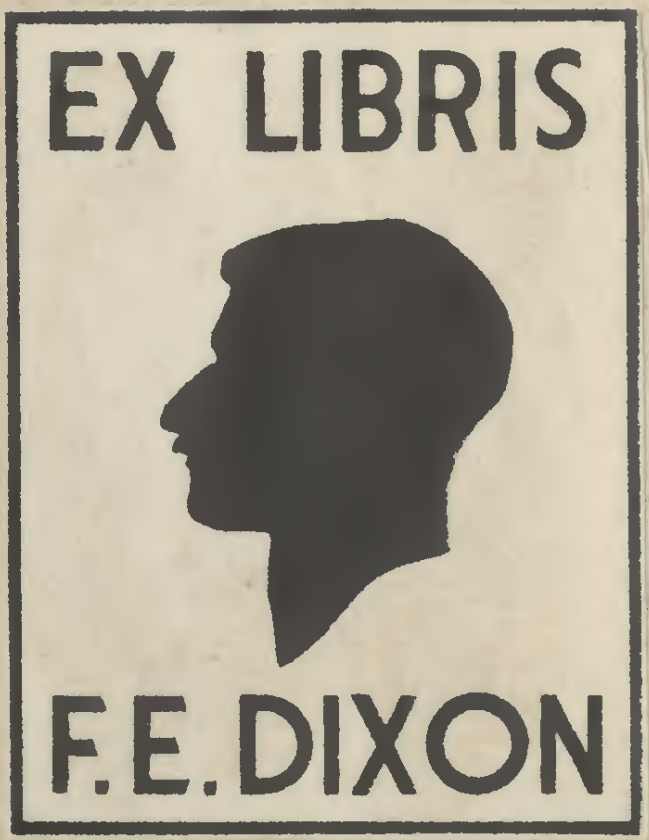
E. M. Taylor
March 7th 1901



754 **Mackenzie** (G.) Elements of the Cycles of the Winds, Weather and Prices of Corn, *The Perth Printing Co.* [1843] 6s

Working with the English Board of Agriculture Mackenzie first evolved his "Primary Cycle of the Winds" in 1819.

ELEMENTS

OF THE

CYCLES OF THE WINDS, WEATHER,

AND

PRICES OF CORN:

CONSISTING OF,

I.—CYCLE OF THE WINDS BY ANNUAL RATE—54 YEARS.

II.—CYCLE OF THE WINDS BY THE SEASONS, WINTER AND SUMMER—216 YEARS.

III.—CYCLE OF THE WEATHER OF 54-YEAR CYCLE OF THE WINDS.

IV.—CYCLE OF THE WEATHER OF 216-YEAR CYCLE OF WINDS OF THE SEASONS.

V.—CYCLE OF THE CHEAP AND DEAR PRICES OF WHEAT.

Forming the Five Primary Cycles of the Weather and Prices.

ALSO,

REPORTS OF THE WEATHER FOR THE YEARS
1844 & 1845,
BEING Nos. XV. & XVI.
WITH NOTICES OF THE WEATHER TO THE YEAR 1852.

BY GEORGE MACKENZIE,
AUTHOR OF THE CYCLE OF THE WEATHER, &c.

THE PERTH PRINTING COMPANY:
W. BELFORD, PRINTER.

PRICE 2s. 6d.

CONTENTS.

NOTICE.

In the *Reports of the Weather* of the recent years, it was stated that the weather of biennial deficiency east of 1842 and 43 was not equally under command as the weather of a number of subsequent years, and the same statement is made in the present work at page 21, and the cause is there explained. The following statement of the weather of the three biennials of deficiency east of the Register, the last being current at present, will be found to be correct—at least for Scotland.

1st Biennial Deficiency East.

Total short rains of the summer of 1807—it had 195—wet, cold.
Do. do. 1808— do. 142—dry, mild.

2d Biennial Deficiency East.

Total short rains of the summer of 1825—it had 163—dry, mild.
Do. do. 1826— do. 144—dry, mild.

3d Biennial Deficiency East.

Total short rains of the summer of 1842—it had 159—dry, mild.
Do. do. 1843— say 200—wet, cold.

On the first summer of each lot the rains decrease from the first summer to the last, while on the second summer the rains increase from the first summer to the last—the two summers of the mid lot being in the transition from wet to dry, and from dry to wet. It was not possible to detect the weather of the third lot exactly, from the state on the first two lots—until actual experience pointed out the same. *(See the figure of the 54-year cycle of the winds.)*

Notwithstanding of the correction made above, the weather of summer 1843 will be found substantially correct, as reported.

Page 21, line 12, *for* 'triennial' *read* 'biennial.'

June 8, 1843.

PRIMARY CYCLE OF THE WINDS;

OR,

CYCLE OF THE LOTS OF EXCESS AND OF DEFICIENCY OF EASTERLY AND OF WESTERLY WINDS,

BY THE ANNUAL RATE.

DISCOVERED AT PERTH ON 12TH JULY, 1817,
FROM A REGISTER OF OBSERVATIONS OF THE WEATHER,
COMMENCING ON FIRST DAY OF NOVEMBER, 1802.

COPIES OF LETTERS

Transmitted to the Author by the Right Honourable Sir John Sinclair, Bart.

My Dear Bart.

You transmitted to me, some time ago, a work of Mr. Mackenzie's, entitled, "*The System of the Weather of the British Islands,*" which the author wished that I should present to the French Institute for their examination. I have real pleasure, my dear Sir John, in sending you with this a copy of the letter that M. de Lambre, Perpetual Secretary of the Academy of Sciences, has written to me on the subject. You will there see that the work of your friend has been received with gratitude; and that it is the Baron de Humboldt who is charged to make a report on the work.

Accept the assurances of the sentiments of attachment and high consideration with which I have the honour to be, my dear Sir, your very humble and obedient servant,

Seguier.

Translation of a Letter from M. de Lambre, *the Perpetual Secretary of the Royal Academy of Sciences in France, to the* Baron Seguier, *Consul-General of France, at London.*

Paris, 1st October, 1821.

Mr. Le Baron,

The Academy has received with gratitude the work which you were so obliging as to address to them, and which is entitled, "*The System of the Weather of the British Islands,*" by Mr. George Mackenzie. It has charged me to thank you in its name; and it requests you, Sir, to have the goodness to be the interpreter of its sentiments to the author, that he may receive the thanks of the Academy for his interesting volume; and to announce to him, that the Academy has charged the Baron de Humboldt to make a Report of his work.

I have the honour to request you, Mr. Le Baron, to receive the assurance of my high consideration.

De Lambre.

No. XV.

REPORT OF THE WEATHER

For the Year 1844.

Beginning 1*st November*, 1843, *and ending* 31*st October*, 1844, *being the Weather Year of* 1844; *and in the Primary Cycle of the Winds, the figure of which is annexed, is the first year of a* TRIENNIAL *lot of* EXCESS EAST *wind; and the third year of a* QUADRENNIAL *lot of* EXCESS WEST *wind.*

WINTER SEASON.

November, 1843.—Slightly windy, rather clear, temperate, and dry.

December, 1843.—Rather clear, slightly snowy, and rather wet.

January, 1844.—Quiet and clear, average frost and snow, dry.

Winter Quarter.—Rather clear, dry, and average temperature.

February—Temperate, otherwise average or ordinary.

March—Some gales, slightly snowy, rather wet.

April—Rather windy, clear, dry; many fine days.

Spring Quarter.—Rather windy, generally clear, cool, dry, and slightly snowy, yet many fine days.

Winter Season.—Clear, average snow, under average frost, dry. Many fine and very fine days.

SUMMER SEASON.

May—Rather cold and rather wet.

June—Clear, average temperature, dry, easterly winds prevailing.

July—Average or ordinary weather.

Summer Quarter.—Rather clear, average temperature, and full average rain.

August—Average windy, average temperature, rather under average rain.

September—Slightly windy, cold, wet.

October—Average temperature and rain; many very fine days.

Autumn Quarter.—Average windy, rather wet, full average rain, slightly frosty; many fine days.

Summer Season.—Generally clear, temperate, frost above average, slightly wet, yet very fine days considerably above average.

Annual Period.—Quiet and clear year, temperate and dry, and great prevalence of fine and very fine days.

It is proper to mention, that the weather of the quarters and seasons is given, because the calculations for the months cannot be expected to hold equally correct with the other periods, in the infancy of the science.

The 1843, up to the publication of the present work (June), proved exceedingly correct in Scotland, or agreeable to the calculations made years ago of the weather to be expected on it; in particular, several severe gales or hurricanes took place, similar in this respect to the winter of 1842, and naturally to be expected under the quadrennial excess west wind, which commenced on the last mentioned year, according to the figure of the cycle of the winds by the annual rate. It is scarcely necessary to mention, that all the winters of the quadrennial lot of excess are not equally windy.

The weather of 1844 promises a climax of fine weather, the greater part of the year being very fine—the winter being dry and cool, and the summer mild and moist.

When fine weather is mentioned in the Reports, it means that it is seasonable in an agricultural view.

TABLE OF AVERAGES OF THIRTY-FOUR PHENOMENA,

FOR THIRTY-NINE YEARS,

From a REGISTER commencing 1st November, 1802, and including INCREMENTS and DECREMENTS, &c. of each Phenomenon within the Period.

No.	PHENOMENA.	Novem.	Decem.	January.	WINTER QUARTER	February	March.	April.	SPRING QUARTER	WINTER SEASON.	May.	June.	July.	SUMMER QUARTER	August.	Septem.	October.	AUTUMN QUARTER	SUMMER SEASON.	ANNUAL PERIOD.	INCREMENTS AND DECREMENTS OF QUANTITY, BY ANNUAL RATE.
1.	No. Days Easterly wind,	10	9	10	30	7	11	14	33	64	17	12	12	42	11	10	11	33	76	140	Stationary.
2.	Westerly,	18	19	19	58	19	19	15	54	113	13	16	18	48	19	18	18	56	104	217	Slightly increasing.
3.	Wind, E. quarter,	3	4	4	12	3	4	7	14	26	9	6	6	21	5	5	5	15	36	63	Increasing.
4.	W. quarter,	8	9	9	28	8	9	7	24	53	5	6	8	21	8	7	8	24	45	98	Do.
5.	N. quarter,	6	6	6	19	5	7	8	21	41	8	7	6	22	7	5	6	19	42	83	Decreasing.
6.	S. quarter,	9	8	9	27	10	8	7	26	54	7	9	8	25	9	10	9	29	55	109	Do.
7.	Indolent wind,	7	8	8	23	5	5	4	15	38	5	7	7	20	7	7	7	22	43	81	Stationary, unequal.
8.	Moderate,	11	10	10	32	9	12	13	37	70	15	14	15	46	13	12	11	36	82	152	Stationary.
9.	Windy,	5	5	6	17	6	7	7	20	38	7	6	5	19	6	6	7	20	39	78	Increasing.
10.	High wind,	4	4	4	13	5	5	3	14	28	1	2	2	6	2	3	3	9	15	43	Stationary.
11.	Gale,	1	1	1	4	1	1		3	7								2	3	11	Decreasing.
12.	Strength of wind,	30	32	33	95	36	34	27	97	193	20	17	18	56	23	24	31	79	136	330	Unequal.
13.	No. Days clear,				7				6	13				8				5	14	28	Increased and decreased.
14.	Generally clear,	6	6	5	18	5	5	5	16	35	6	6	5	18	5	6	6	19	37	72	Increasing.
15.	Cloudy,	8	8	9	26	6	7	6	20	47	6	5	6	18	6	6	7	20	38	85	Decreased and increased.
16.	Generally cloudy,	7	7	8	24	9	9	9	28	53	9	9	10	28	11	9	9	29	58	111	Increased and decreased.
17.	Partly clear and cloudy,	5	5	4	15	5	5	5	16	31	4	5	6	17	6	6	5	17	34	66	Do. do.
18.	Frost,	10	15	16	42	13	10	5	29	72	2			2			4	6	9	81	Do. do.
19.	Slight frost,	7	10	10	28	9	8	5	22	51							3	6	9	60	Stationary.
20.	Hard frost,	2	2	3	8	2			5	14										14	Increased and decreased.
21.	Severe frost, ..				5					6										6	Do. do.
22.	Sum of frost,	16	28	38	84	24	17	8	49	133							5	7	10	144	Irregular.
23.	No. Days snow, sleet, hail,	3	5	7	15	6	6	4	16	32									2	34	Stationary.
24.	Slight snow, &c.	2	4	5	11	4	4	3	12	24										26	Do.
25.	Mean Snow, &c.				3				3	6										7	Decreasing.
26.	Great snow, &c.									2										2	Greatly decreasing.
27.	Sum snow, &c.	5	7	12	25	11	10	6	28	53									3	56	Decreasing.
28.	No. Days rain, snow, &c.	17	18	17	53	16	17	15	49	103	15	14	16	46	17	16	18	52	98	202	Increasing.
29.	Slight rain, &c.	11	12	11	35	10	11	10	32	67	10	10	11	31	12	11	11	35	67	137	Increased and decreasing.
30.	Mean rain, &c.	4	5	5	15	4	5	3	13	28	3	3	4	11	4	4	4	13	25	53	Stationary.
31.	Great rain, &c.				3				3	7				2				3	6	13	Decreased and increasing.
32.	Quantity of rain, &c.	34	34	33	102	32	32	29	94	196	28	25	28	82	31	29	35	97	179	376	Generally decreasing.
33.	No. Days fine, mild, and cold,	12	12	13	37	11	11	11	34	71	13	12	12	37	11	11	11	34	72	143	Stationary.
34.	Very fine, mild, and cold,	6	6	6	18	6	6	7	19	37	8	7	9	25	8	8	8	24	50	87	Do.

TABLE OF AVERAGES.

(SEE TABLE OF AVERAGES, P. 8.)

EXPLANATION.

THE Table of Averages of the Phenomena forms the gateway or introduction to the subject of the cycles of the winds and weather; in other words, an appropriate "Introduction," not only to the Report for this year, but also to the brief explanation of the cycles of the winds and weather which follow.

Nos. 1 and 2. *(See these Nos. at the top of the Table.)* The first includes the average number of days easterly wind, and the second includes the average of days westerly winds; which, in each case, means the number of twenty-four hours of easterly and westerly winds respectively, in the month, quarter, season, &c. in the Table; that is, the average rate of each wind in each period—this Table wholly consisting of the average rates of the phenomena.

When calculating the amount of these winds by the day, the line of division, or that which separates the two classes of the winds, is from N.N.W. to S.S.E. and corresponds with the magnetic axis of the present time—the N.N.W. being rated a west, and the S.S.E. an east wind; all the intervening points respectively are rated as east or west wind. It will be seen, in the column for November, that the average number of days east wind for this month is 10, and the average of the west wind 18 days—both making 28 days wind for the period; the rest consisting of calms and fractional parts, which last, however, are always omitted in the calculations of the weather.

The average rate of easterly winds upon the winters at present is 64 days—*(see column of winter season,*

average of east wind)—the average of the same wind upon the summers is 76 days—*(see column of summer east wind.)* The great difference between the average amount of this wind upon the two seasons of the year is caused by the cycle of the winds of the seasons—a cycle of which a brief explanation is given, *for the first time*, in the Reports; in the succeeding 40 years or so, the proportions of the averages of these winds upon the seasons will be reversed, the winters having the greatest average amount, and the summers the least; the rate of the west wind is, of course, high, when the rate of the east wind is low, and the contrary. By the years, the average of easterly winds should be as 2 to 3 of the westerly winds, or in the proportion of 140 days easterly to 210 westerly winds: at present, the westerly winds preponderate by the year, but in a course of time, such as just mentioned, the process will be reversed—the easterly winds will be a trifle higher in amount than the general average, and the westerly the contrary, and so on alternately.

In the last column of the Table, headed "Increments and Decrements of Quantity," the meaning is, that the annual amount of the phenomena has *increased*, *decreased*, or has been *stationary*, as the case may be, during the course of the 39 years of the author's register. The quantity of easterly and of westerly winds always increase or decrease by the month, quarter, season, and by the year; but the movement of increment and decrement is most prominent and regular by the seasons, and have a striking resemblance to the tides of the ocean, and, like them, are liable to interruptions or exceptions for brief periods. The winds of the quarters by compass, viz. the east, the west, the north, and the south, are calculated in the same manner as for the months, &c.; for example, the winds in east quarter of the compass signify the number of 24 hours of this wind which has blown in that quar-

ter of the compass, which, of course, make so many days of this wind which has blown in the east quarter by month, quarter, season, &c. The winds of the quarters of compass are also always increasing or decreasing in amount, as explained in the last column of the Table on the lines of the quarters of the compass.

No. 7 of the Phenomena signifies 'light airs' or 'indolent winds;' the rest of this class will be easily understood. No. 12, 'strength of wind,' is thus explained:—Six days of 'light airs' are reckoned equal to one 'windy' day; three days of 'moderate wind' reckoned equal to one 'windy' day; one day of 'high wind' reckoned equal to three 'windy' days; one day of 'gale' reckoned equal to six 'windy' days. All these windy days are added together, and, including the number of actual or natural 'windy' days, the total is the 'sum' of the 'force' or 'strength of the wind' by month, quarter, &c. In the column for November, the average 'sum of the force' is 30 of these 'windy' days; in December, the average is 32, in January 33, and so on. *(See the Table.)*

Nos. 20 and 21.—'Hard frost' and 'severe frost.' A day of 'hard frost' is reckoned equal to three days 'slight frost;' a day of 'severe frost' equal to six days 'slight frost;' the sum of both added to the number of actual 'slight frosty' days, is the total or 'sum of the frost.' Temperature of 'slight frost' 30° and above; of 'hard frost' 25° to 30°; and of 'severe frost' all below 25°—Fahrenheit's thermometer being understood.

The rains, including snow, are thus calculated:—A 'mean' rain of from three to six hours of moderately heavy rain, or snow, is rated as equal to three 'slight' rains; a 'great' rain of six hours and upwards of moderately heavy rain, or snow, is reckoned equal to six 'slight' rains; the sum of both added to the number of actual or natural 'slight' rains, is the total sum or quantity for the month, &c. The average number of slight rains, thus

calculated, for November, is 34; for December, 34; for January, 33; &c. *(See the contents of these months, &c. opposite or on the line of phenomena, No. 32 of the Table.*

A 'fine' day admits of some rain, and all winds under 'high' wind; a 'very fine' day admits of but little rain, and no 'high' wind or 'gale,' and rarely the 'windy' state. Fine and very fine days may be of any temperature.

Observations by the barometer, thermometer, hygrometer, rain-gauge, &c. are never calculated with the view of determining the future condition of the weather; in this respect they are inferior to any of the more natural phenomena employed for this purpose, which are little short of 200 in number (a list of which is subjoined); but with regard to the variations of the day, these instruments are very useful and interesting. The averages continually rise and fall like any other amount of phenomena, and are therefore calculated every third or fourth year.

The reader would need to become familiar with the phenomena of the weather, with their average amount by the different periods of the year, and the year itself—for it was in consequence of this familiarity that the Reporter was enabled to prosecute the subject, and to make the discoveries of which the subsequent pages contain a brief account.

THE PRIMARY CYCLE OF THE WINDS.

Explanation of the process by which the Primary Cycle of the Winds was discovered, including also an explanation of some of the general properties of this Cycle—the figure of which is given in page 4.

THIS cycle has been discovered by means of a simple calculation of the easterly and westerly winds respectively, by the annual rate, and casting the average rate of each wind by the year, in the same manner that averages are usually calculated, such as the price of wheat, barley, or oats, &c.—the same principle, when applied to the phenomena of the weather, appears, excepting in most rare cases, to disturb, instead of enlightening, the mind of the general reader. Subjoined is the table containing the number of days of east wind in each year from 1803 to 1821, inclusive, being 19 years. See col. 1 and 2,—col. 1 containing the years, and col. 2 the days east wind, and col. 3 contains the days west wind in the period.

1	2	3
Years.	No. Days East Wind.	No. Days West Wind.
1803	128—D. 11 days.	232—E. 17 days.
1804	174 E. 35 „	182 D. 33 „
1805	160 E. 21 „	200 D. 15 „
1806	143 E. 4 „	221 E. 6 „
1807	118 D. 21 „	239 E. 24 „
1808	110 D. 29 „	254 E. 39 „
1809	147 E. 8 „	218 E. 3 „
1810	156 E. 17 „	193—D. 22 „
1811	134 D. 5 „	221 E. 6 „
1812	131 D. 8 „	231 E. 16 „
1813	127 D. 12 „	233 E. 18 „
1814	155—E. 16 „	189 D. 26 „
1815	134 D. 5 „	205 D. 10 „
1816	133 D. 6 „	188 D. 27 „
1817	112 D. 27 „	233 E. 18 „
1818	112 D. 27 „	245 E. 20 „
1819	144 E. 5 „	205 D. 10 „
1820	159 E. 20 „	187 D. 28 „
1821	176 E. 37 „	218—E. 3 „
	19)2653(139	19)4094(215

These figures being now before the reader's eyes, the object to be accomplished is to determine the average rate of each wind, and accordingly the different sums, first of the east wind, are added together, as is done on any ordinary occasion, when the whole product amounts to 2,653 days; now, in order to find the average rate, this sum is divided by 19, the number of the years, and by the usual process of division, the quotient or average rate appears to be 139 days, a fraction of 12 of remainder being neglected. The average of 4,094 days west wind is 215 days. The next step is to ascertain the years which have an over-average, and which have an under-average in each wind—for there is not an actual average rate in any of the winds, in any of the years of the table; every year is either above or below average. In the table the amount of days above or below average are marked in col. 2 and 3. This much having been stated about the average rate, the next move is to mark every sum above the average with the letter E, to signify 'excess,' meaning thereby that the year is above average, or in excess. Again, every sum which is under average is to have a letter D attached thereto, to signify 'deficiency,' or that the year is under average, or in deficiency. The next proceeding is to notice the order of these letters—thus, there is a single letter D at the top of the column of east wind on the 1803; lower down the column, in 1807 and 8, are two D's; lower down still, are, in 1811, 12, and 13, three letters D; and near the bottom, on the 1815, 16, 17, and 18, are four D's. These letters, therefore, stand thus—first in 1803, an *annual* or single year lot of deficiency of east wind; on 1807 and 8, a *biennial* or two year lot of deficiency east wind; on 1811, 12, and 13, a *triennial* or three year lot of deficiency east wind; lastly, on 1815, 16, 17, and 18, a *quadrennial* or four year lot of deficiency east wind, which completes the course of this series of the east wind, the next lot of the same order

being a single in 1822, a double in 1825, 26, and so on for ever.

The attention is next directed to the order of the excess east. In 1804, 5, and 6 are three letters E, which is called a *triennial* or three year lot of excess east; in 1809 and 10 are two letters E, or a *biennial* excess, or two year lot of excess east; on 1814 is a letter E or *single* year lot of excess east wind; this last completes a series of excess east wind. The second course begins with 1819, 20, and 21, which have each a letter E, and therefore form a *triennial* lot of excess east wind; in 1823 and 24 is a *biennial* excess, and so on for ever—lots of excess alternating with lots of deficiency, and the contrary. Should this description be fully understood, a glance at the column of west wind will show that the excess begins with a *quadrennial*, then a *triennial*, *biennial*, and last an *annual* or single year lot, after which the same order is repeated, and so on for ever. The deficiency west first in the table is a double or *biennial* lot, then a *single*, and after that a *triennial*, which begins the series, then a *biennial*, and so on for ever.

Should this explanation not be taken up, the reader is respectfully requested to begin this section again, and not desist until the description is mastered, or a neighbour may be consulted—for this table and its explanation forms the key to the whole subject of the weather, it therefore demands the utmost attention of the student, and unless thus far is understood, the whole work will appear an unintelligible mass of words. The sums of east and of west wind of the table were first put together 12th July, 1817, and a few subsequent years have been added in order to show a course of the series of excess and deficiency of each wind. The excess east and deficiency west are solar winds, and the excess west and deficiency east are lunar winds. The reader will perceive that the sums of easterly and westerly winds, on being added together, do not

make up the number of days in the year, excepting in rare cases; this is caused by the calms which prevailed much in these years.*

When the reader has become acquainted with the table as now explained, the figure of the cycle on the fourth page will at once be comprehended; in it the letters of the east wind are in the interior circle of letters; and the letters of the west wind are in the exterior circle of letters. The letters of the cycle for the future years were inserted in their respective places on their order and alternation being discovered by induction, on 12th July, 1817, the date of the discovery, from the sums of the winds of the first 14 years of the Register of observations, and have held true since that time, and will do so for ever.

It is right to mention here, that though this cycle was discovered in the manner stated, the principle of the cycle, as it may be termed, is something different. It soon appeared, from a more accurate calculation of the winds recorded in the Register, that every year of excess in either wind was not always above the average, nor was every year of deficiency in either wind always below the average; in short, the exceptions proved nearly equal to the rule; nevertheless, the average of the lots of excess in each wind is always considerably greater in amount than

* The reading of the series of lots of the four winds is as follows: first, of the excess east wind, a triennial, bienuial, and annual, after which a triennial again, and so on continually; of the deficiency west wind, the same as of the excess east wind. Of the excess west wind, first a quadrennial, triennial, biennial, and the annual or single year lot, and the same repeated continually. Of the deficiency east wind, first a single or annual year lot, a biennial, triennial, and quadrennial, after which the same repeated, and continually. In consequence of the shorter series of the excess east and deficiency west or solar winds, they are repeated four times in the 54 years, or in one turn of the cycle; same time the longer series of the lunar winds of excess west and deficiency east, are repeated but three times in the course of a revolution of the cycle.

the average of the lots of deficiency. At the same time it was discovered that the proper designation of the winds should have been into solar and lunar—the excess east and deficiency west forming the solar—and the deficiency east and excess west forming the lunar winds. To explain this new disposition would much exceed the bounds of an annual report. It has been considered best, however, to continue using the letters of E and D, so that the figure of the cycle remains as at first discovered.

The reader not having laboured to discover the average rate of the two winds, and consequent excess and deficiency above and below average, and most probably never thought of such a thing, cannot feel that interest in this calculation which the subject demands, and hence this description of these circumstances possess little or no importance; to him it will signify of small consequence whether one year has a few more days of east or of west wind than another year; but when it is understood that the excess in either wind is totally different in kind from the wind of the deficiency, or that, as stated above, one-half of the winds are of solar origin, and the other half lunar, the necessary impression upon the mind will naturally follow. When men's minds become familiar with the subject of the weather, the wonder will be that it should have been so difficult to understand for so many years after the announcement of the discoveries made in it; but the reason will be found in the very little attention paid to the subject from the supposed hopelessness of discovering its laws—indeed, a weatherwise was not considered overwise until the Reporter commenced, or rather until he continued, his publications for a number of years; at present there is no reflection thrown upon those who study the weather.

Hitherto the figure of the cycle as to order of lots has formed the subject of explanation—the following statement is calculated to show some of the properties result-

ing from the arrangement of the solar and lunar lots of the winds. Under or on the lot of triennial excess east of 1804, 5, and 6, the first winter of the lot in 1804 proved wet and snowy in an extreme degree on the east coast of Britain; the amount of rain, including snow, stands in the tables of the Reporter at 290 short rains. This season is still remembered by some individuals of sexagenarian age on account of the excess of wet, which much surpassed any of the other seasons in this respect, for the whole extent of the 41 years of the Register, particularly on the east coast of the island. Under the succeeding triennial excess east following, in 1819, 20, and 21, the first winter of 1819 was wet, but not an extreme —it had 217 short rains. Under the third consecutive triennial excess east of 1831, 32, and 33, the first winter of 1831 proved wet—it had 224 short rains. *(See Table of Averages, No.* 32, *column of winter season, where the average of short rains is stated at* 196.) From these three successive first winters of triennials of excess east having been all wet, or above average rain, it is certain the first winter of the ensuing triennial excess east, commencing in 1844, will be dry in a considerable degree.* The first three winters mentioned having been all wet, there was consequently a low rate of the very fine days on each, but in the winter of 1844 there appears, by the calculations, a very considerable over average of very fine days, therefore this season will exceed in very fine weather. Another corroboration of this statement is found in the fact of winter 1843 having been considerably wet,

* This is the first allusion to the method of detecting the weather of the future from the past observations contained in the Register; and the curions reader will do well to ponder upon this explanation; for the wet years, seasons, quarters, or months, under preceding lots, come out dry on succeeding lots, very generally; average rates commonly preceding and following the wet and dry periods—all on the principle of compensation among the lots; and it is the same rule with regard to every other phenomenon.

at least in Scotland, and this, too, agreeable to the Report published for the 1843.

The instance of three consecutive corresponding wet winters is quite singular in the period of observations by the Register: the winters immediately following the three mentioned were all dry (that following 1804 stands by much the dryest on the list), yet the winter of 1845, which directly succeeds the dry winter of 1844, does not come out a wet season, as might naturally be expected; it only promises average rain, snow included—the general rule in such cases is, first, 'dry,' then 'average,' lastly 'wet,' or wet average and dry—every regularity in the weather is, however, soon broken, on account of the brevity of the lots of the winds, and also on account of the many cycles of the winds in operation at the same time in perpetuity; indeed, the three wet winters are not equally wet—hence the principle of variation is continually present in the weather.

It will be apparent, from the preceding account, that the great law in the weather is founded upon a principle of compensation; lots of winds which have unfavourable weather at one time, have the contrary at another time, and thus continually exchanging properties. This sort of exchange arises from the altered position of the lots in the cycle which has opposite weather on its two sides, reckoning from certain points on its circumference, to be more particularly explained in the course of the work. Notwithstanding what has been mentioned regarding the law of compensation, there is one class of the lots peculiarly liable to unfavourable weather, and that is the deficiency east, in particular the quadrennial deficiency, which circumstance is established by the list of the prices of corn, from the date of 1202; and within the last 60 years, the ever-memorable 1782 was under a quadrennial deficiency east; the 1799 and 1800 fell under the succeeding quadrennial deficiency; the 1816 and 17 fell under the next

quadrennial in order; and the 1836, 37, &c. fell under the following quadrennial, and its influence only terminated with the 1841, there being at this time six consecutive unfavourable years together—nevertheless, this lot is often of a contrary disposition.

How, it may be remarked, are four successive quadrennials all unfavourable, at least in parts of their course, which is one quadrennial more than is contained in the primary or 54-year cycle? Of course, so many lots together of unfavourable seasons would not be the result of any property of the 54-year cycle, since it has been stated that this cycle, and all the cycles, have opposite weather on the two sides of the circular movement. The cycle of the seasons, which extend to 216—to be explained next section—must contain the cause of so long a string of unfavourable quadrennials; and the extent of this cycle is such, that unfavourable quadrennials might continue in succession for more than 100 years, although the thing is unlikely, from the great number of the cycles in the weather which must be continually correcting one another.

All the lots of the winds of the 54-year periods have peculiar properties—the excess west, and especially the quadrennial lots, have the most violent winds and longest streams of the same, or those winds which cause inundations of the sea over low-lying countries—witness the floods of 1825 in the Netherlands, St. Petersburgh, &c. and many other instances, not to be included in a brief report. But the strong winds are not limited to the excess west; equally strong winds come under the deficiency west, with this difference, that the currents being shorter, do not cause such extensive effects: under these last mentioned lots the most frosty winters usually occur.

When this explanation of the primary cycle is taken up, the reader will have abundant cause of gratification; and the Reporter takes the opportunity to state, that he has laid out a handsome fortune for this purpose—this

being his vocation, under Providence, which has made such a course his destiny: it has been thus, at least, for the last 26 years. It is true, expending money for the advancement of science is the province of governments or rich individuals; but the science of the weather as yet is singularly circumstanced, and demands to be forwarded by every means of individuals and of governments, in order to secure to society the advantages which it offers with as little loss of time as possible.

In referring the reader to an examination of the figure of the cycle, it will appear that the weather of 1842 commences under the first year of a triennial deficiency east, and the first year of a quadrennial excess west wind. Now the weather of these two years is by no means so much under command of calculation as the weather of the two last years of the quadrennial lot—viz. the 1844 and 45, because the biennial deficiency east, and quadrennial excess west, have been only twice repeated in the years of the Register, while the triennials of excess east, and triennials of deficiency west, have been thrice observed in this time, which makes every difference in the world in so new a subject. The *fourth* triennial excess east, be it observed, begins with the 1844, while the *third* quadrennial deficiency east does not commence until the 1852; hence the weather under one set of lots is much sooner known than under a different set, at least in the meanwhile. Before regular or tolerable accuracy can be expected from the calculations, several turns of the cycle should be included in the observations of the Register; moreover, the Reporter labours under the disadvantage of making his observations in all parts of the British Island, which is cause enough of exceptions as to the accuracy of calculation, especially by the monthly periods—consequently the results of calculation apply in a general sense; nevertheless, the calculations are rapidly arriving at perfection, which a few years' experience will serve to con-

vince the public at large: when observations are made everywhere, the results of them, after a given time, will be trusted everywhere.

A remarkable circumstance has been noticed since the commencement of publications on the weather—the public hail with satisfaction the fulfilment of a promise of fine weather, such as took place in March, 1841, and February, 1842, which agreed with the calculations, while not the least sensation is produced by the recurrence of ordinary or average weather. Even the recurrence of severe weather, such as winter 1838 and winter 1841, though pointed out in the Reports, created but little interest; yet calculations promising good, bad, or indifferent weather, cost the same labour to the Reporter. It would appear that there is still an idea of the whole being accomplished by guess and not by calculation.

GENERAL REMARKS.

"When the science of Meteorology is more advanced, we shall, perhaps, by discovering a glimpse of those vast cycles which result from the varied aspects of the sun, combined with the feebler influence of the moon, be at length enabled to predict, with some degree of probability, the condition of future seasons.

"The complex *system* of winds moulds the climate, and varies the features of the seasons over the globe.

"Meteorology is a complex science, depending on so many subordinate principles that require the union of accurate theory, with a range of nice and varied observations, as to have advanced very slowly towards perfection. Though little understood or generally cultivated, it has yet made a decided progress, and at last attained to such a degree of improvement, as will enable the judicious en-

quirer to draw his conclusions with safety and confidence. Nothing is required but the torch of geometry to illuminate the results," &c.—*Edinburgh Review* for June, 1818.

The primary cycle of the winds was the first discovered, and its figure, with a brief explanation, was submitted by the Reporter to the consideration of the Professors of the University of Edinburgh, winter 1818; and in consequence the quotations given above from the *Review* made their appearance. The scientific author of these extracts did not anticipate that the weather, in all its particulars, could be calculated from the mere discovery of the cycle of the winds; not even when the other vast cycles were known was this much to be expected; the probable condition alone of the future seasons was all that might be expected or hoped for by anticipation. But the other vast cycles having subsequently been discovered, and their order of working on the weather having been recorded by the Reporter from his unremitting observations, entered into his register for 40 consecutive years, by 31st October last, a greater command of the nature of the future seasons has been already accomplished than the scientific Professor had contemplated as possible in any length of time. And the Professor never suspected the weather of the quarterly and monthly periods could be calculated with any degree of probability.

In the autumn of 1818, the Reporter explained the structure of the primary cycle, then the only one known, to Dr. Brewster, who was at the trouble of preparing an account of the same, and had it published in *Blackwood's Magazine* for October, 1818, which the reader of the weather report will find in any of the libraries. The Doctor soon after informed the Reporter of an objection that was made to the cycle—that it was not sufficiently in and out—meaning that its range was too limited. This objection, the most sensible ever made to the cycle, or rather

the only objection founded in truth, was proved soon after to be correct, by the Reporter discovering that the excess embraced all quantities of less or more, and the deficiency did the same, as mentioned in the preceding pages, consequently the ins and outs are such as to meet or remove the objection.

Among other innumerable objections to the cycle of 54 years, one is, that the cycle is too short, which is an utterly erroneous objection. This cycle is as long, or extended, as any other in the compass of nature, as the following statement will show:—Every year in perpetuity, backwards or forwards, possesses its own particular state of excess and deficiency in each wind; but the amount of the excess and of the deficiency of each for ever varies, on the principle that no two blades of grass are ever alike, excepting in general structure; thus rendering the system of the winds the most fitting regulator of the weather, under all the varying changes in the physical structure or circumstances of the globe. The 1801 (*see the figure*) is pitched upon as the first year in the current revolution of the cycle, for an obvious reason: this year has its own state of the winds attached, as have all the other years of the cycle. The last year in the figure is the 1854. In the 1855 the winds as to letters are the same as in 1801, but in amount of winds wholly different. The 1856 has the same letters as the 1802, but as to quantities of the winds wholly different, and so on perpetually; because the primary cycle is for ever varied in its numerical quantities by the other cycles of the winds of the shorter periods of the year.

The reader by this time will perceive why the results of calculation are annually becoming more correct in proportion to the increase in number of the years of observations registered. He will also become sensible of the great disadvantage under which the Reporter laboured some fourteen years ago, when he commenced giving the

monthly weather; and will no longer wonder that the exceptions were then more numerous than of late. The explanation is this: It became the duty of the Reporter to broach the subject of his discoveries as early as possible, and in its imperfect state, however the announcement might be received, because, life being uncertain, and had he disappeared meanwhile, no one would look for the discovery and explanation of the cycles of the weather among the papers of an individual wholly unknown in the walks of science or of the world.

It has been stated that the primary cycle of the winds was discovered in summer 1817, when scarcely one course of all the classes of the lots were included in the register, that is, the winds and weather of one course or series of the lots of the winds, when, consequently, nothing of the future weather could be made out from the discovery, excepting a vague guess as to the state under the succeeding quadrennial deficiency east wind, beginning in 1834; for the unfavourable state of the weather of 1816 and 17, falling under the first quadrennial deficiency, commencing in 1815, it was judged that a similar change would commence upon the 1835 or 36, and such a change did actually commence upon the last-mentioned year. This announcement was made in an account of the cycle of the weather published by the Reporter at Edinburgh in 1818.

When the weather of two courses of the lots of the winds were registered, the weather of the seasons began to come out sufficiently correct in the 1835, and have been improving since that time to the present date. The object in making this statement is to show, that it took 33 years of recorded observations and calculations to cast the weather of the seasons in a satisfactory manner; therefore, the weather of the monthly periods will require a corresponding term to become equally at command, as thus—the seasons are 2, the months 12 in the annual round; consequently, as the last-mentioned periods are

six times more numerous, and six times smaller than the first, the time for commanding the monthly would be six times that which has proved necessary to calculate the weather of the seasons, or $6 \times 33 = 198$ years; hence it is not surprising the monthly calculations should occasionally differ sensibly from the actual weather of these shorter periods, and the more especially that the Reporter's register has been kept in all parts of the British island and neighbouring seas; but being for much the greater part kept in Scotland, the result of calculation will apply more particularly to the last-mentioned country—to England and Ireland in a general sense—and to Europe in a still more general sense; that is to say in the meantime. While the monthly weather is thus liable to some uncertainty, it is but right to state, that in consequence of the great number of phenomena at command, it is practicable to ascertain the monthly weather already in a sufficiently accurate manner—for if there is a doubt, for instance, of the amount of rain promised by the calculation, a reference is made to the state of the other phenomena: example—if the quantity of rain is indicated over average, a reference is made to the clear days, to the fine, and very fine days, and other phenomena bearing on the period in question; should these other phenomena indicate a different state of the rains, by promising an over average, it is certain that the amount of rain is to be distrusted, for a month cannot be wet, and very fine, and clear at the same time; hence a conclusion is drawn accordingly; but the limited nature of the work precludes the requisite explanations on this and many other points, the object being to furnish the reader with a general view.

The proportion which the east wind bears to the west may be made out from the letters of the cycle; thus, there are 24 years of excess east, and 30 years of excess west, which is one-fourth in favour of the west wind; again, there are 30 years of deficiency east, and 24 years of de-

ficiency west, which is one-fourth more in favour of the west wind, both amounting to one-half; accordingly, the west wind is as 3 to 2 of the east wind, or the west wind is more frequent than the east by one-half, or as 3 is to 2.

Notwithstanding of the favourable notice of the advances made in meteorology by the scientific of late years, there are still persons who urge the impossibility of discovering the cycles of the weather, at the same time acknowledging that the account of them in the Reports is not in the least understood! and this by individuals in London, while others there have taken every copy of the Reports which could be procured from the publishers, in order to possess themselves of a complete series of the Reporter's works on the weather; and the Reporter, with much of Scotland to back him, can afford to smile at certain individuals who will not, and may be cannot, understand the principles of the cycles, and who deny their existence altogether! When or where was there ever a great discovery made in science without detractors and unbelievers? Never! Generally, it would appear that many, not wishing to throw their labour away, are waiting for the recommendation of high scientific authority on the subject; but this recommendation cannot be obtained until these authorities make themselves acquainted with the discoveries made in the department of the weather. It has been already shown that the highest authorities in science have written as much in favour of the new science as was competent for them to do, and they can do no more until they are masters of the particulars. Meanwhile, the Reporter is rising daily as an authority, and naturally, considering the difficulty or newness of these discoveries. By and by, when he alone occupies the ground thus broken, and when his calculations of the future weather gives every satisfaction, his authority will be rated according to its value. When all this is fulfilled, the Reporter having accomplished the great and important task allotted

him, will then bid farewell to the weather and to the world!

Meanwhile, the Reports of the weather are finding their way into the hands of the greatest statesmen of the time—the most celebrated astronomers—the most distinguished professors of science—in France and England, consequently the natural result will follow when these authorities become familiarly acquainted with this important subject. But this is not correct; they will never become familiar with the subject. Where are their registers—their tables of phenomena? They have them not. And although the Reporter could lend them, it would be too much to expect that they would readily embrace the immense detail of this science. Such a desideratum can only happen after a long lapse of time—in a future generation, when the schoolmaster is enabled to impress the knowledge upon the young mind. The only one capable of teaching the youth upon this subject now is naturally disqualified, he being in the last stage of a feeble old age.

It may be remarked, in concluding this section of the work, that discoveries in science of an extremely complicated nature, will require a long time to be put in the most acceptable form for the general purposes, as to explanation and judicious arrangement; time, practice, and experience, are all necessary to effect this desirable improvement—witness the difficulty of rendering the steam-engine a safe implement!

SECTION OF THE CYCLE OF THE WINDS BY THE SEASONS,

Showing the effect of the Cycle of the Seasons upon the Cycle of the Years.

1	2	3	4	5	6	7	8
Years	Excess East by Winters.	Excess East by Summers.	Deficiency West by Winters.	Deficiency West by Summers.	No. of Gales.	No. of Great Rains.	Days of Short Rains.
1803					128	27	110
4					50	39	105
5	85	65	90	110	25	31	52
6					51	21	87
7					19	27	124
8					50	19	112
9					43	33	95
1810	80	70	100	100	14	22	93
11					27	35	125
12					52	17	117
13					22	30	102
14	75	75			39	22	112
15			110	90	9	33	133
16					23	23	126
17					7	17	131
18					13	16	141
19				80	4	20	121
1820	70	80	120		3	12	134
21					4	16	122
22			130	70	3	9	153
23					2	8	166
24	65	85			5	10	165
25					15	13	148
26					3	4	177
27	60	90			13	11	190
28			120	80	4	13	175
29					8	18	156
1830					11	9	154
31					7	16	162
32	65	85			9	6	153
33					8	10	168
34			110	90	39	15	151
35					11	9	148
36					15	26	140
37			100	100	6	18	135
38	70	80			5	21	150
39					19	27	154
1840			90	110	49	9	156
41	75	75			8	22	136
42					12	14	117
43							
44							
45	80	70					
46							
47			80	120			
48							
49							
1850							
51	85	65	70	130			
52							
53							
54							
55			80	120			
56	90	60					
57							

EXPLANATION OF THE TABLE.

Col. 1 contains the years beginning with 1803 and ending with 1856, being 54 years, or one revolution of the Primary Cycle of the winds, weather, and prices of wheat.

Col. 2 contains the average number of days' wind of the lots of excess east, or the solar east wind, by the Winters; the brackets which face to the right hand denote 'excess;' when covering three years, it means a triennial excess; when covering two years, a biennial excess; and when covering a single year, it signifies an annual or single year lot of excess.

Col. 3 contains the average No. of days' wind of the lots of excess east upon the summers.

Col. 4 contains the average No. of days' wind of the lots of deficiency west, or the solar west wind, upon the winters; the brackets facing the left hand denote 'deficiency;' brackets covering three years indicate a triennial deficiency; and so on, as in the excess east.

Col. 5 contains the average No. of days' wind of the lots of deficiency west upon the summers.

Col. 6 contains the number of gales of wind on the years observed by the Register.

Col. 7 contains the number of long or great rains on the years of the Register.

Col. 8 contains the number of short or slight rains on the same period.

Alterations since last Publication.

Every 4 hours of gales of wind reckoned 1 gale; so that if it blows on all the 24 hours of the day, it reckons 6 gales, and so on.

Every 6 hours of regular rain is reckoned a long or great rain; and if it rains on all the 24 hours of the day, it reckons 4 long or great rains. The general explanation of the Table will show the reasons for these alterations.

DISCOVERY OF THE STRUCTURE OF THE WEATHER OF THE 54-YEAR CYLCE OF THE WINDS, BY ANNUAL RATE.

COMPRESSION AND COMMINUTION OF THE WEATHER.

THE Register of the weather now embraces so long a period of years, that the outline of the weather resulting from the working of the winds of the 54-year cycle, can be distinctly traced; before, however, entering upon the particulars, it will be necessary to describe the movement of two of the winds, the solar east and solar west, upon the two seasons of the year in a turn of the cycle: these winds appearing to have the chief influence in regulating the weather, as will be made evident by the following account.

In col. 2 is inserted the average No. of days' wind of the lots of excess east, or solar east wind, upon the winters. The first lot is a triennial upon the 1804, 5, and 6, being the first of a series; its average by the three winters is 85 days. The next lot down the column is a biennial on 1809 and 10; the average days' wind of the two winters is 80 days. Then lower down is the annual or single year lot of 1814, whose amount of east wind on the winter of the year is 75 days, which is the average rate of this wind by both the seasons. The succeeding lot down the column is a triennial on 1819, 20, and 21; the average of its three winters is 70 days. Lower down the column is the succeeding biennial excess of 1823 and 24; the average of its two winters is 65 days. Further down is the annual or single year lot of 1827, upon which year the amount of east wind is at the lowest rate by the winters, being 60 days. The triennial excess following in 1831, 32, and 33, has an average on its three winters

of 65 days; this wind now increasing upon the winters. Lower down the column is the biennial excess east of 1838 and 39; its two winters average 70 days. Almost immediately below the last is the annual of 1841, under which the wind is again at the average rising, or 75 days. Next comes the triennial of 1844, 45, and 46; the average of its three winters is 80 days. The biennial of 1850 and 51, still lower down, has an average of 85 days upon its two winters; and at the bottom of the column is the annual of 1856, with an amount of 90 days of east wind, which is the highest average rate of this wind by either of the seasons.

It will be observed that the wind of the excess east by winters is almost at the highest on the first years of the table; it is actually at the highest upon winter 1802, which is the same with the 1856 just noticed; on the contrary, the wind of the excess east by the summers is at the lowest rate on these years; it is actually at the lowest ebb on the summer 1802, which is in the same position with the summer of 1856. Hence, when this, or all the four winds, is highest upon one of the seasons, it is lowest upon the other season—and when it is average upon one of the seasons, it is average upon the other season—it therefore appears that the excess east makes a revolution upon the seasons in the same time that the lots by the annual rate completes a revolution, viz. in 54 years.

While the wind of the excess east is at the highest, or nearly so by the winters at the top of the column, and declining, the wind of the deficiency west of column 4 is increasing by these seasons; it is at the highest rate winter 1822, not far from the point of lowest amount of the excess east by these seasons. This wind, as in all cases, is lowest upon the summers when it is highest upon the winters, and the contrary; the lowest amount of this wind is in winter 1851, when it is highest upon the summer. After this explanation, the eye will at once perceive and

follow the increments and decrements of these winds by each of the seasons—the difference in average rate of these two winds will be noticed—the west wind, whether in deficiency or excess, being superior in amount to the average of excess or deficiency east.

Considering that the courses of these two winds, the excess east and deficiency west, are always the same on every revolution of the lots of the 54-year cycle—the cycle of lots and both solar winds always accompanying one another in the manner explained—something of a corresponding uniformity might be expected upon every turn of the Primary Cycle in respect of the order of the weather, varied, however, as it must be from the operation of the lunar winds of excess west and deficiency east, which each perform similar courses upon the seasons with those of the solar winds, but differing so far that each course extends to 72 years—three of these courses and four of the solar winds forming the 216-year cycle of the seasons, when all set out again as before as to general principles, but in the particulars the cycles of the lesser periods vary the winds and weather of the greater periods; that is, the cycle of the years is varied in effect by the cycle of the seasons, and reciprocally; so also the cycles of the quarters, months, &c. affect those mentioned, and one another, from the least to the greatest.

The working or effect of the cycle of the seasons upon the cycle of the years, remains now to be explained—for this purpose the attention is to be directed to cols. 6, 7, and 8 of the table at the head of this section. In col. 6 is a list of the gales of wind upon each year of registered observations—on the first years the number of gales is considerably greater in amount than those about the middle of the table; and that in the lower part of the table the number of gales is again on the increase generally. In offering this view, it is to be stated that the gales of the first years of registration were almost always of long

duration, as compared with those about the middle of the table; so short were the duration of these last, that they seldom exceeded the period fixed as constituting a gale, viz. four hours, and not infrequently did not exceed two hours, whereas in the first years of the table the gales often extended to the full complement of the day, or twenty-four hours, and occasionally to still longer terms—and it is remarkable, that with the recent increase in the number of gales, the duration of each is also increased, and fast approximating to the state observed in the first years of registration.

This arrangement appears to have been caused by the excess east wind being heavy upon the winters, and the wind of the deficiency west being heavy upon the summers of the first years of registration; for when these winds changed position, that is, when the excess east gradually became heavy upon the summers, and the deficiency west abounded upon the winters in the middle part of the table, the violent prolonged gales of wind disappeared, a few short squalls only remaining, until these winds returned gradually to their original position, as seen in the first years of the table, when the gales again gradually became prolonged in duration, and increased in number, and will further increase until the excess east is at the highest upon the winters, and the deficiency west is at the highest upon the summers, which the last will be in the 1851, and the first will be in the 1856. It will be remarked, that the register of the weather commenced on the year immediately following the point of extreme greatest amount of the excess east upon the winters, and of extreme least amount upon the summers, viz. the 1803—the extremes falling on the 1802.

Col. 7 contains the number of great rains upon each year of the period of the register—the great rains follow the same order as to duration and number, and of less or more, as observed of the gales of wind, through the whole

extent of the table. When the excess east was heaviest upon the summers on the 1827, the short or slight rains were unusually numerous, and the great or long rains few; scarce any long rain exceeded the time fixed upon as constituting the class, or six hours, whereas in the first years of the table, and in the recent years at the bottom of the table, the great rains in the first case generally extended to whole days in unbroken succession—the short rains being few; and in the latter case the great rains are fast increasing in duration and number, and the short rains rapidly decreasing—and the great rains will increase along with the increase of the gales of wind, and arrive at the extreme of highest amount at the same time, about the 1851 and 1856. The winter season of 1843 had 31 great or long rains.

Col. 8 of the short rains will place these winds in a stronger light, as the number of them is actually greatest upon the year when the excess east wind was at the highest amount by the summers, and at the lowest by winters —on the 1827. The short rains of the preceding and of the following year are all considerably higher in amount than on any other years of the table; and, moreover, the increase of the short rains from the first year to the 1827, is nearly regular and gradual, and the decrease from this year is equally gradual and regular;* hence compressed weather obtains when the excess east is heavy upon the winters, and comminuted weather obtains when the excess east is heavy upon the summers, there being no doubt of the wind of the excess east being the most potent of all the winds.

In the compressed weather is a feature of the weather which is not exhibited in the table. It consists of periods

* The increment and decrement of the short rains are wonderful for regularity, considering that these form in a manner the last operations of the weather; for the winds and clouds are the machinery by which rain is produced.

of still, dry, settled weather, and continues for months at times, but generally for several weeks in succession, and takes place at all times of the year—when these occur in the summer months, and accompanied by clear skies, the effect of drought is dreadful, witness summer 1800—this state of quiet repose of the elements intervening between stormy periods. Mr. White of Selborne, Hampshire, composed a poem on the still dry weather, which was published in 1789 in his work on the *Natural History of Selborne*, and will be found at the end of this section. By the way, Mr. White's poem would be composed somewhere about the 1748, which year was the centre of the compressed weather of the revolution of the 54-year cycle, preceding the current revolution.

Since the point of extreme comminution of the elements of the weather in 1827, the first specimen of the still dry weather appeared in the last week of February, all March and April of 1840, and again in April, 1842, which last was a delightful clear quiet month; something of the same character appeared in March, 1843, and it is evident the compressed weather is becoming more frequent, agreeable to the altered state of the winds upon the seasons. In this state the clouds become gradually compressed into great sheets of what has been denominated the *cumulostratus* or twain cloud, and in the quiet still weather covering thousands of miles of the surface of the earth for a considerable time—the clear spaces are equally extensive at the same time, and hence many days of clear weather are at such periods observed in succession, while during the time of greatest comminution there is scarce a single clear day upon a whole year, and the clouds, like the winds, rains, &c. are in such shreds and tatters as to appear in a most admired disorder. It will be seen, in a succeeding section, that the time of compressed weather and dearest prices of corn nearly correspond, and that the time of comminuted weather is most favourable for cheap

prices—in all these casos, the one state slides into the other in a gradual manner, as may be seen by the columns of the table, and in the table of the circle of the prices.

The table at the head of this section may be called the spine or back-bone of the weather, the years being connected as part and parcel of the same, equally with the varied phenomena; the other tables of phenomena, which in all amount to about 180 of 25 columns each, may be said to form the rest of the body of the weather, every 54 years from a given point having the same general form of weather, but not exactly alike, since two of the great winds have a term of rotation extending to 72 years each. The extent of the variation, however, amounts to no more than the natural difference between one man and another, or as the difference between two blades of grass, &c.

It is a remarkable circumstance, that the two sides of the cycle should have such opposite states of weather—in tho one, a compressed or compact state of the elements; in the other, a comminuted or broken state of the elements —in the one, dear prices; in the other, cheap prices. This alternation resembles the alternation of day and night, winter and summer, &c. so that a similarity of principle pervades all nature, however varied.

It is also remarkable, that the two sides of a circle are mathematically opposite in the construction. In the cycle, which is a circle, the same principle obtains, for the weather of one side is opposite in construction to the weather of the other side. The compressed weather is by far the easiest to register, from the comparative absence of change, and this was the weather during the Reporter's youth; the comminuted, which is the most difficult to register from the continual change, was the state during Reporter's middle age; and now that he is old, the return of compressed weather will suit his altered circumstances, which is a singular adaptation of things! The centre year of the succeeding course of comminution is on the year 1881, and

so on. This discovery has something about it of a more practical nature than the discovery of the cycles of the winds. The discovery of the cycles of the winds, before that of the cycles of the weather resulting, is like finding the structure of the spirit before that of the body—a most extraordinary circumstance, yet strictly true; but then the one could and was made by induction, whereas, in the other case, practical experience was necessary to come at the structure of the weather resulting from the structure of the cycles of the winds. Truly the whole thing is wonderful. It would appear that the whole of the matter is a part of the decrees of Providence, who permitted the discovery being made from an erroneous calculation, for no other process could have elicited the nature of the weather—the process, however, succeeded, because its movements were in the right direction of research. Most wonderful is the progress of the world in improvement, by means wholly beyond ordinary expectations. Men are but instruments, of which they do not know the tendency —they seem to further the purposes of the Great Supreme, which there is no doubt is for the general good.

The discovery of the laws of the weather was hoped for long since. From the evident circumstance of this hope being despaired of of late, it, of course, could not be conjectured where it would be made, and least of all, that it should be accomplished by an individual from the most obscure corner of the British Island, and where the registration of the weather had its commencement.

In concluding this section, it may be noticed, that the discovery of the cycle of the winds long before the structure of the weather of the cycle is somewhat singular; but although the cycle of the winds had never been discovered, it is evident that a careful and continued registration of the phenomena would, in time, point out the structure of the weather of the cycle, because continual alternations of compressed and comminuted weather would

attract attention, and ultimately the periodical returns of such different weather would become a fixed term or law of the weather.

Upon a review of these circumstances, it appears certain that the Reporter has now accomplished all that is possible for an individual life; and all that remains is to continue observations, in order to perfect what has been done by induction or anticipation. And a beautiful thing it is, the discovery of the general body of the weather—for the weather consists of bodies, like all the rest of Nature's works! most marvellously combined!

GENERAL EXPLANATIONS AND REMARKS ON THE CYCLE OF THE SEASONS.

The increments and decrements of all the four great winds, viz. excess east, deficiency west, excess west, and deficiency east, upon each of the seasons, are termed lunes, because, in the circular figure of the cycle of the seasons, these increments, &c. being curved, of course resemble the appearance of the moon when about from three to five days old; all having the form of crescents, and these crescents are wide or narrow, and long or short, according to the average rate of each wind, and all differ from one another. For example—the average of the excess east, as given in the tabular view, is 75 days for each of the seasons, while the average of the deficiency east is considerably less, and the average of deficiency west is sensibly greater in amount than the average of the excess east wind; the average being 100 days on each of the seasons, as seen in the tabular view; and the average of the excess west wind, which is the greatest of all in amount, its lune is in proportion broader, or forms a crescent such as the moon appears on the fifth day. The lunes of the solar winds, extending to only 54 years, are in proportion shorter than the lunes of the lunar winds, whose term or course extends to 72 years.

Had there been no other cycle than that of the seasons, the quantity of each of the winds would fall to the lowest possible amount, or to nothing, under the lots of annuals of lowest amount, and would rise to the highest possible amount, or to all the days of the seasons, under the annual lots of highest quantity—but under such an arrangement no animal life could exist. Had there been no other cycle than that of the lots of the 54-year period, the years of excess would be always above average, and the years of deficiency would be always under average; but since there are many cycles of the winds, the whole of them must be accommodated on the days of the years, seasons, &c.; hence the result is a mean rate of the whole of the cycles upon each of the cycles: therefore the rise and fall of the quantities of the winds is confined within limits the most favourable to animal and vegetable life. The mean state, however, runs into great extremes, and becomes exceedingly complicated, and so are the results, as experience abundantly proves—the highly favourable years forming one extreme, and the highly unfavourable the other extreme.

The whole of the increments and decrements of the four winds by the winters and by the summers respectively, in the 216 years of the cycle of the seasons, of which but a sample is given in the table, make a formidable appearance, extending to two quarto pages and many columns, but in regularity and precision is equal to the figure of the cycle of the lots by the annual rate, which last has been for a considerable number of years before the public. The cycle of the seasons was discovered on 22d November, 1822, and was done in an instant, as in the case of the cycle of the years, mentioned elsewhere. The rise and fall or tides of the winds by the years are performed in short periods as compared with the tides of the winds by the seasons. The present exhibition of the lunes is much simplified by giving the lune of each wind separately, and

no more than one of each and of the shortest; whereas in the table alluded to in the preceding paragraph all the lunes of the 216-year period are included in a table on two quarto pages facing each other—the specimen table may supply some idea of the structure.

Although the respective winds have equally regular increments and decrements upon each of the seasons, as in the specimen of the solar winds of the tabular view, it is not to be supposed that the respective winds exclude the others in their courses; it is quite otherwise, and often contrary, for a lune, in parts of the course, may have more of the wind of other lunes than of its own, and all the winds are always mixed together on every season in more or less; for it may be seen by the cycle of the lots of the annual period, that there are in it 22 years on which both solar and lunar winds prevail at the same time, while there are 19 years of exclusive lunar, and 13 years of exclusive solar winds, all which numbers added together make the 54 years of the cycle. On this principle the lots of the winds inosculate with each other by the seasons, backwards as well as forwards, so that there are no exclusive years of solar or lunar winds by the seasons, every one of which is mixed of all the winds, solar and lunar—hence the lots which give unfavourable weather are qualified by those which give favourable weather, and the contrary; for sometimes the weather is too good, for example, a burning hot summer; so that the least possible injury is the result at all times in conseqnence of this arrangement. In all latitudes opposite extremes of weather are prejudicial to animals and vegetables.

The increments and decrements or tides of the four winds by each of the seasons, when given in a coloured figure, forms one of the most wonderful sights ever offered to the eyes; the number of these tides in a revolution of the cycle is 28, of which 16 are of the solar winds, and 12 of the lunar—each tide beginning at different times

in the cycle, as may be seen by the specimen prefixed, when the summer tide is at the highest when it is lowest by the winter; further, the tides of all the other winds begin and end at times different from those of the specimen, and different from one another. Yet although a course is completed in 216 years, it is at the same time an endless course, for the observer may begin his cycle on any year whatever—in 216 years the course of the whole is completed, but never repeated in the same exact form or amount. It is the same with the cycle of lots or cycle of the years: nature, however, is divided into compartments, which continue the succession, and at same time admitting of variations, according to existing and external circumstances—in this respect resembling the succession of individuals of the human race.

It therefore follows that those who are not fully acquainted with the subject form erroneous ideas upon the nature of the cycles; a cycle with them signifies a certain regular course of weather, and the same repeated upon the next revolution. This is not exactly the state of the case—for one revolution of the cycle no doubt has a certain course of weather, but this certain course never returns again; all the revolutions of the cycle or cycles are varied to infinity, on the principle that no two blades of grass are ever alike, excepting in general structure.

For why is all this change? Because the cycles of the years, of the seasons, of the quarters, of the months, weeks, days, hours, minutes, seconds, to the minutest portion of time, can never meet twice in the same circumsttances; and were this possible, there is the revolution of the axis of the winds from N.N.W. to N.N.E. and back again in 648 years, which completely changes the operation of all the cycles of the winds. For be it noticed, that when the axis of the winds points to the N.N.E. all the winds to the west of this point will have to be rated as west; and all the winds to the east of

S.S.W. will have to be rated as east, contrary to the practice at present, as explained when treating of the table of averages. But this is not the whole cause of variation—the earth is continually changing in its physical structure and properties, and hence the magnetic influence is varied; and it may be concluded that the sun, from which alone the magnetic properties of the earth is derived, is itself for ever changing—consequently there is no end to change till the system is extinguished—for everything that has a beginning has an end, as exemplified by the lots and lunes of the cycles.

A specimen of the mode of working of the lots of the 54-year cycle has been given at pages 18 to 22. Of the manner of operation of the cycle of the seasons the following is a sample:—Under the triennial lot of excess east of 1804, 5, and 6, the *first* winter (of 1804) had by much the greatest amount of rain of all the winters of the register of observation; under the triennial deficiency west of 1839, 40, and 41, the *last* summer of the lot (year 1841) had by far the greatest amount of rain of all the years of the register—there being 36 clear years between these extremes, which is just one-half of a course of increment and decrement of the lunar winds; it is remarkable that these extremes should be under solar lots of the winds; this translation of the extreme wet of the winters to the summers in 36 years, is the effect of the working of the increments and decrements of the cycle of the seasons; equal extremes as to rain cannot take place for many years to come.

These extremes of rain apply more particularly to the British Islands by the lots and by the lunes; for it is observable that the extremes of greatest amount of rain, frost, snow, &c. and the contrary, affect but a limited portion of the surface of the earth, and generally in belts from east to west; for while one part is wet, another is dry, &c.; yet the cycles of the winds, rains, &c. will, to a cer-

tainty, foreshow the coming wet, or dry, &c. in the British Islands for all time to come; and when the weather is registered in all other parts of the world according to the phenomena prevailing in each, the same results may be obtained for every other place by means of the cycles of the winds discovered in the British Islands. The increments and decrements of the table of averages, and of the list of phenomena in the following pages, are also produced by the lunes or tides of the winds by the seasons.

The cycle of the winds by the years is the great regulator of the weather; it bears the same relation to the other cycles which the sun bears to the planets, the cycles of the winds increasing in extent as the periods contained in the year decrease, and decrease in importance the further removed from the annual period; yet all are equally necessary in the system.

The manner by which the 54-year cycle of the lots regulates the weather of all the other periods of the year, and of the year itself, is by means of the lots themselves; for after a certain number of similar lots as to numerical power were observed by registration, and the amount of phenomena belonging to each for all the periods of the year, it was found that the quantities on the periods observed had a certain bearing upon the lots to come—thus, if the *plus* quantities prevailed over the *minus* quantities of the periods observed, the state upon the immediate future would be contrary; that is, generally a *minus* rate. On the other hand, when the *minus* quantities prevailed over the *plus*, the state upon the immediate future would be contrary, or generally a *plus* rate. When the *plus* and *minus* were few, and many average rates, an average on the future was the general indication. By and bye, when the years of observation are increased in number, the calculations will be made from lots of the same order and power, as in the instance of the three triennials of excess east wind, respecting the winter weather to be ex-

pected in 1844 under the fourth triennial of excess east, which will much simplify the process of calculating the weather. This mode cannot be applied at present, because the lots of the same order and class are too few; and, also, that the lots of the lunar winds are not repeated so frequent as the solar lots.

A general view of the process of registration and calculation is attempted in the following summary, viz. the phenomena of the weather are daily and hourly entered into a large quarto volume, the history of every day in succession; of these there are now eight volumes. From this register the phenomena have to be extracted. A part of these may be directly transferred from the register to the Book of Tables of the Phenomena, a large quarto volume of 400 pages, in which each phenomenon occupies two pages—the winter half-year by month, quarter, and season, on the left-hand page; and the summer half-year by months, &c. on the right-hand page—the 54-year cycle of the lots being in columns on the left-hand side of each page table; the excess and deficiency east in one column, and the excess and deficiency west in another column, side by side, and the years on the left of the whole on each table. But by far the greater number of the phenomena cannot be directly transferred to the tables; it has, therefore, been found necessary to provide two folio volumes, into one of which one half of the remaining phenomena is marked, and the rest in the second book; these books, called "Receivers," are ruled into narrow columns, from top to bottom, and from left to right. In the columns from top to bottom, a phenomenon is placed at top of each; and in the cross columns, the months of the annual period are marked in regular order on the left-hand side of each leaf in both books. All this being prepared, the phenomena of every day in the month are marked in the respective squares of the columns by dots, thus (.), and when all in the month are thus marked, the number of

dots are calculated, and the same entered into the Book of Tables of the Weather, which may be said to complete the process of registration.

The next step is the calculation of the weather for the future, which commences by calculating the number of *plus* and *minus* of all the phenomena in all the periods of registration, which corresponds with the future period in view; and the number of the *plus* and *minus* is entered into another quarto volume, called the "Book of Plus and Minus," every phenomenon being calculated as to more or less of *plus* and more or less of *minus* for each of the 19 periods of the year, viz. the twelve months, four quarters, two seasons, and the annual period. The state of every phenomenon on every period of the year is now described in writing into another book, and from this an abridged statement is prepared, choosing the most important of the phenomena; and in the same book a further abridged statement follows; and, generally, from this statement the Report is prepared, as given in the publications.

Lately, however, it has appeared that four more books have to be prepared, in order to receive the phenomena of each of the four great winds—the excess east, deficiency west, excess west, and deficiency east—for each of these winds having different average rates of the phenomena, offers a much preferable and more convenient form of casting the weather of the future; in short, this is the only form which now can be tolerated, the columns of the book of tables becoming unmanageable from their great length of figures, and the phenomena of the four winds being blended together in the columns.

Recapitulation.—*First*, there is the Register of Observations, of 8 volumes, or about 4,000 closely-written quarto pages. *Second*, the Receivers. *Third*, Book of Tables of the Phenomena. *Fourth*, Book of Plus and Minus. *Fifth*, Books of the Four Winds. *Sixth*, Book

of full Statement of Prognostics, First Abridgment, Second Abridgment, and the Report of the Weather. Hence there are six sorts of books required in conducting the subject of the weather, and at present consist of seventeen thick folios and quartos. It is true, the Books of the Four Winds are not yet completed, and probably may never be by the Reporter—they will, however, be wanted by and bye. The labour in preparing these books has been immense, and when fully completed the working of the weather becomes a comparatively easy task, but a task it will be, nevertheless. In short, these books, as to bulk at least, have a resemblance to those required for a great mercantile concern!

The figures of the cycles are in all things geometrical, and problems are solved, or introduced, which the mere geometer could never dream of, one of which may be mentioned, and the first in the science, viz. that every circle is composed or formed from a square and a triangle of certain proportions, which may be briefly explained thus: The primary cycle contains two circles, each containing solar and lunar winds in equal proportions; the solar winds have four courses of lots in the circle, which may be termed the four sides of the square, each course containing 6 years, that is, a triennial, a biennial, and single year lot, added together make 6, therefore the square is composed of 24 years. The lunar winds have but three courses in the circle or cycle, which may be termed the three sides of the triangle, the value of each side being 10, viz. a quadrennial, triennial, biennial, and single year lot, being put together make 10, which is the value of the sides of the triangle,—in all, 30 years. The solar and lunar winds put together make the 54 years of the cycle, therefore any circle whatever being divided into 54 parts will give a square and triangle of the proportions stated. Hence the circle contains three mathematical figures in ONE: the idea of three in one is not original, but from

what source derived the Reporter has never learned, but here it is in the figure of the 54-year cycle of the winds! A more particular explanation of this problem has been given in the *Manual of the Weather for* 1831. The science of the weather will therefore place itself as of the very highest order in human knowledge, for in it man may be said to live, move, and have his being; or it is the means which Providence has prepared for this purpose. Many think and believe that the Reporter made the cycles! nothing can be more erroneous; it might as well be said that the pen which writes this account is the author. No! the author is but the pen or instrument; he merely recorded what he saw, and Providence guided him in tracing the laws in the work of His hands from the recorded observations. It is remarkable that these discoveries—the crowning ornament of the world—should have been made when other discoveries of the most magnificent description were forthcoming at the same time. The signs or rules for predicting the weather from day to day from the Register of Observations are very numerous, and would prove extremely useful to farmers, travellers, &c. were the nomenclature of the clouds generally understood. Had the Reporter made his observations in one fixed station from first to last, other methods to calculate the daily weather might be accomplished, which may be explained some day.

The primary cycle of the winds was discovered in 1817 from a register of 14 years of observation; the structure of the weather of this cycle of the winds was discovered in 1843 from a register of 40 years of observations: the discovery of the structure of the weather of the cycle is in a sense the most important of the two, and it has an additional recommendation of being more of a practical nature, for thousands will understand it from description who cannot make out the cycle of the winds—this cycle can only be understood from a verbal explanation—or, in

other words, when taught by the schoolmaster; there are some, however, who can understand any description, if the subject has a foundation in nature. It may be deserving of notice, that the greatest or most important discoveries in the weather and prices have been made under the quadrennials—first the primary cycle of the winds under the quadrennial deficiency of 1815, &c.; the cycle of the winds of the seasons, and of the prices of corn under the quadrennial excess of 1823, &c.; and now the structure of the weather of the primary cycle of the winds under the quadrennial excess of 1842, &c. Are men's minds more active and more brilliant under the quadrennials, when also the weather is most brilliant and active?

It is always to be borne in mind that there are two kinds of short rains in the calculations of the weather—one is, the actual short rains; the other is when the great and mean rains are converted into short rains, as explained under the table of averages. When the whole amount of rain is stated, it includes all the short rains; but in the table of 'SECTION OF THE CYCLE OF THE WINDS BY THE SEASONS,' at the head of the present section of the work, the actual short rains are given by themselves in col. 8.

From the preceding account of the cycle of the years and of the seasons, the reader may be said to be possessed of a knowledge of the *structure* of the weather of the cycle of the years and of the cycle of the seasons—the last including four revolutions of the first, and each of the four differing but little among themselves;—hence this section explains in brief the structure of the cycle of the weather of the 54-year cycle of the winds, and also the *structure* of the cycle of the winds of the 216-year cycle of the seasons, and the *structure* of the weather of the seasons of the 216-year cycle of the winds, &c.

The alterations, or, more strictly, the improvements in the calculations of the gales and of the great rains have been only applied to the sums of them in the table at the

head of this section. These improvements will be extended to all the calculations of these phenomena, which must be a work of time; meanwhile the principles of the subject remain the same as before, since either way explains the nature of the weather.

The following observations by the Reporter appeared in the *Perthshire Advertiser* of 6th October, 1842, and are here reprinted :—

"In the Manuals and Reports of the Weather published of late years, it was stated that the hottest weather, the fiercest winds, whirlwinds, terrific thunder, earthquakes, inundations, &c. were usually most prevalent under the quadrennials of the winds, and especially the quadrennials of excess west wind. Annexed is a table, containing the number of hot days under these lots of the last 40 years.

"Under the first quadrennial, beginning with 1806, it will be seen that the hot days are considerable in number on all the years excepting the second, which was registered in Scotland, and was a cold year in Britain generally: the other years of the lot were observed in the south of England. Under the second quadrennial, commencing with 1823, is a rapid and regular increase of the hot days, from the first year to the last: this lot was all registered in the north of Scotland. Under the third quadrennial, commencing with 1842, registered at Perth, the number of hot days on this year is considerable, from which it may be inferred that the order of the quantities under the lot will be slightly decreasing from the first year to the last, other calculations indicating that the mild days will be numerous upon the remaining years of

Quadrennials.		Hot Days.
First,.....	1806	41
	7	21
	8	53
	9	51
Second,...	1823	1
	24	11
	25	26
	26	36
Third, ...	1842	50
	43	..
	44	..
	45	..

the lot. Those who possess Manuals and Reports with the figure of the primary cycle of the winds, are referred to the same, by which the lots of the annexed view will be found to correspond. The 16th day of September was the last hot day of the season (1842).

"It is mentioned in the book of Job that 'great heats caused whirlwinds,' so that there were quadrennials of the winds at the time the Sacred Oracles were written as now, although this circumstance was not then known. It is to be hoped that this statement will induce readers of the Reports of the Weather to consult their Bibles."

The last year of the current quadrennial excess promises to excel in temperate days, from which it may be gathered that the whole of the lot will be favourable to agriculture, with some exception as to the 1843 in Scotland, where the winter half-year proving very wet, the lands became soured, and while this is writing (May 12), the winter wheats are becoming discoloured, and otherwise look unpromising, so that this part of the crops cannot now be luxuriant. The south of England has been more fortunate this year, there being scarce any long rains on the winter season, consequently the lands may be expected to keep sweet on the whole of the year, and the crops may be expected excellent.

Thus, the effect of compressed weather is of an unfavourable tendency, frequent long rains being hurtful to vegetation—such it proved for a considerable number of years before and after the 1802, when the corn became annually discoloured at an early stage of its growth in May, whatever might be the state of the weather at the time; whereas about, and before, and after the 1827, there was no discolouration whatever observed at any stage of growth, on the contrary the vegetation of the corn was beautifully fresh and pleasant to behold.

ON THE DARK, STILL, DRY WARM WEATHER,

OCCASIONALLY HAPPENING IN THE WINTER MONTHS.

(From Gilbert White's *Natural History of Selborne*, published in 1789.)

Th' imprison'd winds slnmber within their caves,
Fast bonnd: the fickle vane, emblem of change,
Wavers no more, long settling to a point.
All Natnre nodding seems composed: thick steams,
From land, from flood np-drawn, dimming the day,
"Like a dark ceiling stand." Slow throngh the air
Gossamer floats, or, stretch'd from blade to blade,
The wavy network whitens all the field.
Push'd by the weightier atmosphere, np springs
The ponderous mercury, from scale to scale
Mounting, amidst the Torricelliau tnbe.*
While high in air, and poised upon his wings,
Unseen, the soft, enamonr'd wood-lark rnns
Throngh all his maze of melody; the brake,
Loud with the blackbird's bolder note, resounds.
Sooth'd by the genial warmth, the cawing rook
Anticipates the spring, selects her male,
Haunts her tall nest-trees, and with sednlous care
Repairs her wicker eyrie, tempest torn.
The ploughman inly smiles to see npturn
His mellow glebe, best pledge of futnre crop:
With glee the gardener eyes his smoking beds:
E'en pining sickness feels a short relief.
The happy schoolboy brings transported forth
His long-forgotten sconrge, and giddy gig:
O'er the white paths he whirls the rolling hoop,
Or triumphs in the dusty fields of taw.
Not so the mnseful sage: abroad he walks
Contemplative, if haply he may find
What canse controls the tempest's rage, or whence,
Amidst the savage season, Winter smiles.
For days, for weeks, prevails the placid calm:
At length some drops prelnde a change: the sun,
With ray refracted, bursts the parting gloom,
When all the cheqner'd sky is one bright glare.
Mutters the wind at eve; th' horizon round
With angry aspect scowls: down rush the showers,
And float the deluged paths, and miry fields.

* The Barometer.

CIRCLE OR CYCLE OF THE PRICES OF WHEAT.

1	2	3		4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Dear and Cheap.	Years.	Cycle of Lots. East Wind.	Cycle of Lots. West Wind.	1200 to 1253.	1254 to 1307.	1308 to 1361.	1362 to 1415.	1416 to 1469.	1470 to 1523.	1524 to 1577.	1578 to 1631.	1632 to 1685.	1686 to 1739.	1740 to 1793.	1794 to 1847.	Yearly average Price of Cycle.	Circle of the Prices.	No. Days of Rain.	Sum of Rain.
Twenty-Seven Years of Dear Prices.	1794	D	E					32				53	34	51	51	44	46	187	344
	95	D	E			21	35					58	25	47	73	43	48	205	412
	96	E	E	36								56	46	34	76	49	50	192	340
	97	E	D		72							56	30	25	52	47	52	233	412
	98	D	E		51							56	35	25	50	43	54	215	382
	99	D	E	40								53	34	27	67	44	55	230	464
	1800	D	D									57	47	39	110	62	56	202	296
	1	D	D			60	49	16				45	68	35	116	56	57	192	272
	2	E	D			91						45	64	37	68	61	57	225	320
	3	D	E			118		8			64	48	53	37	57	55	58	169	341
	4	E	D										71	32	60	54	58	197	447
	5	E	D										60	38	87	62	59	110	270
	6	E	E										68	42	77	62	59	147	309
	7	D	E										64	45	73	61	60	191	376
	8	D	E									48	40	35	79	50	60	176	349
	9	E	E									74	38	34	94	60	59	170	386
	1810	E	D		336				37		56	85	29	45	103	99	59	161	348
	11	D	E				9				53	80	36	60	92	55	58	214	455
	12	D	E					53			80	77	46	50	123	72	58	193	399
	13	D	E								92	73	30	40	107	63	57	187	447
	14	E	D								56	49	26	36	72	48	57	183	377
	15	D	D						22		40	35	28	30	64	37	56	220	496
	16	D	D								38	26	41	39	76	44	55	208	447
	17	D	E	36				46			35	33	78	41	94	52	54	199	377
	18	D	E					48	6		29	43	78	47	84	48	52	195	345
	19	E	D				5		5		35	47	54	54	72	39	50	181	358
	1820	E	D								31	65	46	43	66	50	43	175	296
Twenty-Seven Years of Cheap Prices.	1821	E	E						51	8	36	66	51	57	54	43	46	186	338
	22	D	D			6	33	8			33	56	50	53	43	35	44	229	414
	23	E	E					9	6	8	36	70	43	40	52	33	42	214	370
	24	E	E			10				8	57	74	48	43	62	43	40	220	372
	25	D	E			27		16		8	50	57	46	50	67	40	38	213	403
	26	D	E		38			13		8	36	40	39	58	57	36	36	222	336
	27	E	D		10			10		17	38	49	35	59	56	31	35	234	370
	28	D	D		9				8	8	42	36	37	55	60	28	34	230	369
	29	D	D		30			16		8	48	36	37	51	66	32	33	224	387
	1830	D	E		48					8	41	40	36	42	64	36	32	219	370
	31	E	E	10				10		8	38	44	35	45	66	27	32	223	378
	32	E	E							8	40	42	37	42	59	34	31	198	300
	33	E	D				37	2			48	42	48	34	53	35	31	211	318
	34	D	D								46	41	46	36	46	43	30	223	403
	35	D	E					15			35	47	42	45	39	32	30	194	313
	36	D	E								30	69	54	48	55	50	31	226	464
	37	D	D	6		5		10			30	65	47	53	55	35	31	197	367
	38	E	E	6				16			58	38	36	49	64	34	32	222	436
	39	E	D				9				52	42	33	52	70	38	32	221	421
	1840	D	D	48							48	59	27	39	66	44	33	219	366
	41	E	D	40				3			52	60	28	41	64	37	34	224	466
	42	D	E		12			10			49	45	39	45	57	33	35	177	336
	43	D	E								36	47	43	51		44	36		
	44	E	E							40	28	44	40	53		41	38		
	45	E	E			62			30		42	40	38	47		43	40		
	46	E	D								55	44	35	42		44	42		
	47	D	D			4					68	47	38	48		41	44		

45s. is the average of all the Prices, Cheap and Dear.

TABLE OF THE PRICES OF WHEAT.

CONSTRUCTION OF THE TABLE.

THE first year of the current revolution of the 54-year cycle in the table is the 1794—*see col* 2. Col. 3 contains the two columns of east and west winds of the cycle of lots; col. 4 begins with the year 1200, which is the same year in the cycle as the 1794, but the first price recorded is in 1202—*which see in col.* 4; col. 5 begins with 1254, and corresponds with the 1794; col. 6 commences with the 1308—same as the 1794; col. 7 begins with 1362—same as 1794; col. 8 begins with 1416, it being understood that the first year in each column corresponds with the 1794 in the cycle of the lots; col. 9 begins with 1470; col. 10 with 1524; col. 11 begins with 1578; col. 12 with 1632; col 13 with 1686; col. 14 with 1740; col. 15 with 1794—54 years being contained in every column; col. 16 contains the actual average price of every year of the table, from 1200—that is, the average of the years on the first line of the table, and so on to the bottom of the table; col. 17 contains the average of each year, as in col. 16, with this difference, that the years of col. 16 are clubbed together every three or four consecutive years, so as to give the rising and falling prices more regularly, and the result is the prices given in col. 17, which is called the CIRCLE OF THE PRICES.

There are but five years of recorded prices on the first line of the table, and the average of these five years is 44s. *(See top of col.* 16, *and so on.)*

GENERAL REMARKS.

The list of the prices possess the same properties as the register of the weather, each furnishing their systems

of operation. The list of the prices has shown that the 54-year cycle is in one half cheap and in the other dear, on the average, as to the prices of wheat, a circumstance which could never be ascertained but for the record of prices. Again, the cheap and dear of the prices could never be discovered but by means of the 54-year cycle of the winds, one half having dear prices and the other half cheap prices, on the average. Thus the one throws light upon the other reciprocally. From the arrangement of the 54-year cycle, pointed out by the prices, it is no longer to be wondered that one half, or 27 years, should cause dear, and the other 27 years, cheap prices, because, in the first 27 years of the table, being the years of dear prices, the unfavourable winds prevail greatly; and in the second 27 years it is as much the contrary. In the first half are two quadrennials of deficiency east wind; in the second but one quadrennial of this wind; but this is a small difference. The disposition of the excess east wind, which produces the best weather for good crops of corn, is placed most unequally upon the two divisions of the cycle. In the first 27 years there is but one lot of triennial excess east, while in the second 27 years there are no less than three triennials of excess east wind, the lot of 1819, 20, and 21, coming in effect upon the second division of the cheap prices. (*See this lot in the column of No.* 3.) Hence the crowding of favourable winds upon the second division of the table is sufficient cause of the cheaper prices in that part of the cycle; and the very limited amount of the favourable winds upon the first division, together with a prevalence of unfavourable winds, is sufficient cause of the higher prices of that part of the cycle, leaving altogether out of sight the effect of corn-laws and every other conventional arrangement of legislators, political economists, changes in the currency, &c. which have no place in an account of the weather and prices of corn. It is not to be supposed, however, that

legislation upon corn, currency, and in many other ways, and the state of peace and war, do not affect the prices; these, and many other circumstances, vary the rate of the prices, and generally make higher prices upon both the dear and cheap divisions of the cycle, but more especially when the British Islands are suffering under a visitation of nature from unfavourable seasons and short crops. Nevertheless, such is the potent power of the weather, that the prices are cheap and dear on the respective divisions of the table or cycle on the average, independent of the operation of the other circumstances mentioned—with all which, on this understanding, the Reporter has nothing to remark, for the good reason that there would be no end to the detail. Average of the dear half of cycle, 54s.; of the cheap, 36s.

In col. 17 of the CIRCLE OF THE PRICES, the first year is at the average, and rises gradually to 60s. the highest amount; the prices fall from this point to the average in 1821, and falls to the lowest amount of 30s. in the middle of the cheap division, thereafter rising gradually to the average in 1847, which is the next year to the 1794, and so on continually on each round of the cycle of the lots. To expect that the prices should be equally regular upon all the turns of this cycle, would be quite absurd, seeing there are so many cycles continually operating; were there, indeed, but this one cycle of the lots, such equality of the prices might be expected; but since it has been shown that there are many cycles constantly operating, the consequence is, a great variation, or a variation which is the result of all the cycles. It has been stated elsewhere that the variations in the weather were very extensive indeed, and in the prices the variations are equally great; but there is always a price, however variable, just like any other department of nature.

The range of the prices in the first or dear division of the cycle is from 5s. to 336s. the quarter; the range in

the second or cheap division is from 2s. to 74s. which will be seen by inspecting the figures in the two divisions. The speculator in grain will not be much assisted in his views from this account of the department of the prices—it could not be expected. The result of calculation as made in 1826—year of discovery—has not been altered to suit the state of the prices since, which have generally been somewhat higher than usual in this division of the cycle—because on the next turn of the cycle the prices may be expected lower than usual, so that the rate of the prices, as already fixed, may be maintained in the proportions. The prices from 1826 have, however, been inserted in the column, as far as the same has been ascertained. A calculation of the prices from any other year than the 1794 would cause an utter confusion of the whole system—just the same as calculations of the weather from the 1st January would render it impossible to discover the system of the weather.

The following is a List of the Phenomena of the Weather suitable to the Temperate Zone: it took the Reporter 25 years to render it perfect so far as it goes. It is right to repeat here that the increasing, decreasing, or stationary state of the phenomena means, that the increments, &c. extend to the whole of the 40 years of the register by the annual rate. The Reporter has every reason to believe that no register exists on earth from which a proper list of the phenomena can be extracted, excepting that of the Reporter, and should such be now commenced, it will be full 40 years before the same can be turned to account. No! the Reporter, who determined the period of commencement of the weather year, before registering a single phenomenon, has the advantage over other observers for ages to come.

LIST OF PHENOMENA OF THE WEATHER,

Including the state of the Increment and Decrement of each by the Annual Rate, in the 40 Years of the Register.

I.—Direction of Wind.

1. Days invariable easterly wind—magnetic compass, ... Decreasing.
2. Days invariable westerly—magnetic compass, ... „
3. Days entire easterly—magnetic comp. „
4. „ „ westerly—magnetic comp. „
5. „ variable from east to west, west to east, or both—magnetic compass, Increasing irregularly.
6. Days variable, of every degree—magnetic compass, ... „
7. Amount of easterly wind in days—magnetic compass, ... Stationary.
8. Amonnt of westerly wind in days—magnetic compass, ... Slightly increasing.
9. Amonnt of wind, east qnarter—solar compass, ... Increasing.
10. Amonnt of wind, west qnarter—solar compass, ... „
11. Amonnt of wind, north qnarter—solar compass, ... Decreasing.
12. Amonnt of wind, sonth quarter—solar compass, ... „

II.—Force of Wind.

13. Honrs calm, ... Greatly decreased.
14. Days indolent wind or light airs, ... Stationary, nneqnal.
15. „ moderate, ... Stationary.
16. „ indolent and moderate combined, „
17. „ windy, ... Increasing.
18. „ high wind, ... Stationary.
19. „ windy and high wind combined, Increasing.
20. „ gale, ... Decreasing.
21. „ high wind and gale combined, „
22. Snm force of wind, ... Uneqnal.
23. „ east, ... Not extracted.
24. „ west, ... „

III.—Orders of Clouds.

25. Haze, ... Not extracted.
26. Stratus or fall cloud, ... Stationary.
27. Cumulus or stacken cloud, ... „ nneqnal.
28. Nimbus or rain cloud, ... „ „
29. Cumnlostratus or twain cloud, ... „ „
30. Cirrostatus or wane cloud, ... „ „
31. Cirrocumnlostratus or compound cloud, Not extracted.
32. Cirrocumulus or sonder cloud, ... Decreased, all out.
33. Cirrus or curl cloud, ... Stationary, nneqnal.
34. Rain, snow, sleet, hail clonds, ... Much increased & decrg.
35. Clouds of no order or nentral, ... Increased and decreasing.
36. Total of orders, ... „ „

IV.—Colours of Clouds.

37. Pnrple or red, ... Increasing.
38. Golden or yellow, ... „ irregnlar.
39. Ochery or straw. ... ... „
40. Silver or white, ... Greatly increasing.
41. Iron or grey, ... „ decreased.
42. Indigo or black, ... Irregular, increasing.
43. Bright clonds, ... Increasing rapidly.
44. „ and black, ... „ „

V.—Clear and Cloudy.

45. Days clear, ... Decreased and increasing.
46. „ generally clear, ... Increasing.
47. „ clear and generally clear combined, ... Decreased and increasing.
48. „ clondy, ... „ „
49. „ generally cloudy, ... Increased and decreasing.
50. „ cloudy and generally clondy, ... Stationary.
51. „ partly clear and partly clondy, Increased and decreasing.
52. „ dark clondiness, ... Increasing.

VI.—Fog.

53. Days partially foggy, ... Stationary.
54. „ totally foggy, ... „
55. „ partially and totally foggy combined, ... „

VII.—Mild, Temperate, and Cold, and Fine and Very Fine.

56. Days temperate, ... Irregular.
57. „ „ fine, ... Decreasing.
58. „ „ very fine, ... Stationary.

59. Days temperate, fine and very fine,... Greatly decreased.
60. „ mild, ... Stationary, irregular.
61. „ „ fine, ... Irregular.
62. „ „ very fine, ... Stationary, irregular.
63. „ „ fine and very fine, ... „ „
64. „ warm or hot, ... Few at all times.
65. „ „ fine, ... Irregularly decreasing.
66. „ „ very fine, ... Stationary, irregular.
67. „ „ fine and very fine combined, ... „ „
68. „ cool, ... „ „
69. „ „ fine, ... „ „
70. „ „ very fine, ... Increasing slowly.
71. „ „ fine and very fine combined, Generally decreasing.
72. „ cold, ... Stationary, irregular.
73. „ „ fine, ... Increasing.
74. „ „ very fine, ... Very irreg. stationary.
75. „ „ fine and very fine combined, Stationary.
76. „ severe cold, ... „ irregnlar.
77. „ „ fine, ... „ „
78. „ „ very fine, ... „ „
79. „ „ fine, and very fine, Slightly increasing.
80. „ temperate and mild combined, Decreasing, irregular.
81. „ „ fine do. Slightly decreasing.
82. „ „ very fine do. Stationary.
83. „ temperate and mild, fine and very fine combined, ... Decreasing, irregular.
84. „ mild and warm combined, ... Stationary, irregnlar.
85. „ „ fine do. „ „
86. „ „ very fine do. „ „
87. „ „ fine and very fine combined, ... Slightly decreasing.
88. „ cool and cold combined, ... Stationary, irregular.
89. „ „ fine do. ... ... „ „
90. „ „ very fine do. ... Slightly increasing.
91. „ „ fine and very fine combined, ... Stationary, irregular.
92. „ cold and severe combined, ... Slightly decreasing,
93. „ „ fine do. ... Increasing.
94. „ „ very fine do. ... Irregular.
95. „ „ fine and very fine combined, ... Increased and decreasing.
96. „ temperate, mild, and warm combined, ... Decreasing.
97. „ temperate, mild, and warm, fine combined, ... „

98. Days temperate, mild, and warm, very fine combined, ... Slightly decreasing.
99. „ temperate, mild, and warm, fine and very fine combined, ... Decreasing.
100. „ cool, cold, and severe combined, Irregular.
101. „ „ fine do. Increasing.
102. „ „ very fine combined, ... Slightly decreasing.
103. „ cool, cold, and severe, fine and very fine combined, ... Greatly decreasing.
104. „ temperate, and fine, and very fine combined, ... Decreasing.
105. „ mild, and fine, and very fine combined, ... Stationary.
106. „ warm, and fine, and very fine combined, ... Irregular, stationary.
107. „ cool, and fine, and very fine combined, ... Increasing.
108. „ cold, and fine, and very fine combined, ... Slightly Increasing.
109. „ severe, cold, and fine, and very fine combined, ... Irregnlar.
110. „ temperate, and mild, and fine, and very fine combined, ... Decreasing.
111. „ mild, and warm, and fine, and very fine combined, ... Sllghtly decreasing.
112. „ cool, and cold, and fine, and very fine combined, ... Increasing.
113. „ cold, and severe, and fine, and very find combined, ... Increasing.
114. „ temperate, mild, and warm, and fine, and very fine combined, ... Decreasing.
115. „ cool, cold, and severe, and fine, and very fine combined, ... Rapidly increasing.
116. „ mild, and cold, fine (temperate rated as mild), combined, ... Stationary.
117. „ mild, and cold, very fine (temperate rated as mild), combined, „
118. „ mild, and cold, fine, and very fine (temperate rated as mild), combined, ... „

VIII.—Lightning, Thunder, and Aurora Borealis.

119. Days lightning, ... Stationary.
120. „ thunder, ... Increasing irregularly.

121. Days lightning and thunder combined, Increasing irregularly.
122. „ aurora borealis, ... Greatly increasing.

IX.—Frost.

123. Days frost, ... Increased and decreasing.
124. „ slight frost, ... Stationary.
125. „ hard frost, ... Increased and decreasing.
126. „ severe frost, ... „ „
127. „ hard and severe frost combined, Irregnlar.
128. „ Snm frost, ... „

X.—Snow, Sleet, Hail.

129. Days snow, sleet, or hail, ... Stationary.
130. „ slight snow, sleet, or hail, ... „
131. „ mean snow, sleet, or hail, ... Decreasing.
132. „ slight and mean snow, sleet, or hail, combined, ... „ Stationary.
133. „ great snow, sleet, or hail, ... Greatly decreased.
134. „ mean and great snow, sleet, or hail, combined, ... „
135. Snm snow, sleet, or hail, ... Decreasing.

XI.—Rain, Snow, Sleet, Hail.

136. Days fair, ... Decreased and increasing.
137. „ rain, snow, sleet, hail, ... Increased and decreasing.
138. „ slight rain, snow, sleet, hail, „
139. „ mean rain, snow, sleet, hail, Stationary.
140. „ slight and mean rain, snow, sleet, hail combined, ... „
141. „ great rain, snow, sleet, hail, Mnch decreased & incrg.
142. „ mean and great rain, snow, sleet, hail, combined, ... Slightly decrd. & incrg.
143. Snm rain, snow, sleet, hail, ... Little variation.

XII.—Miscellaneous.

144. Electric clouds, ... Not extracted,
145. Warm-looking clonds, ... „
146. Cold-looking, „ ... ... „
147. Crispy-looking, „ ... ... „
148. Soft or foggish, „ ... ... Increasing.
149. Fog on hills, ... „
150. Hard or stiff clonds, ... Stationary.
151. Lobe-shaped, „ ... ... „
152. Fleecy, „ ... ... Increasing.
153. Thin clouds, ... Not extracted.

154. Thick or large clouds,		...	...	Increasing.
155. Curdled	„	...	...	Not extracted.
156. Bank form of	„	...	...	„
157. Sponge do.	„	...	...	„
158. Low down on hills	„	...	...	„
159. High,	„	...	...	„
160. Small	„	...	...	„
161. Fritters of	„	...	...	„
162. Rounded	„	...	...	„
163. Thready	„	...	...	„
164. Great variety of	„	...	...	Decreasing, irregular.
165. High haze, ...	...	...	...	Irregular, few.
166. Green sky, ...	...	...	...	Rapidly increasing.*
167. White sun-light,	...	...	...	Increasing.
168. Yellow do.	...	...	...	„
169. Clear atmosphere,	...	...	...	Irregular, few.
170. Turbid air, ...	...	...	...	Not extracted.
171. Extreme dry days,	...	...	...	Increasing, irregular.
172. Misty, ...	...	...	...	Stationary.
173. Dusty, ...	...	...	...	Increasing.
174. Clear nights, ...	...	...	...	Not extracted.
175. Parhelions haloes meteors,			...	Stationary.
176. Barometer, ...	...	...	...	Not extracted.
177. Thermometer,	...	...	...	„
178. Hygrometer, ...	...	...	...	„
179. Rain-guage, ...	...	...	...	„
180. Evaporation, ...	...	...	...	„

Note.—This last class of Miscellaneous may be much extended, and with great advantage to the science.

* This phenomenon appeared for the first time in the autumn of 1813, and at present extends to more than half the days in the year.

CONCLUSION.

The amount of each of these phenomena being attached to the respective years of the 54-year cycle, by the month, quarter, season, and by the year, enables the Reporter to calculate the amount or state of each on these periods of the year, and, in a general sense, from them describe the character of the weather of each period for the future,—the instruments by which observations are made form exceptions to the above statement, the condition of the future not being determined by the use of them; and it is deserving of special notice, that no conclusion as to character or state of weather can be made by any calculation on the lunar periods, the weather coming out solely by the calendar months; so that the weather is a solar effect, yet the moon is the source or cause of one half of all the wind that blows; while both solar and lunar winds have a slight variation in the respective proportions of amount from time to time. The weather coming out rigorously upon the calendar months, a question arises, how these periods were ascertained? for every one of them is a strictly *natural* period, every month having exactly its proper number of days, and no more nor less; and observers may satisfy themselves on this head when they may remark that very frequently the change in the weather takes place on the first day of the month, though occasionally there is an inosculation, or the weather of one month enters some way into the other month. The quarters, the seasons, and the year, beginning with the first of November, are also *natural* periods, and not like the civil year, which is no year at all, but a part of two years clubbed together, which renders the period the most perfectly heterogeneous that can be imagined: These are points of singular interest.

It should be added, for the encouragement of observers who keep registers of the weather, that all of them may be able to calculate in the rough the future state of the weather for a few years, when 30 years of observations have been registered upon the plan exhibited by the preceding list of phenomena; and when 40 years of observations are recorded, the result given by calculations may be trusted as nearly perfect for a dozen years to come at least, unless the observer should happen to be tossed about through the country by circumstances, as was and is the case with the Reporter. It is strange that the cycles of the weather should be discovered under the most discouraging circumstances.

The point of commencement of the weather year, which the Reporter fixed upon more than 40 years ago, viz. first day of November, has been lately adopted by the British Association for the Advancement of Science —one of its members, the now Sir D. Brewster, in a communication to the Secretary of that body, stating that "they had appointed two stations in the north of Scotland, viz. Inverness and Kingussie, for observing the weather, and that the observations commenced on the first day of November, the beginning of the meteorological year." See the *Athenæum* of 31st August, 1839.

The Reporter, in his *Manual of the Weather for* 1831, at pages 41 and 42, stated as follows:—"This circumstance may show the propriety of the weather of every district over the general surface being ascertained, so as to arrive at a knowledge of the working of the system in every such place or district;" and the Reporter repeatedly urged this point in his subsequent *Manuals*. At the meeting of the British Association at Plymouth, 29th July, 1841, Professor Whewell, in the chair, delivered an address, in a paragraph of which is the following—"We ought to have meteorological observations and observers distributed over the face of the globe." These various

quotations from the works and sayings of scientific authors, furnish a proof that some of the principles of the subject of the weather are beginning to be understood, which affords the utmost gratification to the Reporter, for, during 20 years after his first discovery, he never could find an individual willing to know anything of the matter, excepting the knowledge which Sir D. Brewster acquired of the structure of the primary cycle, which, however, turned to no account at the time. Of late, numbers of ingenious young gentlemen have made considerable progress in the study of this new science.

Should the British Association exist for a lengthened term, there is no doubt of that body, which at present follows in the wake of the Reporter at a humble distance on this subject, adopting all the discoveries and improvements made by the Reporter in the weather; but the Reporter is anxious to enable all, or every individual, were this possible, to calculate the weather for themselves from the cycles. It was doubtless for the benefit of mankind at large that Providence ordained the Reporter to be the instrument through which this communication was to be made to the world, and which is now becoming extensively known over Europe and America, especially the United States and the Canadas,* to which countries the Reporter's relatives, friends, and countrymen, have removed from Scotland within the last 30 years. The Reports of the weather have found their way even to China!

Before the Reporter commenced his labours in the department of the weather, philosophers in all countries had almost utterly despaired of any discovery being ever made in the weather; but since the Reporter succeeded in detecting many of the first principles of the science, observ-

* The Reporter's correspondents in Canada complain of the complicated nature of the subject, at the same time admitting that the science may be correct.

ers and calculators have sprung up in every direction, eagerly hoping to construct a system of the weather, and among the rest, the British Association was founded in 1831, which of late years warmly took to the subject of Meteorology, as noticed above. There is, however, no reason to doubt that their talk upon this matter would have been exceedingly small, had it not been for the previous success of the Reporter in his discovery of the various cycles of the weather, which would have been long since established in public estimation but for the great difficulty of comprehending a subject so entirely new, and in which the least progress was never made before the Reporter succeeded in unravelling almost at once the whole scheme of the structure of the weather ! The impulse thus given, however, will now be carried out, and the Association may flatter itself that their more laboured observations and calculations will enable it to substantiate the discoveries of the Reporter ; in this the Association will be disappointed —their more laboured observations and more correct, if that be possible, will lead it and others but the more astray from the corroboration hoped for, as the reader of the preceding account of the primary cycle will readily perceive ; yet accuracy of observation is absolutely necessary to the command of accurate results.

The only remedy in this case is to adopt the cycles and arrangement of phenomena as laid down in the Reports of the weather, and to calculate the state of the particulars for the future in the same manner as conducted by the Reporter, for there is only one method of managing the thing, which is by means of the cycles of the winds and the other natural phenomena described. All this is not explained in the present Report, but explanations to this effect to some little extent have been given in the Manuals of the Weather, published from 1830, inclusive, and will doubtless be often and fully repeated, either by the Reporter or his successors, before it can be turned to account

by the British Association or any other.* Meantime, an account of the future weather will be furnished to the public of the British Islands at least, and much to the satisfaction of all parties.

The basis of all the cycles is determined by multiplying the square of the periods by the years of the primary cycle, or cycle of lots. Thus the square of the year is 1, the year standing in relation to the other periods within itself which the sun stands in relation to the planets. The square of the 2 seasons is 4; the square of the 4 quarters is 16; of the 12 months, 144; therefore, $54 \times 4 = 216$, forming the cycle of the seasons; again, $54 \times 16 = 864$, which is the extent of the cycle of the quarters, and so on, to the smallest *natural* period of the year; the civil year is not a *natural* period, and the same may be said of many other periods in use.

The figure of the primary cycle, or cycle of the years or lots *(which see)*, is about three inches in diameter; the figure of the cycle of the seasons is about a foot in diameter—both being constructed so as to be sufficiently legible. It is remarkable that these are the proportions in the number of years of each—a matter of course—the one being four times the diameter of the other, or the one contains four times the number of years of the other; for $54 \times 4 = 216$ years, the number in the cycle of the seasons, hence the cycle of the quarters should be 48 inches in diameter; this last extends to 864 years—thus, $54 \times 16 = 864$ years—consequently there is but little or rather no prospect of the geometric form of this cycle being ever discovered, on account of great complexity and extent: it is so extensive as to be wholly unmanageable by the eye

* When will the British Association be able to do this? not at least by any of the members now alive, because they will not or cannot become acquainted with the subject—an apprenticeship of no mean duration would be necessary to qualify for the conducting of this subject, as now done by the Reporter!

—even the small figure of the primary cycle of 3 inches diameter is too much for many heads to keep steady while viewing it! Hence there is far less reason to hope the geometric form of the cycle of the months can be detected.

It may surprise the young student of the science of the weather, why so much stress has been laid by the Reporter upon the simple circumstance of some years having more east or more west wind, which, it may be said, every one knows to be the case. The explanation is this: a calculation was made in winter 1816-17 of the amount of wind, rain, frost, snow, &c. on the seasons of the preceding 14 years of registration, and put upon a card, for the purpose of studying the same, and it was remarked that the amount of each phenomenon rose and fell in quantity continually —each rise and fall embracing a few seasons, and, at same time, each rise and fall was different in amount, from which it appeared that some cause or rule directed these variations, which it was desirable to discover; but no solution could be obtained, till, on the morning of 12th July, same year, it suddenly occurred to the Reporter that, by adding the sums of the two seasons of winter and summer, the total by the years might throw some further light on the subject; and no sooner thought than done, when out came the lots of excess and deficiency of east and west wind as seen in the key table; this discovery so overcame the Reporter, that he instantly left his work and scampered over the country for three days like one bereft of his wits; but the thing durst not be whispered at the time. This feat was accomplished in the Fair City of Perth, which will ever be distinguished on this account, and so will Scotland, England, and the British empire be proud of having the merit of discovering the laws of the weather, while at the same time these islands possess the most variable climate on the surface of the globe; the Reporter at the time of making this discovery, was forty

years of age. Thus the reader will see that the discovery made was sought for by every means likely to lead to success. Had, however, the calculations been quite correct in the first instance, the discoveries would never have been made by him nor by any other, to the end of the world! On the first of November, 1842, the 41st year of the register of the weather commenced.

It will naturally be supposed the Reporter would have prepared an account of the cycles of the winds, weather, and prices consequent. This has been done many a time; but the new features which continually made their appearance in these departments of the science, made it necessary to re-cast the whole continually; it would, in short, require an antediluvian life to execute such a work, and then it would only, strictly speaking, apply to the period of recorded observations, so vast are the variations of the changes. The recent discovery of the structure of the weather of the 54-year period, of which a brief account is contained in the present Report, has rendered the science more simple and distinct, but much remains to be done even to get the subject put into working trim.

Readers of the Report are apt to conclude, that if there was any truth in these discoveries, the scientific world would at once assent and approve of the same; but the readers do not consider that the scientific know as little of the matter as themselves. The scientific do acknowledge the correctness of the discovery so far as the same is comprehended—witness the quotations from the *Edinburgh Review*, and from the proceedings of the British Association, given in the preceding pages. When the discoveries made in the weather become generally known, they will be acknowledged, and most gratefully too, more especially when the Reporter is dead. But in the meantime the cycles of the weather are utterly unknown and new to the world; and it will take ages to come before they become generally known.

The lots of the winds of the 54-year cycle may be compared to the waves, and the rising and falling quantities of the winds of the cycle of the lunes of the seasons bear a close resemblance to the tides of the ocean—and the still more lengthened swells of the winds by the quarters, months, &c. must have their types in the great waters; the oscillations of the planetary movements resemble the increments and decrements of the winds; in short, any one department of nature constitutes a type of every other —compare the flower of a day with the oak of a thousand years! After a time, when the science of the weather must be entertained, the scientific, the learned, and the public will nevertheless find it harder to digest than all the other discoveries made by the present generation, including the doctrine of the ten-mile crust of animal remains of the earth propounded of late by the geologists!

When the Reporter was usually employed in calculations, or in preparing a description of any particular branch of the subject of the weather, a perfectly new discovery in other branches would, unsolicited and instantaneously, offer itself sideways, and had to be recorded immediately, to secure the same: a great proportion of the light obtained in the science has been acquired in this manner, and not by direct contemplation. How comes this double operation? However this curious circumstance may be accounted for, the fact is certain, and without it the Reporter could not accomplish so much of the great work in a much greater length of time than he has been labouring therein. Why this haste, when the world is so slow in receiving these discoveries?

In order to shorten the process of labour, abbreviations have been freely adopted in conducting the register of observations; for example, m. for morning, cds. for clouds, &c.; otherwise the register, which now embraces about 4,000 pages, could not be contained in 6,000.

Although there might be some individuals who would

prefer the weather to have continued in the same glorious uncertainty as is said of the law of the land; yet to the great majority the foreknowledge of the weather must prove exceedingly interesting, since all proceedings, movements, &c. will be guided accordingly in future.

It is believed that regularly appointed and paid Professors of the Colleges are the best qualified for conducting any matter of science. This is only true when the science is in their possession; but many individuals, not professors, have established their claims to high proficiency in original discoveries. With regard to the weather, these leaders cannot devote their time to the keeping of registers of the phenomena;* they have other duties to perform, which renders it impossible for them to attend to matters out of their sphere of office. Witness the proceedings of the British Association on this subject: this body delegates the work of conducting observations to schoolmasters, who, of all people, are least capable of the task, one and all of them having to attend to the business of their lives—that of teaching the knowledge already established. Moreover, the observations of the schoolmaster cannot be of much avail to the professor—to do the subject justice, the professor should himself be the observer. The Reporter, on the other hand, has had the advantage of an all command of time, not having to work for a living, and therefore he has not only conducted a register of unrivalled minuteness, but of unexampled duration, and consequently has completely succeeded in unravelling the difficult, the thrice difficult subject of the weather; and the science—greatly complex it must be acknowledged—bids certain now to be established, and not liable, as the Reporter ap-

* The Edinburgh Professors to whom the Reporter submitted a brief account of the primary cycle in 1818, to which allusion is made elsewhere, immediately sent instructions to many factors and clergy of Scotland to keep registers of the weather, but to this day nothing of result has appeared in consequence.

prehended for years, to be lost, as was the case with the kindred science of astronomy, whose general principles were discovered more than two thousand years ago, yet was only recovered but a few hundred years since.

Another objection remains to be stated against the old and still continued process of conducting observations upon the weather, which is, that too much attention and reliance is placed upon observations by instruments—to calculate the one thousandths-part of variation of barometer, rain-guage, &c. of an inch, is considered the very perfection of registration, whereas the truth is, all the observations by all the instruments are as nothing compared to a few made on the more *natural* phenomena, as mentioned elsewhere. The success of the Reporter in ascertaining the true character of the future weather, has solely originated in his trusting to his register of the more natural phenomena, which, indeed, settles the point. The weather-wind vanes of steeples, &c. are very faulty, some correspond with the solar north and south, others with the magnetic north and south, and many with neither; but the true observer requires none of this assistance, he is master of the solar and of the magnetic points wherever he may happen to be, and therefore is enabled not only to ascertain the quantities of the winds by the east or west, but also the actual amount of rain, frost, snow, &c. on all the various periods of the year. In short, the practised and acute observer sees at a glance how the affairs of the weather progresses, and with the same ease as is done by practical men in the every-day affairs of the world.

The reader will perceive that all the articles given in the present brief account have not an immediate connection; this arises from the circumstance of selecting what is offered from an immense multitudinous statement of the subject prepared from time to time; were the whole offered, this discrepancy would not appear—yet, as mentioned elsewhere, no account of a period of time will apply

to any other period of time; endless is the subject, yet particular for the time. The Reports published of late years have been prepared in the rough a considerable time back, and have been carried to the 1846.

The mass of important and interesting facts suppressed in preparing this epitome of the cycles of the weather is immense, and altogether the subject, to do it justice, would extend to several large volumes. The Book of Tables of the Phenomena, by which the weather of the future is calculated, alone extends to 400 large octavo pages. In this account the powers or properties of the cycles are given in a concentrated state—the particulars will follow some day.

Readers who do not make themselves acquainted with the structure of the cycles and their properties, so far as the same is explained, on them the Reporter's labour of love is lost.

P.S. The volcanic eruptions, earthquakes, fierce winds, &c. peculiar to the quadrennial excess, have been in full play recent winter of 1843, second winter of the lot; the gale of the 13th January was most extensive and severe, causing great destruction of life and property; the earthquakes have been too numerous to be particularly alluded to—proof sufficient the great quadrennial excess now rules, as denoted by the cycle of lots!

JUNE, 1843.

GLASGOW, 5th May, 1843.

DEAR SIR—I am truly pleased to learn that you are preparing for publication a small elementary work on the subject of the Cycles of the Weather.

This step may perhaps be the means of at length attracting the attention of men of science, who are apt in general to be very sceptical about mere weather prognostications, and thence of all classes of the community. Your discoveries in this important department offer a striking instance of the vast difficulty that attends the introduction of new truths to the notice of the public; notwithstanding the regularity of your annual publications for the last fourteen years, the appearance of your larger works, and the incidental notices of others, the subject has not received a tithe of the attention that, from its interesting nature and useful tendency, it so truly merits. The reason the learned pay so little heed to publications on the subject of the weather is, because so many attempt to set up the most meaningless theories on that subject, or to predict the future weather by mere guess-work and without any theory at all. It is to be hoped your present little work will convince them that you stand forth as an exception to this rule, and that serious long-continued application will at length give bright glimpses of the truth, however seemingly insuperable the difficulties the department of nature we investigate presents. I have read your publications regularly from the first, and can testify that the system they describe, when properly understood, is beautiful in the extreme, and also that the practical results of that system have hitherto been such as to afford the strongest corroboration of its inherent truth.—I am, most sincerely yours,

JAMES SMITH.

Waterloo Place, Glasgow.

NOTES.

The fact of the revolving bodies of the weather of the different cycles being in constant change, is proof that all the bodies in nature are subject to the same law: indeed, proof is not wanting on this head—witness the changes of the globe of the earth, which has been proved by the geologists.

The short rains at the point of greatest compression of weather average about 90 by the year; at the point of greatest comminution, they average about 180.

The lots of excess east have a decided superiority over all others in compressing the weather in that division of the cycle termed the 'compressed;' and it is remarkable that the same lots have the opposite property in a similar excess upon the comminuted division of the cycle—witness the extraordinary high number of the short rains on the 1827, year of single excess east—*which see in the Table.*

In the Key Table, the first triennial excess east of 1804, 5, and 6, has the highest amount of days wind on the *first* year, decreasing from first to last; on the second triennial excess east of 1819, 20, and 21, the highest number of days wind is on the *last* year of the lot, increasing from the first to the last. The reason why the first lot decreased, is on account of the compressed weather being on the decrease under the lot; and why the second triennial should be increasing, is, that the comminuted weather is on the increase under the lot. *(See these lots in the Table.*

In the 40 years of the Register, the 'fair days' have been lowest in number (122) exactly on the year which is the centre of greatest comminution; while about this year, though not on the year itself, the quantity of rain is also lowest in amount—circumstances which most distinctly show the nature of comminuted weather. In this state of the weather, the adage of 'long foul, long fair,' is by no means applicable. The remark must have been made when the weather was in an opposite condition, or when the days fair were much more numerous than the opposite upon the years, that is, in the compressed division of the cycle when long rains prevail, and but few short, comparatively.

The 'clouds of no order' are naturally higher in number at the point of greatest comminution of the weather. *(See the increments and decrements of this order of clouds in the List of Phenomena.)*

The 'total of orders,' on the same principle, are highest in number at the same point of the cycle. *(See 'total of orders,' as above.)*

The unfavourable weather under the quadrennial deficiency of 1815, &c. and again under the quadrennial deficiency of 1834, &c. had each about double the number of days of black clouds to that under any of the other lots of the winds.

The weather of some of the years under all the lots of deficiency east is always of a troublesome description. The current year of 1843 is to the point, yet a more or less of a favourable crop is expected on the year notwithstanding.

The 'clear and generally clear' days were at the lowest amount on the 1827, viz. 62 days, having decreased from an average of 120 on the 1802 to the 1827; and since the

last-mentioned year are increasing. In these notices, the annual rate is always understood. The 'cloudy and generally cloudy' are not so uniform in their courses. The 'partly clear and partly cloudy' are at the highest amount immediately about the 1827, increasing from 1802 to these years, and since decreasing. Days of 'dark cloudiness' have been decreasing from 1802 to the point of greatest comminution, and since then are increasing.

Days 'temperate' have been decreasing through the whole of the years of the register. Days 'cool' increasing in the same time. Days 'fine' decreasing for the last 40 years, or all the years of the register, the highest number 174; lowest 53, on 1842. Days 'very fine' increasing at the same time, the lowest number 35 in 1804; the highest 211 on 1842. This low rate of very fine days on the first year of the triennial excess of 1804, is a further corroboration of the triennial of 1844 commencing with the highest number of very fine days.

The List of Phenomena in the tabular form exhibits most surprising properties, correspondencies, nay, perfect curiosities, not by the thousands, but by tens of thousands; in short, the 40 years alone of the register are inexhaustible in matter of information, and of the highest interest.

The recent compressed weather, commencing with 1788 and ending 1813, had very high prices of corn throughout the whole of the period—so much so, that it may be concluded as certain the prices will not rise to near the same amount for several whole turns to come of the 54-year cycle; and particularly on the compressed division, whose commencement may be dated 1842, and terminating with 1880, the prices may be expected of a moderate rate. This much is all that can be ventured upon a cycle so much in and out as the circle of the prices.

By examining column 18 of 'Table of the Prices,' page 52, it will be seen that the number of days rain in the compressed weather, or dear division of the prices, is considerably lower than the days of rain in the comminuted weather or cheap division of the prices, although the days rain do not show the difference between the two divisions in so striking a light as the short rains of the two periods.

The cycles of the winds, weather, and prices of corn being fixed laws of nature, will in time enable the rulers of the country to store the surplus produce of favourable years, in order to keep the supply equal upon the unfavourable years.

The biennial deficiency east of 1807, 8, in its first year reduced the number of hot days of the quadrennial excess in 1807. *(See tabular view of the hot days of the quadrennials of excess, page* 49.) The biennial deficiency east of 1825, 26, increased the hot days of the quadrennial excess in both years—*(which see as above.)* On the other hand, the biennial deficiency east of 1842, 43, reduced the hot days of the quadrennial excess on the last year of the lot, that is, on the 1843—it being now (8th June) evident that the hot days of this year will be of a limited number, according to the statement made when the tabular view of the hot days of the quadrennials of excess was published (6th October, 1842, in the *Perthshire Advertiser).*

The discovery of the cycles of the winds, weather, and prices of corn, is like a removal into a new world, wherein every great physical change is anticipated, and all that was known before will then be known in a different light from previous experience. Moreover, the value of the world will be increased at an astonishing rate, since little will be left to be determined by chance or uncertainty;

and further, the discovery will have a strong tendency to bind the nations of the earth in a closer bond of friendship. In truth, there is no end to the beneficial advantages which this new and ample science offers to the world.

The quadrennials of the lots of the winds are to the rest of the lots what the stream tides are to the neaps in the fluxes and refluxes of the waters of the ocean.

The reader is little aware of the gratification arising from the invisible machinery of the cycles of the winds producing the calculated effect: this gratification may be his, should he study the subject and register the weather.

When the working of the machinery of the weather is actually perceived by the observer, while the machinery itself is invisible, excepting in the calculations, the effect upon the mind will be electrical. Hitherto the Poet gave to 'airy nothings a local habitation and a name;' but in the airy body of the atmosphere the Poet's fiction is more than realised—the 'nothing' is reduced to substance by the calculations.

The winds, &c. are not only in lots by the years, but also by the seasons, quarters, months, weeks, days, hours, &c. as if all things were in masses or pellets of every conceivable dimension.

It is not to be overlooked that the increase of the easterly winds upon the winters of the coming years for a certain term, cannot give rise to any very pleasant emotions, since every body of any experience is perfectly aware of the nature of the weather on these seasons under a prevalence of easterly winds.

During the compressed weather at the end of last cen-

tury and commencement of the present, the corn in the early stage of vegetation constantly appeared of a sickly yellow colour; the first exception was observed in summer 1806, and again in 1812, when the east wind was rapidly leaving the winters for the summers, after which the healthy colour became the rule—until the present summer of 1843. *Note.*—The first part of this paragraph has been extracted from the manuscript account of the Cycle of the Prices prepared in 1827.

It may hence be expected that under the compressed weather now commenced, and to continue for a considerable number of years, the usual result under the circumstance, as to the state of the vegetation, will be remarked to become more frequent as the period of compressed weather becomes more confirmed. An excess of easterly winds upon the winters appears to be unfavourable to corn, as it is to the health of the people—in the climate of the British Islands at least.

The calculations have been extended to the 1846, which also promises a favourable result as to crops, but it may be concluded the years will be more or less favourable until the quadrennial deficiency of 1852 appears, under which it is probable there may be some reverses, which calculations will detect as soon as the same can be made.

The reason the two periods of compressed weather and dear prices, and of comminuted weather and cheap prices, do not exactly correspond, is, that the effect comes after the cause: hence the commencement of dear and cheap prices comes a few years after the commencement of compressed and comminuted weather.

The Author, at the time of discovering the cycle of the

winds of the seasons, was sensible of the wind of the excess east being on the increase upon the current times; but he was not certain that the weather would have so much of a sameness as to gales of wind, long rains, and short rains, on the return of tho excess east upon the winters, as experience has proved.

The lots of one side of the cycle operate in a contrary order to that of the lots of the other side of the cycle; which is naturally accounted for by one side of a cycle being perfectly opposite in construction to the other side.

For example, in a thrashing machine, the horses on one side of the wheel pull in an opposite direction to the horses on the opposite side; and this is the case on any two sides of the wheel. No better illustration of the nature of a circular movement can be found—all circular movements are upon the same principle.

Under the quadrennials of excess, the fierce winds prevail over the whole globe; yet it may be a question whether the weather year begins at the same time in both hemispheres; it is possible that in the southern the beginning is upon the first of May.

The last quiet, still, dry weather of the compressed state, whose centre is on 1802, was on the month of June, 1821; it continued on tho whole of the month. Another was on August, 1819, with clear skies, which also continued the whole month.

So every turn of a cycle is a distinct body, and consequently the weather is composed of different bodies, similar to the rest of creation, but wonderfully combined in succession. Perhaps there is not a material difference be-

tween this connection and that of other bodies—say the sun and planets, &c. which have an intimate connection with one another.

Hot weather is commonly called 'fine weather,' but it is not so; it is a scourge—witness summers 1800 and 1826, &c.; it is the mean state that is best entitled to this appellation. But even 'fine weather' is not the best weather; that which is seasonable—moderately cold in winter, and moderately mild in summer—constitutes the best weather.

Although the Author expected similar weather on the return of the excess east upon the winters to that observed in the first years of registration, his attention to this fact was principally owing to the great number of the long rains of the winter season of 1843—Mr. White's poem coming under his eye at the same time, assisted in directing attention to the altered state of things in the weather. In the south of England, winter 1843 proved the driest observed for many years—a difference which strikingly shows the propriety of having registers kept in every country.

The cirrocumulo or sonder cloud has been gradually declining for the last 30 years, until it wholly disappeared some years ago. These clouds were in the fulness of their strength about 60 years since: when they may return is not easy conjecturing.

The cirrostratus or wane cloud is the tyrant of the sky; on its approach, all others become stiff and shrivelled, and are speedily absorbed by the great monster. When the wane cloud is absent, all the others seem at perfect ease in displaying their entire capacities.

The point at which the compressed weather decidedly gave way is at the year when the excess east is at the average by both the seasons, declining in winter and increasing in summer—that point is the 1814, which see in the table; and the point when the compressed weather is again on the increase is when the excess east is at the average by both the seasons, increasing upon the winters and decreasing upon the summers—and this state is on the 1841, which see in the table.

The circle or cycle of the prices of col. 17 in the Table of the Prices, is a true representation of the average rate of the last 600 years. The prices are generally cheap when the excess east wind is heavy upon the summers; and the prices are generally dear when the excess east is heavy upon the winters; and every one knows, that when the east wind is heavy upon the winters, the weather of those seasons is most dismal; but no one had any suspicion that this same wind, when heavy upon the summers, made the best weather and the most fruitful years! Of course, the wind of the excess east will not be heavy upon the fine winter of 1844; it will not be heavy upon any of the winters of the triennial which commences on that year; but the greatest amount of east wind will be on the mid year of the lot, the 1845, and then only a slight excess. But there is no end to explanation of the particulars furnished by 180 tables, of 25 columns each, of the phenomena of the weather. Future generations will take infinite delight in anticipating, by calculations, every phase of every phenomenon of the weather. Talk of the subject being a dry one—it is quite the reverse, as time will confirm!

In addition to the large number of great rains upon the winter season of 1843, several have already taken place by the 8th of June, current; and no doubt the number

will be considerably increased upon the rest of the summer season. In fact, this year of 1843 is the great year of the quadrennial excess of the present day, as the 1825, celebrated for inundations, was the great year of the preceding quadrennial excess of 1823, &c.

The prices of the dear division of the 54-year cycle average 54 shillings—those of the cheap division average 36 shillings. This is exactly the proportion of the west to the east winds, the one being half more in amount than the other; hence the two winds regulate the prices—the east wind upon the winters make dear prices—the east wind upon the summers make cheap prices—the west wind, on the other hand, make dear prices when upon the summers, and cheap prices when upon the winters—such are the properties of the two winds of east and west! None but an enthusiast can follow up this subject!! and every one that understands it must become an enthusiast —witness the quotations from the *Edinburgh Review*— the letters from the National Institute of France, communicated to the Author twenty-two years ago, when the belief in the discoveries was of the faintest description— the proceedings of the British Association—also, Mr. Smith's letter, given in the preceding pages; all which is proof of the strong interest entertained on this head by the most eminent individuals of society, who one and all hail with delight the least glimmer of light obtained in the subject of the weather!

The 'mean' rains have not been alluded to when treating of the 'long' and 'short' rains of the 54-year cycle, because the rate of them is of an even tenor through the whole of the Register—now in its 41st year.

The present season having the first appearance of the yellow colour in corn under the current increasing com-

pressed weather, and it being a consequence of the frequent long rains of the recent winter, there is an explanation arising from the circumstances of a satisfactory nature—thus, had the corn continued of luxuriant growth and fresh in colour, its weight would be such that, at a certain stage, the long rains would assuredly beat it down flat on the ground, never to rise again, and hence there would be a total loss of crop; but by the vigour of the plant being checked, it has the chance of being better enabled to stand the pelting of the long rains. During the late very unfavourable seasons there was no yellow taint remarked in the corn, because all the winters of the period were more or less dry, while the summers were excessively wet and cold. The proverb of 'long foul, long fair,' is peculiarly applicable under the compressed weather of the cycle, now continually on the increase, as explained elsewhere.

Total short rains on the summers of biennial deficiency east of	1807 had	195
	1808 —	142
Total short rains on the summers of biennial deficiency east of	1825 had	163
	1826 —	144
Total short rains on the summers of biennial deficiency east of	1842 had	159
	1843 say	200

The biennial deficiency east of 1807, 8, had a cold wet summer on the first year of 1807. The same lot on 1842 and 43 has the cold wet summer on the last year of 1843. See page 21, where it is explained that the weather of 1842 and 43 is not so much under command as the weather of some subsequent years.

The average of total short rains for the summers is 179. *(See Table of Averages.)*

Mean temperature of March, 1843, at Toronto, Canada, West, 24° of Fahrenheit.

JUNE 8, 1843.

No. XVI.

REPORT OF THE WEATHER

For the Year 1845.

Beginning 1*st November,* 1844, *and ending* 31*st October,* 1845, *being the Weather Year of* 1845; *and in the Primary Cycle of the Winds, is the second year of a* TRIENNIAL EXCESS EAST *wind; and last year of a* QUADRENNIAL EXCESS WEST *wind.*

WINTER SEASON.

November—Average windy, frosty, rather dry, fine.

December—Average frosty, rather snowy, average rain.

January—Slightly windy and slightly cloudy, average frost, snowy, wet.

Winter Quarter—Foggy, average frost, snowy, yet rather dry quarter, with a good many fine and very fine days.

February—Frosty, snowy, average windy, slightly cloudy.

March—Windy, temperate, yet snowy and slightly wet; average frost.

April—Frosty, yet many temperate days, and rather wet.

Spring Quarter—Rather windy, frosty, snowy, yet many days temperate; average wet.

Winter Season—Full average frost and snow, yet many temperate days, and average rain and wind.

SUMMER SEASON.

May—Temperate days above average, cold days average, and rather dry; much white clouds.

June—Cold, yet many temperate days; average rain.

July—Temperate days prevailing, and average rain.

Summer Quarter—Foggy, temperate days the general run, and rain slight over average.

August—Rather windy, cloudy; temperate days the general run, and rather wet.

September—Easterly winds prevailing; temperate days the general run; average rain.

October—Slightly windy, temperate, average rain.

Autumn Quarter—Slightly foggy, temperate days prevailing. Mild and warm days considerably under average; cold days the contrary. Frost full average, and sensibly over average wet.

Summer Season—Average windy, many clear days. Temperate days the general run—on the whole a mild season. Thunder and lightning slight over average; frost considerably over average; rain a sensible over average.

Annual Period—Westerly winds prevailing, average windy. Red, yellow, brown, and black clouds all considerably above average. Many clear days, yet average cloudiness. Temperate, fine temperate, and very fine temperate, all much above average—a rather singular circumstance. Frost slight over average; snow much over average; quantity of rain rather over average. A temperate year.