

METEOROLOGY FOR APRIL, 1865.

PRIVATE OBSERVATORY, HOBART TOWN.

Day of month.	Bar. 37 feet abv. sea level, cor. & reduced.		Self-register- ing Thermo- meters.				Wind.		Rain in inches.
	Highest.	Lowest.	Highest in shade.	Lowest in shade.	Highest in sun.	Lowest on grass.	Direction from three daily registers.	Force in lbs. per square foot.	
1	In. 29·727	In. 29·595	60	46	89	44·0	N N W W	1·04	0·57
2	30·159	30·043	61	41	100	39·5	N E S	·78	0·02
3	30·206	30·146	61	40	75	38·0	N W N N	·52	
4	30·150	30·049	60	50	64	44·5	N W W S	0·	0·01
5	30·210	30·105	71	49	106	46·5	N N E S	·26	
6	29·956	29·844	76	53	94	49·5	N W N W S W	·52	
7	29·832	29·709	87	49	120	46·5	N W N E W	·78	
8	29·768	29·657	80	58	88	51·0	N W N W	2·86	0·31
9	30·079	29·895	74	59	84	43·0	W N W W	5·46	
10	30·072	29·964	67	49	69	46·0	N W N W N W	3·38	
11	29·795	29·630	69	54	102	42·0	N W W W	13·02	
12	29·906	29·842	65	49	95	46·0	N W N W N W	3·12	
13	30·071	30·057	78	49	103	45·0	N W N W N W	8·33	
14	29·895	29·877	69	54	94	44·0	N W N W N W	1·30	
15	29·941	29·921	69	57	90	46·5	N W S E S E	·52	
16	30·066	30·058	65	51	67	50·0	S W E S E	0·	
17	30·060	29·995	77	50	101	48·0	N W N W S E	1·04	
18	30·097	30·067	73	48	105	47·0	N W S E S E	·52	
19	30·079	29·881	77	53	103	52·0	N W N W N E	2·86	
20	29·730	29·548	73	63	84	60·5	N W N W N W	5·46	0·02
21	29·942	29·915	70	45	96	42·0	N W W N W	2·86	0·04
22	30·328	30·198	65	41	87	36·0	W S E S	·26	0·01
23	30·380	30·276	64	38	95	36·0	N W N W S	·78	
24	30·252	30·129	64	50	90	39·5	N W N E S W	·26	
25	30·061	29·926	63	38	72	35·0	N W N W N E	0·	
26	29·708	29·489	75	50	100	49·0	N W N W N W	·52	0·15
27	29·633	29·456	75	47	105	42·5	N N W N E	3·12	
28	30·012	29·798	71	44	93	40·5	N W W N W	1·30	0·10
29	30·188	30·129	66	39	93	36·5	N W N W N W	·26	
30	29·956	29·846	63	41	75	39·0	N W N W S W	0·	
Total force								61·13	1·23

The mean in all cases is taken from the sums of the three daily registers, and not from the maximum and minimum.

The direction of the wind is registered from currents moving at a height of 192 feet, and the force according to Lind's Wind Gauge. The supposition, however, of an uniform velocity during the month is a very arbitrary one, and the results can be considered only approximately correct.

The relations of the quantities of rain which fell under the different winds, are registered each evening at sun-down.

The twenty years' standard tables are used for obtaining the difference from the average.

Leafing, flowering, and fruiting of a few standard plants in the Royal Society's Gardens during the month :—

- 4th. Chrysanthemums commencing to flower.
- 8th. Elm leaves commencing to fall.
- 10th. Coe's Fine Late Red Plum commencing to ripen.
- 20th. Mountain Ash leaves commencing to fall.
- 25th. Black Mulberry leaves commencing to fall.
- 28th. Hornbeam seeds commencing to ripen.

Barometer mean, 29·951 inches, being 0·066 in. above the average.

Temperature mean, 56·49°, being 0·85° above the average.

Solar intensity mean, 91·32°, being 0·54° below the average.

Dew point mean, 46·3°, being 0·82° ditto.

Humidity mean, ·74, being 1½ ditto.

Elastic force of vapor ·341 *per cent*, being ·17 above the average:

Total amount of rain, 1·23 inches, being 0·55 inches below the average.

Mean amount of ozone 8·16 chromatic scale, being 1·50 above the average.

Increase of spontaneous evaporation on condensation +1·37 inches.

Electricity active on the 11th, 13th, 23rd, 24th, and 28th.

Fresh deposit of snow on Mount Wellington on the 1st. Showery with thunder on the 8th. Much haze through the month, with frequent halos round the Moon.

FRANCIS ABBOTT.

ANALYSIS OF THE OBSERVATORY RECORDS FOR APRIL,
1865, IN CONJUNCTION WITH THOSE OF BIRTHS, DEATHS,
&c. BY E. SWARBRECK HALL.

In many respects this April has had anomalous weather, nevertheless the general result has been favorable to health and life, and more especially so to infants under five years old, whose deaths were less than one-fifth of the total at all ages. On the other hand, invalids, and particularly those of advanced age, have died in unusually large proportions; those at all ages above 60, constituting rather more than one-third of the total of all ages.

Atmospheric pressure mean, 29·951, was +·066 above the 20 years' average for April, though less than either 1864 or 1863. The perturbations were both frequent and extensive. The extremes were, 30·380, maximum, on the 23rd, and 29·456, minimum, on the 27th, being a range for the month of ·924 of an inch, but occurring within four days. The deaths on the three following days amounted to 11, being by far the most fatal period of the month, no other three consecutive days having more than five; indeed, the first, second, and fourth weeks had each only six deaths. The greatest movement of the barometer in any twenty-four hours, was a rise of +·510 of an inch on the 2nd, and the greatest fall was —·472 of an inch on the 26th. On thirteen other days there were movements exceeding one-fifth of an inch. Extensive and frequent changes in atmospheric pressure are always followed by the deaths of many invalid and old persons, though children and healthy adults resist its lethal influence wonderfully well.

Wind force, -61·13lbs., is +6·25lbs. above the April mean in the four years' computations contained in Mr. Abbott's 20 years' adopted standard tables, while it is +16·25 more than that of the seven years now recorded. This shows how necessary it is to obtain averages from a long series of records. Sir John Herschell's statement of the periodical cycles of meteorological phenomena makes it evident that nothing less than twenty years' records, can give means entitled to much reliance in comparing annual deviations. North-east, west, and north-west winds, were all above the average both in frequency and force, and the other five points were all below. The north-west was the predominant wind as indicated by the vane on St. David's Church, at the three daily observations; and yet there are other facts to prove, that the prevailing winds were more westerly. It has been often shewn before, that the peculiar conformation of the country to the west and north-west of this city, gives a north-westerly deflection to westerly winds. In April last year the total wind force was little more than one-third of that of the present month's, a very significant fact in connection with the much greater mortality April, 1864, had. The strongest winds in the present month had a pressure of 5·21 lbs. to the square foot, and were noted twice on the 11th, and once on the 13th. *Calms* were recorded 31 times, being only a few fractions beyond the seven years' average for the month.

Temperature mean, 56·49°, is +00·85 higher than the 20 years' average, and +·34 more than April last year had. The self-registering thermometers give a much higher mean, 59·05°. The hottest day in this month, the 7th, is the hottest day yet registered in 1865, being recorded 87 degrees. In only three Aprils in the previous 24 years was a greater heat noted, *i.e.*, 89 in 1860, 90 in 1856, 89 in 1855. This day had three deaths, while in all the previous six days of the month only as many occurred. The minimum temperature of the month was, 38 degrees, on the nights of the 23rd and 25th. The month's range, 49 degrees, is greater than that of any April since 1857, when it was 50 degrees. But 1860 had the maximum range of the 24 years, being 60 degrees, the extremes being 90 and 30. The mean of all the maxima of the self-registering thermometer was 69·60 degrees. April, 1864, was only 64·50. The mean of all the minima records was 48·50, that of 1864 being 48·63. It thus appears that while the extreme night temperature of the two months, was almost identical, the extreme day temperature of the present April was much greater than last year's. But the terrestrial radiation thermometers of the respective months

shows that the absolute night temperature of the present month was below that of 1864, as will be seen hereafter.

The *daily-range of temperature* mean, was 21·10 deg., being + 3·18 degrees above the 20 years' average, and + 5·24 more than April, 1864, had. The greatest range for any day was 38 degrees, and noted on the 7th. No other April since 1857 has had so high a maximum, but in that year it attained 39 degrees, which is the maximum of the 24 years' records in April. The minimum variation was 10 degrees, and registered on the 4th and the 20th.

The *solar thermometer* had a mean of 91·32 degrees, which is —·54 below that of the 20 years, and —3·68 less than April, 1864, had. This is a puzzling contrast, when the records shew the present month to be considerably less cloudy than last year, and at the same time the mean shade temperature of this year, higher than that of 1864. The maximum was 120·5 on the 7th, which is half-a-degree higher than April, 1864, had. However, while the highest of the other nine records of 100 degrees or above, of the present month, only rose to 106 degrees; last year, out of ten, five exceeded that heat. The lowest of the present month was the same as in 1864, *i.e.*, 64 degrees.

Terrestrial radiation mean was 44·18 degrees, being + 1·24 degrees more than the average of the previous nine years, though —1·33 degrees less than April, 1864, had. The extremes were 60·5 on the 20th; 35 on the 25th; while those of 1864 were 56 and 32.

The *rain fall* this month was below the 20 years' average by more than half-an-inch (*i.e.*, ·55), being altogether only 1·23 inches; while April, 1864, had 2·18 inches. There were nine wet days, being —3·10 below the average for April of the previous ten years. On the 1st, 8th, and 26th enough of rain was precipitated to flush the streets and drains, and the other days' showers, together with the free aerial movement, sufficed to maintain a higher degree of atmospheric purity than April, 1864, had. The *snow* that remained on Mount Wellington on the last day of March, did not altogether disappear until the 5th of the present month; but there were no fresh deposits in April.

Spontaneous evaporation amounted to the same as the previous month, *i.e.*, 2·60 inches; 1864 had only 1·49.

Elastic force of vapour mean, was 341, which, though + 17 more than the 20 years' average, was less than 1864 had by —35; on the 6th, 7th, 20th, and 26th it was very high.

Humidity had a mean of 74, being —1½ below the 20 years' mean, and —8 less than 1864 had.

Cloud mean was 5·72, which is almost identical with the 20 years' average for April, though less by —·82 than April last year.

Ozone mean, 8·16, is + 1·32 above the mean of the previous eight years, and higher than any one of them, exceeding last year by + 1·23. How effectually this atmospheric purity protected the community from zymotic diseases will be seen when the death records are analysed. On the 9th, 12th, 16th, and 23th, at 7 a.m. observation, the maximum of the chromatic scale 10 (saturation) was recorded, and 6 was the lowest registered during the month.

Electricity had 19 positive indications, with a maximum tension of 5·5, and the lowest registered 4, but the majority were at 5. In April last year there were only 5 positive records with maximum tension of 4. Negative indications were 36 (6 less than 1864) with maximum tension of 4, but some falling as low as to 1. "Nil" was registered 5 times, *i.e.*, at the morning observation of the 1st, 5th, 8th, 19th, and 26th. No lightning seen during the month, but thunder heard with the showers on the 8th. All the collateral phenomenæ indicate that we were subjected on the 6th and 7th, to the skirts of a hot wind prevailing on the Australian continent, though in Hobartton the wind on the 7th was registered, 7 a.m., N.W., calm; 1 p.m., N.E., ·26 of a pound pressure to the square foot; sunset, W., ·52 of a pound pressure.

The 38 *Deaths* in the present month, contrast favorably with the eight years preceding Aprils, as shown in the tables following, for though 1862 had one less death, yet both the infantile and zymotic deaths were more numer-

ous in that year's April than in the present; and that is the nicest test of the salubrity of any season or climate.

Apr., 1865.	Ages.	Aprils.								Avg. 8 yrs. 1857-1864.		
		Mar., 1865	1864	1863	Min. 1862	1861	1860	1859	1858		1857	
5	Under 1	12	15	5	7	10	8	11	11	12	9	7-8
2	1 to 5	6	18	8	3	13	9	8	11	4	9	2-8
4	5 to 20	2	4	3	1	1	4	1	1	7	2	6-8
7	20 to 45	9	5	10	10	6	6	11	9	8	8	1-8
7	45 to 60	9	5	11	10	10	9	9	4	8	8	2-8
13	60 and above	18	7	11	6	8	9	7	11	3	7	6-8
38		56	54	48	37	48	45	47	47	42	46	

The total of the deaths of the present April, is eight below the average of the previous eight years, and 16 less than April last year had. Moreover, it is eighteen fewer than occurred in the previous month of March. "Under five years of age" the deaths were little more than one-third of the eight years' average, and not many above one-fifth of the number that died in April 1864. At "5 to 20," however, the deaths were more than the average, though the same in number as in April last year. At "20 to 45" the deaths were more numerous than in 1864, though less than the eight years' average. The same remarks apply to the group at "45 to 60." But at "all ages above 60" the mortality was nearly double both the eight years' average and last years' numbers. Moreover, the previous month of March had exceeded the average in a still larger proportion. The oldest person that died this month was a man aged 80, but seven more of the 13 deaths had exceeded the "three score and ten."

April, 1865	Classes of Disease	Aprils.								Average of 8 years, 1857-1864.		
		Mar., 1865	1864	1863	1862	1861	1860	1859	1858		1857	
5	1. Zymotic	10	32	7	9	17	8	8	12	8	12	5-8
7	2. Constitutional	9	4	9	5	4	6	7	10	7	6	4-8
20	3. Local	29	13	24	16	21	23	24	16	20	19	7-8
5	4. Developmental	5	5	6	4	6	3	5	7	1	4	5-8
1	5. Violent	3	0	2	3	0	3	3	2	6	2	3-8
38		56	54	48	37	48	45	47	47	42	46	

The class of *Zymotic* deaths never had so few in number as the present April exhibits. It is considerably less than half the eight years' average, and but little more than one-seventh of last April's mortality from this class of diseases. Four of the five deaths were from bowel-complaints, three of them being children aged respectively seven weeks, eleven months, and fourteen months. The fifth, a man aged 41, was registered "probably from cold and intemperance," therefore is classed alcoholism. Last April, bowel-complaints caused 22 deaths; scarlet fever and diphtheria, 7; croup, fever, and pyæmia, each one.

The *constitutional class* of diseases caused a few fractions more deaths than the average. Dropsy, cancer, scrofula, and tabes-mesenterica each caused one death. Three were consumption, all British by birth.

The *local class* of diseases scarcely differs from the eight years' average of deaths, though it is considerably more than 1864 had. Diseases of the brain and nervous system had 7 of the 20 deaths. In 1864 this "order" had only

3. Diseases of the heart and organs of circulation had one death, being the same in number as in 1864. The lungs and organs of respiration had 8 deaths, all but one above 20 years old, the exception being a child aged nine months. Last year this "order" had exactly the same number of deaths. The organs of digestion had 3 deaths from inflammation of the liver, all above 45 years old. In 1864 there was only one. The organs of reproduction gave one death this April, none in the former.

The *developmental class* had a trifle more deaths than the eight years' average, but precisely the same in number as last year, though differing materially in age. All the 5 this year were from old age, aged respectively 62, 72, two at 75, and one 78. In April, 1864, three were young children, and two were old people from 70 to 75 years old. The 5th class, violent and accidental deaths, had less than half the eight years' average, though 1864 had none whatever. The death in the present month was a man of 77 brought to hospital from a country district with fracture of the thigh and other injuries.

The *inquests* held on deaths occurring during this month were 2; in April, 1864, there were not any. In the Hospital 9 deaths took place, the same in number as in 1864. Of these persons two did not belong to the Hobarton Registration District, one being a sailor, the other brought from a rural district. At the Male Invalid Asylum 5 deaths took place, three of them being upwards of 70 years old. Last April no deaths were recorded for this establishment. A female invalid aged 72 died at the Cascades establishment, together with a prisoner, aged 42 (one of the inquest cases), and a child aged 17 months. There were not any deaths there in April 1864. At the Queen's Asylum for Destitute Children, a boy verging on 9 years old, died from scrofula, after years of suffering; in fact life had been prolonged only by the assiduous attention he had received. No other death has occurred in this institution, so far, in 1865.

Of the 38 deaths, 23 were males, 15 females. Two of the deaths took place in the Glenorchy district, the rest in the city. On nine days there was not a single death; on 13 others only one each; on 3, two each; on 3, three each; and on 2, the concluding days and most fatal period of the month, five each. The first, second, and third weeks of the month each had six deaths, in the third week there were ten, and, as before stated, on the last two days ten.

The *Births* registered during the month were 61, being one less than in Aprils 1864 and 1863.