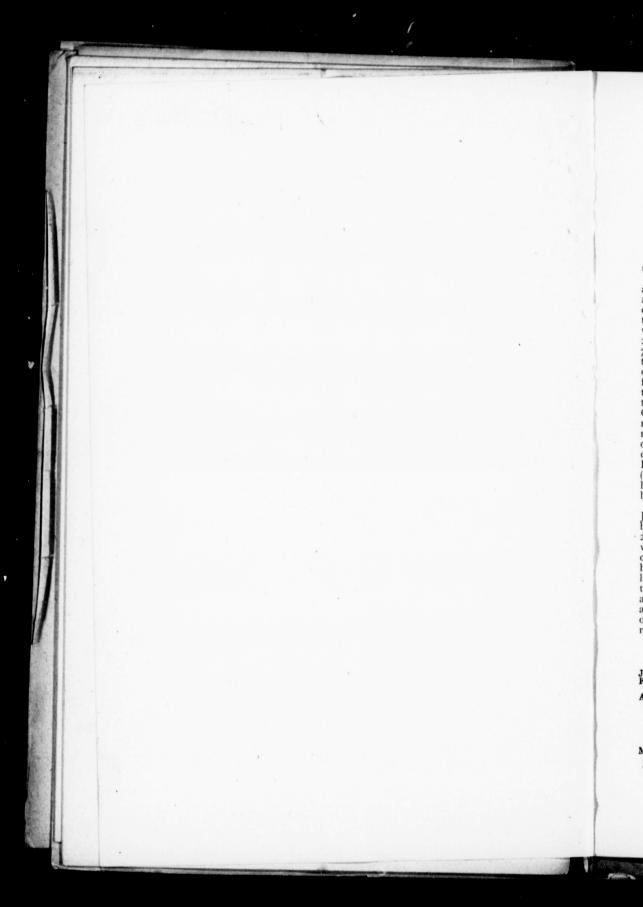
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TORONTO

GENERAL METEOROLOGICAL REGISTER

FOR THE YEAR 1896.



REMARKS ON THE METEOROLOGICAL RESULTS AT TORONTO FOR THE YEAR 1896.

-:0:--TEMPERATURE.

The mean temperature of the year 1896 was 45'36, being 1'16 warmer

than the average of 56 years and 1'08 warmer than 1895.

The mean temperature of the several months was in eight instances above and in four below the average for their respective months, the average excess to the average defect being in the ratio of 2° to 2° 77. On each of the 203 days the mean temperature was above the normal of that particular day and below on 163 days. The mean temperature of each month, ticular day and below on 163 days. The mean temperature or each month, with the difference from the normal, was: January, 22°·18—0°·24; February, 22°·62+0°·13; March, 23°·57—5°·18; April, 45°·77+4°·80; May, 59°·79+7°·65; June, 64°·75+2°·36; July, 68 72+1°·10; August, 60°·49+1°·28; September, 57°·41—1°·22; October, 44°·77—1°·60; November, 39°·45+3°·35; December, 27°·84+1°·50. Dividing the year into the ordinary seasons we have for Winter, 22°·79; Spring, 56°·77; Summer, 64°·54; Autumn, 37°·35. The thermic anomalies differ from the normal temperature proper to the latitude: Winter—12°·8: Spring—0°·86: Summer,—1°·60: Autumn,—6°·08. tude: Winter, -13°8; Spring, -0°86; Summer, -1°69; Autumn, -6°98. On three months during the year the observed emperature exceeded the normal value for the latitude, viz.: May, 1°69; June, 0°15; July, 0°02. The mean daily range for the year was 17°58, the greatest monthly average occurring in August (22° 56) and the least in December (12° 45). The greatest daily range (38° 9) occurred on the 8th May, and the least (2° 8) on the 29th December. The warmest month relatively was May, estimated by its excess (7°65) above the normal, July, the warmest absolutely. The coldest absolutely was January (22°18). March was the coldest relatively, its mean being 5°18 below the normal.

The climatic difference was 46°54, the warmest day was the 12th of Luly maps tamperature 7°200 and the coldest the 16th of Fabruary 7°200.

July, mean temperature, 78° 32, and the coldest the 16th of February, 5° 55 below zero; but the warmest day relatively was the 10th of May, it being 27°.80 above its proper normal, and the coldest the 16th of February, which was 29°13 below the normal. The average temperature of the warmest and coldest days from former years was 77°95 and 2°24 below zero. The highest temperature of the year (91°3) occurred on the 12th of July, and the lowest (17° 9 below zero) on the 17th of February. The annual range from these extremes was 109°2, being 5°2 less than 1895 and 6°2 more than the average annual range. There were 39 instances on which the temperature at the hour of observation was 20° above the normal and 20 when a defect at the hour of observation was 20° above the normal and 29 when a defect of equal amount occurred. The most striking deviations from the daily

normal curve of temperature have been as follows:

IN EXCESS.

			0 1				0
January	2, Mean	Deviation	 13.23	May	11. Mean	Deviation	 20:80
February	7 1,	do	 13.02	do	16.		 13.83
do	28,	do	 12.15	June	7.	3-	 13:57
April	13,	do	 12.97	October	29.	.1 -	 13.75
do	14.	do	 16.17	do	30.	3 -	 13.47
do	15,	do	 15.57	Novemb	er 16.	do	 15.30
do	16,	do	 22.85	do	17.	do	 12.17
do	17,	do	 22.62	do	26.	do	 15.58
do do	18,	do	 17.78	do	27,	do	 20 67
do	19,	do	 13.42	Decembe	r 12,	do	 13.33
May	8,	do	 16 42	do	29,	do	 14.57
do	9,	do	 25.97	do	30,	do	 16.77
do	10,	do	 27.80				

IN DEFECT.

			0				0
January	4, Mean	Deviation	 13.18	March	11. Mean	Deviation	 13:08
do	5,	do	 24.83	do	12.		
do	6,	do	 15.10	do	13.	do	 15.92
do	7.	do	 14 63	do	14.	do	 13.33
February	16.	do	 29.13	do	20	do	 15.55
do	17.	do	 28:80	do	22	do	 19:67
do	20,	do	 18:67	do	99	do	 16.79
do	21.	do	 16:57	April	20,	do	 14:00
March	3.	do	 13:55	Dogomb	ar 99	do	 10.40
do	4	do	 15.50	Decemb	er 20,	uo	 10 40

BAROMETRIC PRESSURE.

The mean height of the Barometer was 29'6382 inches, being 0'0185 inches more than the average. The month which showed the greatest deviation from the normal was February, o 185 in excess; May and August showing the least 0°006, also in excess. Average deviation without reference to sign was small, being only 0°056. The highest reading was 30°422 inches at 4 p.m. of December 27th, and the lowest 28°734 at 4 p.m. of Feb-

ruary 6th, giving a range of pressure of 1688 inches.

The number of days of large abnormal variation in which the average pressure differed by two-tenths and upwards from the normal was 121, the greatest number (18) occurring in February, and least (3) in July and August.

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HUMIDITY.

The mean humidity of the year was 75, being 2 per cent below the average, the greatest monthly humidity was 84, in January, and the least, 66, in May. There were 17 cases of complete saturation at the hour of observation; 5 in January, 3 in February, 1 in May, 1 in July, 2 in October, 4 in November, and 1 in December. The least humidity of the year at the hour of observation was 20 on the 14th of August, at 4 p.m..

CLOUDS.

The extent of the sky clouded was on the average of the year six-tenths of the whole. June was the clearest month and January the most cloudy. During the year there were 55 days completely clouded, being 11 less than the average (1855-79), the greatest number (21) occurring in January, none being registered in the months of April, May, July and August.

The resultant direction of the wind was N. 88° W., showing 14 more northing than 1895, and 11° more southing than the ten years to 1890. The mean velocity of the win i without reference to direction was 8 44 miles. The most windy month was March, with an average of 1000 miles per hour, and the least windy was August, with an average of 669 miles. The windiest day was February 19th, average velocity 38.53 miles per hour, and the day of least velocity September 18th, average velocity 1.92 per hour. The highest velocity in one hour was 500 miles, 4 to 5 p.m. of the 19th of September.

RAIN AND SNOW.

The total depth of rain that fell during the year was 21 770 inches, being The dotal depth of rain that ten during the year was 21 770 menes, being 5 '552 inches less than the average, and 0 '761 less than the rainfall of 1895. The depth of snow, 73'3 inches, was 5 inches more than the average, and 18'5 inches more than the snowfall of 1895. September was the most rainy month as to quantity (5'085), and also with reference to the number of rainy days. December was the least rainy month, only 0'345 inches having fallen.

The day of greatest rainfall was the 23rd of January, when 1'845 inches fell. There was only one other day during the year on which over one inch

fell. There was only one other day during the year on which over one inch ell.

The heaviest fall of snow in one day was 74 inches on the 19th of March. Rain fell on 104 days, being 10 less than the average number, and 3 more than 1895. Snow fell on 43 days, being 23 less than the average and 5 less than 1895. There were 174 days on which neither rain nor snow fell; 335 hours in its fall, giving a total of 756 hours, or 31 days and 12 hours when rain or snow was actually falling.

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THUNDER-STORMS.

Of the 25 thunder-storms occurring during the year, the first was on the 25th of March, and the latest on September 27th, I in March, I in April, 8 in May, 6 in June, 4 in July, 4 in August, I in September. The most severe storms were on the 25th of May, 7th of June, 6th of July, 5th of August, and 27th of September.

AURORA.

Auroral displays were more numerous than in the previous year. Of the 18 observed, none were of the first class, 2 of the second class, 1 of the third class and 15 of the fourth class. There were 172 nights favourable for observation. The most brilliant displays occurring on the 4th of March, 17th of May and 6th of August.

SUNSHINE.

The total duration of bright sunshine during the year was 2146.7 hours; number of hours the sun was above the horizon, 4474.4; ratio of registered to possib e, 0.48.

GENERAL METEOROLOGICAL

MAGNETICAL OBSERVATORY,

	Latitud	e 43° 39′	4 N. Lo	ngitude,	5h. 17m	. 34*65.	Elevatio
	JAN.	FEB.	MAR.	APRIL	. MAY.	June	JULY
Average temperature Difference from average (56 years) Thermic anomaly (Lat. 43° 40'	22°11 -0°2 -10°6	4 + 0.1	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	45°77 + 4.80 - 4.43	59°79 + 7°68 + 1°69	64°78 5 + 2 30 + 0 18	1 1 1 10
Highest temperature Lowest temperature Monthly and annual ranges Average maximum temperature. Average minimum temperature. Average daily range Greatest daily range.	-10°3 48°0 28°21	48.9 -17.9 63.8 29.96 14.12 15.84 33.2	50°3 31°25 15°37	79 7 18 3 61 4 55 60 37 69 17 91 32 9	90 8 36 5 54 3 71 11 49 24 21 87 38 9	86:3 41:9 44:4 75:90 53:94 21:96 32:9	59:38
Average height of bar. at 32° Fah Difference from average	29·742 + 094	2 29 464 2 - 185	29·6298 2 + · 0231	5 29 6925 1 + 0948	29 581 + 006	7 29 182 2 + 010	3 29 603 9 + 015
Highest barometer. Lowest barometer. Monthly and annual ranges		1 28 73	4 29 023	29.298	29.08	29 158	29.24
Average humidity of the air Difference from average	84	+ 83	- ⁷⁶ 2	+ 74 + 4	- 66 - 4	67	72
Average elasticity of aqueous vapour Average temperature of dew point	0·108 20·0	0 111 20.6	0.103	0 · 249 40 · 1	0:336 48:1	0°414 53°7	0:508
Average of cloudiness Difference from average	+ 0.83	- °01	- 0·50 - 13	+ 0:64	0:48	0°42 - °11	0.54
Resultant direction of wind	N 9 E 0 94 8 58	N 70 W 2:39 9:67	N 59 W 3 89 10 00	N 18 W 0 · 52 9 · 38	S 66° W 0.84 7.60	N 10 E 0:48 7:36	N 85 W 0 25 6 78
Total amount of rain in inches	+ 0.700	+ 0.106 4	- 1 345 - 0 098	- 0 730 - 1.445	- 2:440 - 0:612 12	- 1:105 - 1:774 6	- 2·175 - 0·792
Total amount of snow in inches Difference from average Aumber of days of snow	+ 20·7 + 3·3 11	29.6 +12.6 11	-11·4 -0·9 7	- 0:3 - 2:1 2	- ö i	::::	::::
Sumber of fair days Sumber of days completely clouded	9 21	10 8	14 5	11 0	19	17	17
umber of auroras observed	3 10	0 8	3 19	15	1 24	1 20	1 21
umber of thunderstormsumber of fogs	0	0	2 2	ł	8 2	6	4
umber of hours of bright sunshine umber of hours of possible sunshine	44·8 285·7	113·2 302·5	201 · 0 369 · 9	191·8 406 5	282 0 461 1	300·2 465·7	246·7 470·9

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0.481 57.9

S 32° W 2.00 6.69 $-1.130 \\ -1.741 \\ 9$

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REGISTER FOR THE YEAR 1896.

TORONTO, ONTARIO.

above Lake Ontario, 108 feet. Elevation above the Sea, 350 feet.

-	_	T		10, 10	o reet	. Ele	ratio	n abo	ve t	he Se	a, 3 5() feet						
	Aug.	-	EPT.	Ост.	N	ov.	DEC.	1	896.	18	95.	1894	. 1	893.	1 18	92.	1891	1000
	67°49 1 28 1 01	-		44°77 1 60 9 03	+ 39 + 3 - 3	35 + 75 -	27 [°] 84 1 50 8 16	+ 4	5°36 1°16 5°66	+ 0	28 08 74	46°7 - 2°5 - 4°2	5 4 5 –	3°53 0°67 7°49			45°8 - 1°6 - 5°1	
4 4 7	89 9 42 3 47 6 79 16 56 59 2 56	86 27 58 66 48 18 28	46	66 8 28 7 38 1 52 41 37 44 14 97 27 8	63 17 46 47 31 15 29	8 1 1 3 16 3 91 25 1 1 0 2	18 9 1 1 17 8 13 75 1 29 2 45 6 7		· 3 · 9 · 2 · · · · · · · · · · · · · · · · · ·	93 -21 114 17 36	6 1	90·7 9·9 00·6 16·27 24·3	111	3.3 7.8 1.1 	93 -10 103 15 38	5 53	91 · 9 - 2 · 0 93 · 9 	89 4 - 2 7 92 1
29 +	6231	29:6	242 422 —	6544	29:70		7529 1028	29:6	382 185	29:61	71 90	0 604	8 20.	5006	90.00	100	9:638	36·0 5.29·6313 + ·0117
30: 29:	001 274 727	29 · 90 29 · 00 0 · 91	52 29	142 196 946	30 22 28 99 1 23	2 29	422 127 295	30 4 28 7 1 6	22 34 88	28 746 1 494	30 29 1	·516 ·035 ·481	30 · 4 28 · 2 2 · 2	67	30 :35 23 :84 1 :51	6 30) 266 3 536	30:331
_ ⁷⁰	4 +	79	_ 7	5 4 -	- ⁷⁸ 2	- 8	0 2	- ⁷⁵ 2		75 - 2	-	76 1	77	- -	77 0	-	75 2	1·572
57.9	-	0:38 51:5	1 0:38	230	0°202 34°8	24 2		0·25 38 9		0.253	0:42	277	0 · 26 41 · 5	32 4	0·272 2·5	-		0·272 42·5
- 0:			+	63 +		-	_	0.60		0:57	0:	60	0:59		0.61	0:		0:62
S 32° 6 6	- -	42 V 0 50 8 50	N 46	W S	32° W 2:12 9:10	S 47	W N 3 30	88 V 0.75 8.44	vs	78 W 1 35 5 60	N 78	8 W 1	N 66 V 1 95 8 59	VN	54 W 1.81 8.17	N 5	63	N 48 W 1 80 9 19
-1 74 -1 74 9	1 + 1	5.085 1.811 15	1:96 -0:39 11		2:605 0:061 11	0·34 -1·25 4	3 —	1 · 770 5 · 552 104	22 -4 10	531 791 01	25 - 1:	537 +	31.14 3.82 105	5 2	5·285 2·037 119	26	735 : 587 +	32:110 -4:788 119
::::	1 .	:::	+ 1.2	-	3 4 1 2 3	- ^{6:0} 7	+	73·3 5·0 43	-13	1·8 3·5 8	37 · 8 -30 · 8	3 +	85·7 17·4 64	42	2.2	47 8 -20 8 50		52.6 15.7 52
17	1	3	20		10 5	16 9	1	74 55	19	6 8	179 43		156 50	1	65	193	-	159 68
21	10	6	15	1	0 2	13	19	18	11 195	5	23 199	2	18	33	3	18 212	-	7 86
7	5	2	9		0	0 2	2 3	25	23 33		36 30		41 31	40		19 38	-	21 43
272·2 134·5	180° 376°	2 3	143·2 340·2	94 286	9 2	77·3 27 4 ·3	214 447		2150 4463	7 2 4	017·7 463·3	208	52·4 53·3	2054 4174		065 4 463 3	197	7.6

levation JULY.

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ATORY,

 $\begin{array}{c} 0.505 \\ 59.3 \end{array}$

85 W 0.25 6 78

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TEMPERATURE.

1 1	1896.	Average of 56 years	ExTR	EMES.
Average temperature of the year. Warmest month Average temperature of the warmest month Coldest month Average temperature of the coldest month Difference between the temperature of the?	45.36 July 68.72 January 22.18	44 · 20 July 67 · 62 January 22 · 42	47 09 in 1878 July, 1868 75 80 Feb., 1875 10 16	40°77 in 1873 Aug., 1860 64 46 Feb., 1848 26 00
Average of deviations of monthly means from their respective averages of 56 years, signs of deviations being discognized	46·54 2·53	45·20 2·76	3.58	
to sign. Orresponding magnitude of deviation. Average temperature of the warmest day. Coldest day.	May 7.65 12 July 78.32 16 Feb.	77.95	Feb., 1875 12:33 July 14, '68 84:50 Feb. 6, 1855	72.75
verage temperature of the coldest day	-5 55 12 July 91 3	90.87	Jan. 22, '59 -14 33 Aug. 24, '54 99 2 Jan. 10, '59, -26 5 118 2	82.4

BAROMETER.

	1896.	Average of 55 years.	EXTREMES		
Average pressure of the year Month of the highest average pressure Highest monthly average pressure Month of the lowest average pressure Lowest monthly average pressure. Date of the highest pressure in the year Highest pressure Date of the lowest pressure in the year Lowest pressure. Range for the year.	29 6382 Dec. 29 7529 Feb. 29 4642 27 Dec 30 422 6 Feb. 28 734 1 688	30.357	\$ 20 6779 29 5602		

RELATIVE HUMIDITY.

	1896.	Average of 55 years.	Evre	REMES.	
Average humidity of the year. Month of greatest humidity. Greatest average monthly humidity. Month of least humidity Least average monthly humidity.	75 January 84 May 66	77 January 83 May 70	82 in 1851 Jan., 1857 89 Feb., 1843	73 in 1858 Dec., 1858 81 April, 1849	

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Total of Number Month Greate Month Greate Day on Greate

EXTENT OF SKY CLOUDED.

	1896.	Average of 43 years.	L'en.	REMES.
Average cloudiness of the year. Most cloudy month Greatest monthly average of cloudiness Least cloudy month Least monthly average of cloudiness.	January. 0 80 June. 0 42	0.61 Dec. 0.76 July. 0.49	0 66 in '69'77 0 89 0 29	0.57 in 1856 0.73 0.50

i, '44 22,'42

WIND.

	1896.	Average of 17 years.	Ext	REMES.
Resultant direction. Resultant velocity in miles. Average velocity without regard to direction. Month of greatest average velocity. Greatest monthly average velocity. Month of least average velocity. Least monthly average velocity. Day of greatest average velocity. Greatest daily average velocity. Day of greatest average velocity. Least daily average velocity. Least daily average velocity. Hour of greatest absolute velocity.	8.44 March, 10.0 August. 6.69 Feb. 10	2 51 9 64 March 11 49 July 7 56 28 98	10·54 in '50 April, '80 13·88 July '78 5·93 Nov. 17' '70 41·67 April 20th, 60 0	Dec. 1875 10 42 July, 1881 8 43 Feb. 10, '85 23 75

Note.—During the year 1896, the wind has been obtained from the records of the anemograph at the observatory at a lesser elevation than formerly, and no comparison has been made with the result of former years. The extremes are from the Island anemograph

RAIN.

	1896.	Average of 56 years.		EMES.
Total depth of rain in inches Number of days on which rain fell Month on which the greatest depth of rain fell. Greatest depth of rain in one month Month in which the days of rain were most frequent Greatest number of rainy days in one month Day on which the greatest amount of rain fell Greatest amount of rain in one day	21 770 104 Sept. 5 085 Sept. 15 Jan. 23 1 845	Sept. 3 274 Oct. 13	43 555 in '43 145 in 1890 Sept., 1843 9 760 {Jan., '69 {Oct., '90 23 Sept. 14, '43 3 455	80 in 1841 June, 1887 2 655 May, 1841

SNOW.

	1896.	Average of 53 years.	Extr	REMES.	
Total depth of snow in inches. Number of days on which snow fell. Month in which the greatest depth of snow fell Greatest depth of snow in one month. Month in which the days of snow were most frequent Greatest number of days of snow in one month. Day in which the greatest amount of snow fell Greatest fall of snow in one day.	Feb. 29-6	January. 15	122 9 in '70. 87 in 1859, March, '70. 62 4 Dec., 1872. 24 Feb. 5, '63. Mar. 27, '70. 16 0	33 in '48.	

SUNSHINE.

	1896.	Average 1882 to 1895.
Total duration of bright sunshine in hours. Ratio to possible amount. Month of greatest relative amount. Ratio to possible amount Month of least relative amount. Ratio to possible amount. Number of days completely clouded. Day of greatest relative amount. Ratio to possible amount.	2146.7 0.48 May 0.64 December 0.16 55 January 5 0.96	2038 0 0 45 July. 0 61 December. 0 19 67 - 0 91

DIFFERENCES OF CERTAIN METEOROLOGICAL ELEMENTS FOR 1895 FROM THE NORMAL VALUES FOR EACH QUARTER AND YEAR.

	Bar.	Tem.	Rain.	Days Rain.	Snow.	Days Snow.	Cloud- ed Sky.
Winter Spring Symmer Autumn Year	in. - '0226 + '0373 - '0068 + '0662 + '0185	- 1.76 + 4.94 + 0.39 + 1.08 + 1.16	in.* + 0 708 - 3 831 - 0 722 - 1 707 - 5 552	- 3 · 24 - 4 · 43 + 1 · 24 - 3 · 72 - 10 · 15	$ \begin{array}{r} + 15.0 \\ - 2.2 \\ - 7.8 \\ - 5.0 \end{array} $	- 9.35 - 2.00 -11.95 -23.30	p. c. - 0.02 - 0.04 + 0.02 - 0.01 - 0.01

Janua

Febru Marc

April

May.

June Augu Septe

Octob

PERIODICAL OR OCCASIONAL EVENTS, 1896.

January16.	Large flock of Wild Geese flying S.W. Snow Buntings about. Flocks of Grosbeaks.
20. 29.	Lowest water in Bay 20in, below 0; 23rd, 24th, great ice and rain storm. Flocks of Grosbeaks again numerous
February27.	Robins about.
March11.	Song Sparrows. 17th, Spring birds numerous. 29th, Bronze Grackle, Moths numerous. First Thunder of year.
30	Robins numerous. Gray Birds, Wild Geese, Brown Butterfly.
April 3.	Tunner 11th Diggs 10th Manday Lord Francisco Blands
April 0.	Juncos. 11th, Plover. 12th, Meadow Lark, Frogs piping, Blue Bird.
	Large flocks of Ducks in Bay. 7th, Last measurable snow. 8th, Schooner arrived.
13.	Phæbe bird, Golden Woodpeckers, Hawk, May beetle, Crocus in bloom.
	Chipping Sparrow. Soft Maples in bloom. Lawn grass green.
14	Woodspakers numerous 15th Cabbase Puttends Vinefales Floris
	Woodpeckers numerous. 15th, Cabbage Butterfly, Kingfisher. Elm in bloom.
18.	Hepatica and Arbutus in bloom. 20th, Towhee numerous. 21st, Swallows.
23.	Frost.
	Willow in leaf. 2nd, Orioles seen. Dandelion in bloom.
A	Changing the large of the large pind Target in 11000.
4.	Cherry in bloom. 6th Humming Bird, Japonica in bloom. 7th, Plum in
10	bloom. 8th, Apple in bloom. Elder in bloom. 10th, Lilac in bloom.
_ 12.	Horse Chesnut in bloom. 14th, Mountain Ash.
June 2.	Night Hawks, 13th, Cherries ripe.
August 27.	Large flocks of Robins and Blackbirds, ome Snowballs in bloom.
September 8.	Swallows appear to have left.
20	First frost and ice. 23rd, First entry below 32° of season.
27	Last Thunder Storm.
	First snow flakes. 17th. First measurable snow.
December 22.	Bay frozen. 25th, Sleighing.