have detected by means of the spectroscope, sodium, magnesium, and sometimes iron in these bright shooting stars. One consequence of this constant falling of meteoric particles is that the earth is growing larger, but there is no immediate danger of any radical change taking place in the surface of this sphere, for at the present rate of the meteoric fall, it would take 500,000,000 years for the earth to gain one inch of surface. Meteors are known to come in periodical showers, probably the most remarkable being the showers that occurs about the 11th or 12th of November.—*Young.*

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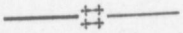
## THE NUMBER SEVEN.

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 63, 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.



At three feet below the surface of the earth the range of temperature is less than half what it is at the surface; at twenty four feet, less than one-tenth.

All Storms move east and never west, nor north nor south. Every bit of weather in this country is made in the north-western part of the Rocky Mountains. Experience and observation have shown that one year's mean temperature does not vary from that of another over 6°. Take it all in all Winnipeg, or Manitoba shows up the most cold weather in a year.—*Weather Bureau.*

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## EXTRAORDINARY SEASONS.

During the December of 1877, a western newspaper remarked that not since 1837 has any December season been known so mild. Lawn grasses were growing finely, and dandelions were in bloom; navigation was perfectly open. And again, in 1881, we had to record a very similar state of affairs on the same month of the year. The December of 1882 has been the very reverse over both hemispheres.

In the latter part of December 1877, the Napanee *Express* remarked as follows:—"The experiences of the present season are truly remarkable. Nothing like it has been known since 1837, the year of the rebellion, and then considerable snow fell before Christmas. Untimely sports and amusements, such as yacht races, steamboat excursions, etc., were indulged in on Christmas, in different parts of the Province: ploughing has been done in several parts, and still the weather has more the appearance of spring than winter, and no telling when a change may occur."

In connection with the weather we are reminded of a reminiscence printed some few years ago in *Harper's Weekly*, in which it was pointed out that the winter of 1816 was remarkably open everywhere, but that in the summer following the temperature was so cold as to kill all vegetation; that snow and frost were frequent visitors, and that the results, from an agricultural point of view, were so disastrous, that the year was referred to as "eighteen hundred and starve to death."

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PEOPLE ARE APT to think they "never experienced so hot a summer as this," or so cold a winter, as the case may be. They forget the heat and cold that had almost melted or frozen them in the past, and regard the present temperature and weather generally, as exceptional, if not unparelleled, and what is stranger each individual thinks himself the best authority on the subject. Such people are generally stocked with more conceit than brains and nothing seems to contribute so much to their enjoyment as the self-consciousness that they are wiser than "those government folks."—*Argus, Albany, N. Y.*

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## THE KRAKATOA ERUPTION.

FIRST SIGNS OF THE GREAT VOLCANIC DISTURBANCE—CITIES OBSCURED BY "A CLOUD OF DARKNESS WHICH MIGHT BE FELT"—DISAPPEARANCE OF ANJER.

The details of the Krakatoa eruption read like a page from the earthquake of Lisbon, or the yet blacker horror which Lord Lytton's genius cast around the fall of Pompeii. Even in the grim region, whose very soil seems forever quaking with the struggles of the unquenchable fires below, so widespread and overwhelming a ruin has had no parallel since the Island of Sumbawa exploded like a powder mine in 1815, shaking land and sea for hundreds of miles around, and hurling forth ashes and lava enough to "cover two feet deep the whole surface of Germany." On the night of Sunday, the 26th of August last, various sea captains far away from land paused in their measured pacing of the deck to listen in wonder to the sound of a heavy cannonade (as they thought) coming from the direction of the Sunda Strait at the western extremity of Java. During the same night several residents in Singapore were surprised by the appearance of a floating black dust, pungent stifling, and so fine that even a mosquito-net was not proof against it. In Java itself the tokens of evil were even more awfully manifest. The sun rose in vain for Batavia on the morning after that fatal Sabbath. A thick black cloud—a cloud of "darkness which might be felt"—encompassed the affrighted city. In that tainted air the flickering lamp quivered and died. The few men who returned to grope their way about the darkened town fell fainting in its streets. Houses and shops were shut and barred, and the inhabitants sat trembling within, thinking that the last day was at hand.

But the real nature of the calamity soon became terribly clear. The volcanic system of the Malay Archipelago may be best compared to an electric table traversing the whole length of Sumatra and Java, continued to the eastward through the smaller islands of Lombok and Sumbawa to Floris and Timor, and thence making a sudden bend northward to Amboyna and the Moluccas. One of tne most important links in this great

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explosive chain is the volcanic islet of Krakatoa, in the strait dividing Java from Sumatra, which was quickly discovered to be in a state of furious eruption. And now tidings of disaster began to come thick and fast from every side. Miles of flourishing plantations had been blasted by the burning ashes, and the labors of years were destroyed in one night. The sea, shaken to its lowest depths, rose and fell like a fountain jet, flinging boats and even large ships far up on the shore. Neither chart nor compass could save the bewildered seamen, who, voyaging over perfectly familiar waters, found sea in the place of land and land in the place of sea. In Batavia itself the streets were heaped with volcanic ashes and lava dust, while a succession of mountain waves, bursting upon the shore, rendered any approach from that side impossible.

But worse was still to come. The fatal mountain stood right in the centre of a group of native towns and villages lying along either side of the strait, and upon these fell the utmost fury of the destruction. One great wave sufficed to lay in ruins the Javanese village of Tjeringin. The district inspector of telegraphs, while engaged in repairing the broken wires between Serang and Anjer, a few miles further up the Javanese coast, suddenly descried far out to seaward a piled-up wall of water "standing up like a high column." and coming in upon the shore with inconceivable swiftness. When it subsided Anjer was gone. Even worse did it fare with Telnk Betong, a large Malay town on the Sumatran side of the channel. One line in a telegraph formed its dismal epitaph: "Teluk Betong has disappeared, with 10,000 inhabitants."

The Miltonic battle ended as suddenly as it had began, but its grim work had been thoroughly done. All the light-houses had disappeared from the Sunda Strait. Three populous towns were gone as if they had never been. Upward of 30,000 human beings lay buried under the falling ashes or in the depths of the devouring sea. The dust and volcanic cinders descended thickly all over Western Java as far as Cheribon. The flashes of the successive fire-spouts through the gloom were distinctly seen many leagues away, and, according to the concurrent testimony of several trustworthy witnesses. some of the explosions were

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plainly heard at a distance of 430 miles. The whole conformation of the Sunda Strait has been diverted in one night, and bold indeed will he be who shall dare to pass through it for many a day to come. Compared with the havoc of that fatal Sunday all the destruction wrought by the overthrow of Pompeii and Herculaneum is as nothing. But with the destroyed has perished the destroyer. One sentence of a recent bulletin rounds off with tragic fitness this battle of the giants: "The sea now plays where Mount Krakatoa once stood."—*New York Times.*

## SUN SPOTS AND FLOATING ICE.

Prof. Fritz of Zurich, who has studied the years when floating ice was most abuntadt in the lower latitudes of the Atlantic, declares that sunspots and abundance of detached icebergs are synchronous. From 1788 to 1870, epochs of maximum sunspots, and there have been 10 such periods, have been pretty nearly the years of greatest frequency of floating ice. The masters of tne North German line of steamers, who, having kept detailed accounts of ice met with every month in the Atlantic, shows that from 1860 to 1869 very similar weather, with pretty nearly the same temperatures, was found, and that during these years the greatest amount of floating ice was found. Now, going back to the cause, the present temperature is not caused by a cold Arctic winter, but rather by a warmer one. "which has prevailed pretty uniformly over the north Atlantic and northwestern Europe, aud which has detached a larger proportion than usual of Arctic ice fields." Sun spots may be made to explain innumberable things ohter than meteorological ones, for a great many periods of human strife show some co-incidence with these solar outbursts, commencing with 1788 and ending with 1882.

THE UMBRELLA and the rain are often *mist.*

"ONE SWALLOW cannot make a summer," but one frog can make a *Spring.*

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## SUNSTROKE.

The New York City Board of Health has issuned the following circular on the prevention of sunstroke:—

Sunstroke is caused by excessive heat, and especially if the weather is "muggy." It is more apt to occur on the second, third, or fourth day of the heated term than on the first. Loss of sleep, worry, excitement, close sleeping-rooms, debility abuse, of stimulants, predispose to it. It is more apt to attack those working in the sun, and especially between the hours of eleven o'clock in the morning and four o'clock in the afternoon. On hot days wear thin clothing. Have as cool sleeping-rooms as possible. Avoid loss of sleep and all unnecessary fatigue. If working indoors and where there is artificial heat (laundries, etc.), see that the room is well ventilated.

If working in the sun, wear a light hat (not black, as it absorbs the heat), straw, etc., and put inside of it, on the head, a wet cloth or a large green leaf; frequently lift the hat from the head, and see that the cloth is wet. Do not check prespiration, but drink what water you need to keep it up, as prespiration prevents the body from being overheated. Have, whenever possible, an additional shade, as a thin umbrella yhen walking, a canvas or board cover when working in the sun. When much fatigued do not go to work, but be excused from work, especially after eleven o'clock in the morning on very hot days, if the work is in the sun. If a feeling of fatigue, dizziness, headache, or exhaustion occurs, cease work immediately, lie down in a shady and cool place, apply cold cloths to and pour cold water over head and neck. If any one is overcome by the heat, send immediately for the nearest good physician. While waiting for the physician, give the person cool drinks of water, or cold black tea or cold coffee, if able to swallow. If the skin is hot and dry, sponge with or pour cold water over the body and limbs, and apply to the head pounded ice wrapped in a towl or other cloth. If there is no ice at hand, keep a cold cloth on the head, and pour cold water on it, as well as on the body.

If a person is pale, very faint, and pulse feeble, let him inhale ammonia for a few seconds, or give him a teaspoonful of aromatic spirits of ammonia in two tablespoonfuls of water with a little sugar.

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## A MILD WINTER.

VENNOR'S OPINION CONFIRMED BY AN OLD TRAPPER—THE INDICATIONS AND SIGNS.

"What kind of a winter are we going to have, uncle?" asked a Terre Haute *Express* reporter of an old squirrel hunter and mink trapper, who makes his home in the hills across the river.

"I kinder calculate that we will have a rather mild winter; all the indications point to such."

"What signs do you go by uncle?"

"I have a good many signs, and I never knew one of them to fail yet. When I say we are going to have a mild winter, you can depend on it. Haven't I lived in this country for forty years, and haven't I watched the winters right along, and oughtn't I be able to tell?"

"Are the corn husks thin this year?"

"You better reckon they are. They are only two or three layers of them, and they are as thin as calico. Why, the corn is all dry enough to go through the snow without injury. The one or two frosts we have had have sucked all the sap out of it."

"Are there other indications besides the corn husks?"

"You better believe there are. Now, when the sun crossed the line the wind blew from the south-east. That indicates a mild winter every time. If it had blown form the north you could have been prepared to hear the wind blow great guns."

"Is that all?"

"Not by a long ways. I could tell you enough to fill a book. My dog holed a ground hog the other day. I had nothing to do, so I set to work and dug the animal out. He didn't have a leaf or a twig in his hole; hadn't nothing in the shape of a nest."

"Isn't it too early for ground hogs to make their nests?"

"Now I see how little you know about a ground hog. A ground hog has his hole dug, or has picked out his hole by the first of September. If it's going to be a cold winter he has it filled with leaves by this time."

"Is there anything else?"

"Yes. The coons haven't commenced to gnaw the corn. That is a splendid sign. And another sign, and a sign that

Ask for Clark's M. E. Q. Spool Cotton.



never fails, the woodpeckers haven't commenced to drum. Now, if this was going to be a cold winter all the dead trees would be covered with red heads pecking away at a hole in which to store nuts."

"Isn't it too early for that yet?',

"Not a bit. They should have their holes all pecked by this time, and be ready to fill them. There is not a smarter bird than the wood-pecker; he knows what he's about when he is pecking away at an old limb from morning till night."

## WIT AND HUMOR.

Where the mind inclines, the feet lead. Love climbs mountains.

The morning of life, like the dawn of day, has the most of purity, imagery and harmony.

A Boston man ate 150 baked clams the other day. He died calmly, and was wafted to that beautiful shore where they bake everything.

A dredging machine is a very good thing in its way, but injurious to the sense of music, for it not only removes flats, but whole bars.

Chicago folks now have their monograms put on their toilet soap. And we somehow suspect they must be afraid of spoiling the monograms.

A fuddled New Yorker skinned his nose on a barber pole, and said: "'Scuse me!" He thought that he had fallen against a pair of striped stockings.

Passenjaire: "Why is it that these street boys who catch on to the cars have not been fined before?" Drivaire: "'Cause they've been found behind."

There is a hog in Georgia that drinks beer. Long hair and a suit of shiny clothes is all it wants to become a socialist, and claim to be a working man.

A philosopher says: "The man who laughs is the sympathetic man." It is astonishing how many sympathizers a man has when he slips down and hurts himself.

# POSTAL MONEY ORDER INFORMATION.

1. On Money Orders drawn by any Money Order Office in Canada on any other Money Order Office in the Dominion, the commission is as follows:—

| | | | | |
|---|---|---|---|---|
| If not exceeding | $4 | | | 2c. |
| Over $4 | " | " | 10 | 5c. |
| " 10 | " | " | 20 | 10c. |
| " 20 | " | " | 40 | 20c. |
| " 40 | " | " | 60 | 30c. |
| " 60 | " | " | 80 | 40c. |
| " 80 | " | " | 100 | 50c. |

No single Money Order, payable in the Dominion of Canada, can be issued for more than $100; but as many of $100 may be given as the remitter requires.

Not more than one Order under $10 payable in Canada may be issued to the same person in the same day, drawn on the same plcae in favor of the same payee.

2. Money Orders are issued in Canada on the following Foreign Countries and British Possessions, at the rates of commission shown below:—

| | For sums not exceeding— | | | | |
|---|---|---|---|---|---|
| The United Kingdom, France, The German Empire, Italy, Switzerland, Austria-Hungary, Roumania, The United States, Jamaica, Barbadoes, Newfoundland, British India, Victoria (Australia), New South Wales, Tasmania | $10 | $20 | $30 | $40 | $50 |
| | 10c. | 20c. | 30c. | 40c. | 50c. |

($50 *is the limit of a single Order.*)

Money Orders on the above countries are drawn in Canada Currency. Tables showing the sums payable in other countries where the money is of a different denomination, on Orders issued in Canada, will be found below.

TABLE showing the amounts in Canadian money to be paid for Money Orders drawn on the United Kingdom, British India, Jamaica, Barbadoes, Victoria, New South Wales, Tasmania and Zealand.

| Amount Payable in English Money. | Dollars and cents. | Amount Payable in English Money. | Dollars and cents. | Amount Payable in English Money. | Dollars and cents. | Amouut Payable in English Money. | Dollars and cents. |
|---|---|---|---|---|---|---|---|
| £ s. d. | $ c. | £ s. d. | $ c. | £ s. d. | $ c. | £ s. d. | $ c. |
| 0 0 1 | 0 2 | 0 0 11 | 0 22 | 0 10 0 | 2 44 | 1 0 0 | 4 87 |
| 0 0 2 | 0 4 | 0 1 0 | 0 24 | 0 11 0 | 2 68 | 2 0 0 | 9 74 |
| 0 0 3 | 0 6 | 0 2 0 | 0 49 | 0 12 0 | 2 92 | 3 0 0 | 14 61 |
| 0 0 4 | 0 8 | 0 3 0 | 0 73 | 0 13 0 | 3 17 | 4 0 0 | 19 48 |
| 0 0 5 | 0 10 | 0 4 0 | 0 97 | 0 14 0 | 3 41 | 5 0 0 | 24 35 |
| 0 0 6 | 0 12 | 0 5 0 | 1 22 | 0 15 0 | 3 65 | 6 0 0 | 29 22 |
| 0 0 7 | 0 14 | 0 6 0 | 1 46 | 0 16 0 | 3 90 | 7 0 0 | 34 09 |
| 0 0 8 | 0 16 | 0 7 0 | 1 71 | 0 17 0 | 4 14 | 8 0 0 | 38 96 |
| 0 0 9 | 0 18 | 0 8 0 | 1 95 | 0 18 0 | 4 38 | 9 0 0 | 43 83 |
| 0 0 10 | 0 20 | 0 9 0 | 2 19 | 0 19 0 | 4 63 | 10 0 0 | 48 70 |

NOTE.—The original order issued in Canada must be sent to the payee by the remitter.

## *MONEY ORDER INFORMATION.—Continued.*

TABLE showing the sums payable in Germany, in Marks and Pfennings, on Orders issued in Canada.

| Canadian Money. | Value in Germ'n Money. | Canadian. Money. | Value in Germ'n Money. | Canadian Money. | Value in German Money. | Canadian Money. | Value in German Money. |
|---|---|---|---|---|---|---|---|
| cents. | pf. | cents. | m. pf. | $ cts. | m. pf. | $ cts. | m. pf. |
| 1 | 4 | 20 | 0 83 | 1 00 | 4 16 | 15 00 | 62 40 |
| 2 | 8 | 25 | 1 04 | 2 00 | 8 32 | 20 00 | 83 20 |
| 3 | 12 | 30 | 1 25 | 3 00 | 12 48 | 25 00 | 104 00 |
| 4 | 16 | 40 | 1 66 | 4 00 | 16 64 | 30 00 | 124 80 |
| 5 | 20 | 50 | 2 08 | 5 00 | 20 80 | 35 00 | 145 60 |
| 6 | 25 | 60 | 2 50 | 6 00 | 24 96 | 40 00 | 166 40 |
| 7 | 29 | 70 | 2 91 | 7 00 | 29 12 | 45 00 | 187 20 |
| 8 | 33 | 75 | 3 12 | 8 00 | 33 28 | 50 00 | 208 00 |
| 9 | 37 | 80 | 3 33 | 9 00 | 37 44 | | |
| 10 | 41 | 90 | 3 75 | 10 00 | 41 60 | | |

NOTE.—The original order issued in Canada should be retained by the remitter. The payee will receive a proper form of Money Order from the Chief Offi e at Cologne.

TABLE showing the sums payable in France, Belgium, Italy and Switzerland, in Francs and Centimes, on Orders issued in Canada. (The same table applies to Austria-Hungary and Roumania, but sums payable in either of those countries will be subject to a further deduction by the Swiss Post Office of 25 centimes for each 25 francs, the abatement on a single order being in no case less than 50 centimes.)

| Canadian Money. | Value in Foreign Money. | Canadian Money. | Value in Foreign Money. | Canadian Money. | Value in Foreign Money. | Canadian Money. | Value in Foreign Money. |
|---|---|---|---|---|---|---|---|
| cents. | ctms. | cents. | fr. ce. | $ cts. | fr. ce. | $ c | fr. ce. |
| 1 | 5 | 20 | 1 00 | 1 00 | 5 10 | 15 00 | 76 50 |
| 2 | 10 | 25 | 1 25 | 2 00 | 10 20 | 20 00 | 102 00 |
| 3 | 15 | 30 | 1 55 | 3 00 | 15 30 | 25 00 | 127 50 |
| 4 | 20 | 40 | 2 05 | 4 00 | 20 40 | 30 00 | 153 00 |
| 5 | 25 | 50 | 2 55 | 5 00 | 25 50 | 35 00 | 178 50 |
| 6 | 30 | 60 | 3 05 | 6 00 | 30 60 | 40 00 | 204 00 |
| 7 | 35 | 70 | 3 55 | 7 00 | 35 70 | 45 00 | 229 50 |
| 8 | 40 | 75 | 3 80 | 8 00 | 40 80 | 50 00 | 255 00 |
| 9 | 45 | 80 | 4 10 | 9 00 | 45 90 | | |
| 10 | 50 | 90 | 4 60 | 10 00 | 51 00 | | |

NOTE.—The original order issued in Canada, and payable in Belgium, Italy, Switzerland, Austria-Hungary or Roumania, should be retained by the remitter. The payee will receive a proper form of Money Order from the Chief Office at Antwerp, Turin or Basle, as the case may be.

The original order issued in Canada, and payable in France, must be sent to the payee by the remitter.

# POSTAL REGULATIONS.

The following instructions with regard to the addresses of letters intended for the Northwest have been issued by the Post Office Department:—

## TERRITORIAL DIVISIONS IN THE NORTH-WEST.

1. The extensive range of country lying between the western limits of the Province of Manitoba and the eastern boundary of British Columbia, has been formed into four territorial divisions, named Assiniboia and Saskatchewan, immediately contiguous to Manitoba, and Alberta and Athabasca, further west, and between the other two divisions and British Columbia.

Letters and other mail matter, therefore, intended for any settlement or place in the Northwest country thus divided, should be addressed to the territorial division in which it may be situated.

As Winnipeg, however, is the distributing Post Office for the whole region, such letters, &c., should invariably have "*via* Winnipeg," as part of the direction.

For example, a letter for Battleford should be addressed—

Mr. A. B.,
Battleford,
Saskatchewan Territory,
*Via* Winnipeg, Canada.

Postmasters should instruct all persons corresponding with the Northwest Territorries through their offices, to address letters, &c., as far as practicable, in accordance with these directions.

Th principal Post Offices already established in the above named districts are as follows:—

| *Name of P. O.* | *Territorial Div.* |
|---|---|
| Battleford | Saskatchewan. |
| Broadview | Assiniboia. |
| Carletnn | Saskatchewan. |
| Edmonton | Alberta. |
| Grandin | Saskatchewan. |
| Moosomin | Assiniboia. |
| Oak Lake | Do. |
| Prince Albert | Saskatchewan. |
| Qu'Appelle | Assiniboia. |
| Regina | Do. |
| St. Albert | Alberta. |
| Stobart | Saskatchewan. |
| Touchwood Hills | Assiniboia. |

JOHN CARLING,
*Postmaster-General.*

# ROYAL MILITARY COLLEGE,

## KINGSTON, CANADA.

Examinations for admission as Cadets to this College are held semi-annually, in June and December, at the office of the Deputy Adjutant-General of the Military District in which candidates reside.

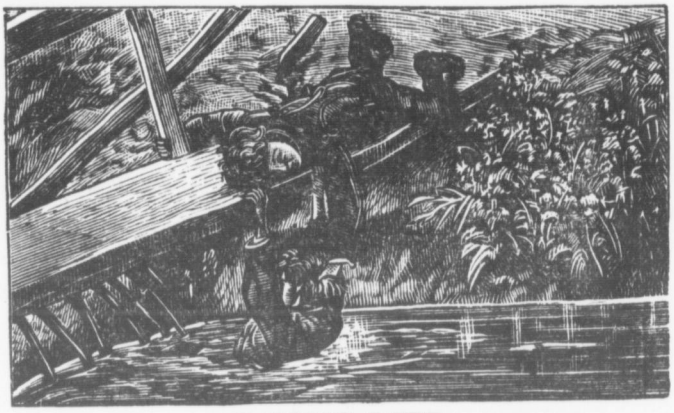
Applicants may obtain all necessary information from the Adjutant-General at Ottawa, or the Deputy Adjutant-General of Military Districts.

The limits of age are from 15 to 20, and candidates must be within those limits on the first day of the month following the examination.

Applications for admission should be sent to the Adjutant-General not less than one month before date of examination.

W. POWELL, COLONEL,
*Adjutant-General.*

ADJUTANT-GENERAL'S OFFICE,
Ottawa, April 3rd, 1883.



SAVING LIFE.

# DR. HARVEY'S
## ANTI-BILIOUS & PURGATIVE
# PILLS

## Are Life Preservers,

For they cleanse the system of all impurities resulting from

**Over Eating,**
**Excessive Labor,**
**Costiveness,**
**Headache,**
**Boils,**
**Biliousness,**
**Liver Complaint,**
**Indigestion,**
**Eruption of the Skin,**
**Impure Blood, &c.**

The **Anti-Bilious Pills of Dr. Harvey** are prepared with the greatest care, composed **entirely of the most powerful Vegetable Medicines without Calomel** (Mercury) or any of those very injurious ingredients so much used in some of the **Popular Pills,** and by the smaller dealers throughout the country.

Their penetrating and searching qualities find out, cleanse, and invigorate every portion of the human organism, correcting any diseased action present, and restoring the part to its normal healthy state.

These Pills do not gripe or produce the slightest pain or inconvenience during their operation; they are consequently the most pleasant and agreeable as well as the surest and safest remedy ever offered to the public.

# M. H. BRISSETTE,

**424 ST. PAUL STREET, MONTREAL,**

PROPRIETOR OF

**Dr. Harvey's Anti-Bilious & Purgative Pills.**

Always on hand a full assortment of

**DRUGGISTS' SUNDRIES.**

—THE—

# Canadian Pacific Railway Company.

## AMENDED LAND REGULATIONS.

The Company now offer lands within the Railway Belt and elsewhere, at prices ranging from

## $2 50 PER ACRE UPWARDS,

with conditions requiring cultivation.

A rebate for cultivation of from $1.25 to $3.50 per Acre, according to price paid for the land, allowed on certain conditions.

The Company also offer lands

## Without Conditions of Settlement or Cultivation,

At prices which can be obtained from the Land Commissioner.

The sections heretofore reserved along the main line, *i.e.*, the odd-numbered sections within one mile of the Railway, not already disposed of, are also offered for sale on advantageous terms to parties prepared to undertake their immediate cultivation.

## TERMS OF PAYMENT.

If paid for in full at time of purchase, a Deed of Conveyance of the land will be given, but the purchaser may pay one-sixth in cash, and the balance in five annual instalments, with interest at six per cent. per annum, payable in advance. Payments may be made in Land Grant Bonds, which will be accepted at ten per cent. premium on their par value and accrued interest. These Bonds can be obtained on application at the Bank of Montreal, Montreal; or at any of its agencies.

For further particulars apply to JOHN H. McTAVISH, Land Commissioner, Winnipeg, to whom all applications for lands should be addressed.

By order of the Board.

CHARLES DRINKWATER,
*Secretary.*

Montreal, November, 1883.

# KENNETH CAMPBELL & CO.,

WHOLESALE DRUGGISTS,

603 Craig Street, Montreal.

CAMPBELL'S ELIXIR OF BEEF, IRON AND WINE,

The Great Nutritive Tonic. Made with Carefully Selected Material. Always Fresh and Reliable.


McPHERSON'S OINTMENT,

An infallible remedy for Sore or Weak Eyes, Salt Rheum, Scalds, Burns, Recent or Old Sores, &c. K. C. & CO. PURCHASED RECIPE from late Mr. McPherson.

THE FAMOUS CAMPBELL'S QUININE WINE,

**The only Tonic suitable for every season of the year.**

*THE ORIGINAL AND GENUINE.*