

METEOROLOGY FOR DECEMBER, 1864.

PRIVATE OBSERVATORY, HOBART TOWN.

Year.	Barometer reduced to standard temperature, 32 de. rees.	Mean Temperature of the Air.	Maxima Thermometer Readings.	Minima Thermometer Readings.	Mean daily range of temperature.	Degree of humidity, 100 complete saturation.	Extent of cloudy sky 10 for sky covered.	Mean amount of ozone 10 for maxima.	Total amount of Rain.
	In.	°	°	°	°				In.
1841	29.739	60.07	88.8	41.5	20.1	.56	5	—	0.31
1842	29.807	58.82	—	—	20.1	.65	5	—	0.11
1843	29.741	61.03	84.8	43.0	22.5	.60	5½	—	0.56
1844	29.835	60.86	78.0	40.3	21.1	.65	4	—	0.23
1845	29.668	61.69	84.0	47.5	19.6	.67	4½	—	0.39
1846	29.709	62.88	90.6	46.0	22.6	.70	6	—	1.14
1847	29.725	62.88	103.0	41.7	22.1	.69	5	—	0.53
1848	29.550	56.68	—	—	21.8	.71	6½	—	2.36
1849	29.666	58.41	85.0	43.3	20.8	.71	5½	—	0.90
1850	29.631	62.39	89.3	42.2	19.9	.65	5½	—	0.61
1851	29.678	59.59	89.4	44.0	19.2	.71	5½	—	1.66
1852	29.697	58.13	92.5	42.0	11.1	.73	5	—	2.01
1853	29.693	61.41	94.0	43.0	20.0	.66	5½	—	0.48
1854	29.682	59.76	83.0	44.0	18.6	.77	6½	—	1.62
1855	30.037	67.00	96.0	38.0	15.11	.76	4.70	—	2.73
1856	29.689	60.61	85.0	39.0	23.03	.65	6.23	—	1.94
1857	29.846	65.26	94.0	39.0	25.50	.61	4.50	6.71	0.21
1858	29.775	62.10	84.0	42.0	20.19	.68	5.40	6.94	1.98
1859	29.841	64.48	102.0	41.0	22.90	.62	5.83	6.91	1.25
1860	29.846	63.45	89.0	44.0	19.93	.67	5.92	6.80	2.27
1861	29.707	60.63	80.0	41.0	18.09	.69	6.40	6.35	3.29
1862	29.773	61.07	78.0	45.0	19.35	.66	5.90	7.21	1.73
1863	29.798	60.25	91.0	45.0	17.16	.74	6.01	7.37	7.60
1864	29.839	59.29	78.0	40.0	16.67	.74	6.90	8.12	3.92

The means in all cases are taken from the sums of each column, and not from the maximum and minimum.

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

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

8th. First bunch Red Currants ripe.

10th. Common Privet commencing to flower.

15th. First bunch Black Currants ripe.

17th. Melia Azederach commencing to flower.

24th. Doyenne d'Ete Pear commencing to ripen.

27th. June-eating Apple commencing to ripen.

	In.
Barometer, highest, 5th, 7 a.m.	30.291
" lowest, 9th, sunset	29.329
" mean for the month	29.539
Being 0.069 in. above the average.	
Temperature, highest on the 9th.....	78.00
" lowest on the 4th.....	40.00
" mean for the month	59.29

Being 2.78° below the average.

Rain fell on the 2nd, 3rd, 4th, 11th, 12th, 13th, 15th, 18th, 19th, 20th, 23rd, 25th, 26th, 27th, 28th, 29th, and 30th, to the amount of 3.92 in. being 1.60 in. above the average.

Thunder and lightning on the 1st, 19th, 23rd, and on the 25th, from 4.20 to 5.20 p.m., a heavy electrical storm passed over the city from W. by S. to the N.E. part of the horizon, vivid flashes of lightning were succeeded by loud reports of thunder, with heavy rain. No circumstance of the kind has called for special notice since the memorable thunder storm of February 16th, 1857.

FRANCIS ABBOTT.

ANALYSIS OF THE OBERVATORY RECORDS FOR DECEMBER
1864, IN CONJUNCTION WITH THOSE OF BIRTHS, DEATHS,
&c. BY E. SWARBRECK HALL.

The year 1864 closed with weather less fatal to life than any December of the previous seven years, 1860 had previously the minimum mortality, though December 1863 had only one more death than it had.

Atmospheric pressure had a much smaller range and fewer perturbations than in either the preceding month of November or in December 1863. The mean was 29·839, being +·069 above the 20 years' adopted standard mean, and higher than any December since 1860. The extremes were 30·291 maximum on the 6th; 29·329 minimum on the 9th. The month's range ·962, being —·317 less than December, 1863, had. The greatest movement of the barometer on any day of the month was a rise of +·463 of an inch on the 4th. The greatest fall was —·454 on the 9th. Besides these there were only eight other days having a movement exceeding one-fifth of an inch, and none of them extending beyond one quarter of an inch. Atmospheric pressure, therefore, was not adverse to life, as it was in November.

Wind pressure amounted to 94·44 lbs., being +6·20 lbs. more than the December average of the previous seven years. December 1863, however, was still more windy. The three southerly points of the compass had 48 out of the 93 observations, and 53·03 lbs. of the total strength. Of the other five points north-west had 20 out of the 45 winds, and 28·37 lbs. out of the 41·38 lbs. of force. The strongest wind noted had 10·42 lbs. pressure to the square foot, and occurred on the 10th; being a north-west gale but not a hot wind. It is a remarkable and unusual fact that there was not a single hot wind in all 1864. Calms were recorded 11 times, being —3·33 less than the average of the previous seven years' Decembers. Aerial movement, therefore, was much more propitious to health than in November, for though having a less total force, the predominant winds were from the purest quarters.

Temperature mean, 59·29 degrees, is —2·78 degrees below the 20 years' average, and colder than any December since 1852, when the mean was 53·13 degrees. Though the present month has little more than one degree higher mean than November had, it differed widely in the distribution of its heat. November had wide extremes, and a great daily range. December was much below it in both respects. The maximum temperature was only 78 degrees on the 9th and 23rd, and the mean of all its maxima, only 68·58 degrees; while November's maximum was 85, and the mean of its maxima 70·13 degrees. The December minimum was 40 degrees, recorded on the 4th; and the mean of all its minima 51·90 degrees. November was respectively 41 and 48·76 degrees. Cold and wet Decembers have always had fewer deaths than warm and dry ones. December 1863 came under the former category. The mean temperature by the self-registering thermometers differed less than one degree from that of the three daily records, being 60·24 degrees.

The mean *daily range of temperature* was only 16·67 degrees, being —3·88 degrees below the 20 years' average for December. It was also about half a degree less than that of December 1863, being another more favorable meteorological condition to account for the smaller mortality of the present month. The greatest range on any day was only 24 degrees, on the 7th and 14th; and the smallest 4 degrees on the 28th. December 1863 had as low a minimum, but 12 degrees higher maximum. None of the twenty-three Decembers on record had so small a maximum as the month under review, the range being from 28 degrees in 1862 to 42½ in 1847. The preceding month of November had a maximum range 13 degrees higher than that of the present month.

Solar intensity mean was only 100·51 degrees, being —4·10 degrees less than the average of the previous eight years, and —3·35 less than the previous month had. December 1863, however, had a few decimals less, and 1861 was only 99 degrees. The unusually cloudy character of the present month in great part accounts for so small a mean. At the same time the maximum only attained 121 degrees, on the 17th, being 4 degrees less than November had, and less than six out of the eight years had. 1863 had the maximum 136 degrees, and 1861-2 had the minima, being respectively 117-116. The minimum record of the solar-thermometer was 61 degrees on the 29th, being a cloudy wet day with a cold south wind.

Terrestrial radiation mean was 49.19 degrees, being +1.01 above the average of the previous eight years, though -78 of a degree less than December 1863 had. The maximum was 56 degrees on the 9th; the minimum was 39.5 on the 4th and 14th; the range being 16.5 degrees, while November had a range of 24 degrees.

Rain-fall amounted to 3.92 inches, being +2.60 inches above the December average, or nearly three times as much. Nevertheless December 1863 had very nearly twice as much rain as the present month, but then it had the maximum rain-fall of 23 years. The rain-falls of the last five years' Decembers have been all exceptionally high. The rain fell on 17 days of the month, being +5.12 days above the average of the previous nine years, and more numerous than any one of the nine. The greatest fall on any one day was 1.26 inches on the 27th, but from the 25th to the 30th inclusive, all wet days, the aggregate amount was 2.38 inches. This period was remarkably cold with boisterous southerly winds, and it is noteworthy that Saxby had noted the days, preceding and succeeding this period, that is, the 24th and 31st, as his bad days, both being fine, and the intervening days just the reverse. In December 1863 the period from the 13th to the 18th inclusive, was very wet, the rain-fall being 7.27 inches with a consequent flood. Because some of these days fell within the ample marge of his predictions, Lieutenant Saxby has plumed himself largely on the accuracy of his system,—the present month, however, ought to abate somewhat his self-gratulation. The water-courses and drains got a thorough cleansing this month. No snow was visible on Mount Wellington during the whole month. In 1863 it was observable until the 13th, when the summit became obscured, and continued so until the 20th, after which no snow could be seen.

Humidity mean was 74, being +7 above the 20 years' average.

Elastic force of vapour had a mean of 376, being +22 above the 20 years' average, but the maximum was not so high as in November by 73.

Spontaneous evaporation, notwithstanding so much windy weather, did not equal precipitation, being 3.17 inches.

Cloud mean was 6.90, being +1.44 above the 20 years' average, and higher than any one of the 23 years on record. It is also +.89 more than December 1863 had, though the rain-fall then was so much greater.

Ozone had the highest December mean on record, 8.12, as might be expected from the quarters from which the winds generally came, and the abundance of rain. Saturation was noted four times, and the lowest amount registered was 6 on the 9th and the 19th. Not a single death from any acute form of disease of the organs of respiration was registered.

Electricity was abundant, though far from equalling the previous month of November, either in the number or strength of its indications. Positive was recorded 13 times with maximum tension of 6; negative 37 times with the same maximum tension, both being one-third less strength than November had. *Nil* was recorded 13 times, but in November only thrice.

The 36 deaths for this December is a smaller mortality than for any December of the previous seven years, and -11.7 less than the average of the whole, as the following table shows:—

Dec., 1864.	Ages.	Decembers.								Avg. 7 yrs. Decs. 1857-1863.
		Nov., 1864.	1863	1862	1861	Min. 1860	Max. 1859	1858	1857	
11	Under 1	4	3	13	9	10	14	7	15	10 1-7
1	1 to 5	2	4	5	4	3	12	7	7	5 5-7
4	5 to 20	6	4	3	3	4	2	3	3	3 1-7
7	20 to 45	12	6	15	10	7	15	14	6	10 6-7
8	45 to 60	9	11	8	9	8	13	5	7	8 4-7
5	60 and above	10	11	8	11	6	6	9	10	8 5-7
36		43	39	52	46	38	62	45	48	47 1-7

Under one year old, the deaths were a trifle above the seven years' average. Four out of the 11, however, were under 18 days old; and of the remainder, but one was above six months old. From 1 to 5 the deaths were not one-fifth of the average. All under 5 years of age were but one-third of the total deaths; the average for the seven years being considerably more than that proportion.

At 5 to 20 years the deaths were also slightly above the average. In all the remaining groups the mortality was greatly below the average.

Dec., 1864.	Classes of Disease.	Decembers.								Avg. 7 yrs. Decs. 1857-1863.
		Nov., 1864.	1863	1862	1861	Min. 1860.	Max. 1859.	1858	1857	
9	1 Zymotic	1	9	9	7	8	12	9	11	9 2-7
7	2 Constitutional	11	6	9	8	3	7	6	8	6 5-7
15	3 Local	20	18	25	20	19	32	21	23	22 4-7
3	4 Developmental	6	4	4	7	4	4	3	5	4 3-7
2	5 Violent, &c.	5	2	5	4	4	7	6	1	4 1-7
36		43	29	52	16	38	62	45	48	47 1-7

Zymotic deaths were a trifle above the December average, though precisely the same in number that December 1863 had. Two were cases of *Croup* in children, aged 3 and 6 years respectively; one was a case of *Continued Fever* in a girl of 8 years old; the fourth was a case of *Pyæmia* in a man aged 51, brought to the hospital from a rural district in the interior of the island; the fifth was a case of *Diarrhœa* in a child eleven months old; the remaining four were registered as *Dysentery*, aged respectively nine weeks, four months, forty years, and fifty-six years.

Constitutional diseases caused a slight excess of deaths above the average. *Cancer* and *Scrofula* each caused one death, at the ages of 53 and 39 respectively. *Consumption* caused five deaths, two of the number of 16 and 17 years of age were born in Tasmania. December 1863 had only three deaths from consumption, none of them natives of the island. The deaths from *Local* diseases were nearly one-third less than the seven years' average, principally owing to the unusually small proportion of deaths from diseases of the organs of respiration (one only). December 1863 had three more in the total in this class. *Developmental* diseases caused a much smaller share of deaths than usual. Of the three, one was a *malformed* child, which only survived its birth eighteen days; both the others were from old age, 68 and 89 years old respectively. *Violent and accidental* deaths were less than half the average, though exactly the same in number as December 1863; one was the result of injuries caused by a cart running over him; the other was found drowned in a pond in the Queen's Park.

Inquests during the month were only 2, being one-half the number of December 1863. The deaths in *Hospital*, inclusive of one of the inquest cases, were 10. December 1863 had only 8. Only one death occurred at the Male Invalid Asylum, aged 65, and from chronic bronchitis, being the single case before alluded to from diseases of the organs of respiration. A death from disease of the brain was the only one in that establishment in December 1863 also. Of the 36 deaths this month, 23 were males, 13 females. Five died in the Glenorchy, and 1 in the Queenborough rural divisions of the Hobart Registration District; 30 in the city. In the first week there died 8; in the second 7; in the third 12; in the fourth 7; in the last three days 2. The most fatal period of the month was the three days 18th to 20th inclusive, when 8 deaths took place. The meteorological peculiarities of these three days were:—The smallest wind movement of any three consecutive days in the month, the least amount of ozone and electricity, and a storm of rain, with thunder and lightning.

The *Births* registered were 66 being 14 more than were registered in December, 1863.

In the registration district of Hobart Town, having a total population of about 25,000 persons, there were altogether in the year 1864 568 deaths, being 19 4-7 less than the average of the previous seven years, though 21 more than 1863 had. Of these 124 were under one year of age, being 14 6-7 below the seven years' average; 67 were from 1 to 6 years old, being 20 5-7 less than the seven years' average; 44 were between 5 and 20 years of age, being 8 2-7 more than the average of the seven years; 113 were between 20 and 45 years old, being less than the average; 113 were between 45 and 60 years of age, being 15 3-7 more than the average; 107 were above 60 years old, (the oldest 102) being 5 2-7 more than the mean.

110 died from diseases in the *zymotic* class, being 17 4-7 less than the average of the seven years, 95 died from diseases in the *constitutional* class, being 4 1-7

more than the average ; of these, 53 were registered as *pulmonary consumption*, being 2 less than in 1863, but 4 4-2 more than the average of the seven years. Less than one-fourth of these deaths in 1864 were Tasmanian born, *i.e.*, 13 out of the 53. The deaths in the *local class* were 266, being 6 1-7 less than the average. The *developmental* class had 69 deaths, being 13 3-7 more than the average. The greatest part of these deaths were from old age, 60 years and upwards to 102. In the fifth class, *violent and accidental*, the deaths were only 27, being 12 6-7 less than the average.

The total of registered *births* was 837, being 16 more than 1863 had.

