

## ROYAL SOCIETY.

## METEOROLOGY FOR DECEMBER, 1866.

## 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.	
	In.	In.	°	°	°	°			
1	29.996	29.968	67.47	105.5	45.0	NW SE	1.04	0.30	
2	30.152	30.087	57.47	62.0	44.0	NE SE	3.12	0.13	
3	30.264	30.234	63.42	106.0	39.5	SE	1.30		
4	30.297	30.254	67.41	112.0	38.5	NW SE NE	1.30		
5	30.214	30.065	69.43	112.0	42.5	NW SE	1.30		
6	30.029	30.012	61.43	101.5	44.0	SW	7.80	0.05	
7	30.074	30.062	62.40	108.0	37.5	W SE E	.78		
8	30.027	29.760	68.49	106.0	45.0	NE	3.64		
9	29.625	29.531	76.53	117.0	53.5	NW NE SE	.78	0.17	
10	29.785	29.764	70.46	113.0	44.0	W SE NE	.52		
11	29.744	29.598	75.52	113.0	50.5	NW S E	1.30	0.92	
12	29.775	29.737	67.54	78.0	50.0	SE E	1.04		
13	29.945	29.829	74.43	114.0	42.0	NW SE	1.30		
14	29.980	29.960	70.53	114.0	51.5	NW SE	1.04	0.05	
15	30.122	30.095	70.47	113.5	45.5	E SE S	1.30		
16	29.906	29.814	59.50	60.0	53.0	SE SW S	.26	0.61	
17	30.052	29.895	59.46	105.0	41.0	SE	1.30	0.05	
18	30.071	30.013	67.45	111.0	42.0	NW E NE	1.04		
19	29.964	29.791	66.50	106.0	50.5	NW N NW	.78		
20	29.916	29.737	61.49	84.0	45.5	SW S SW	1.04	1.21	
21	30.086	30.070	64.48	110.0	45.5	SW SE	3.12	0.10	
22	30.118	29.997	70.52	113.5	51.0	NE SE	1.30		
23	29.851	29.615	80.53	120.0	50.5	NW	7.80		
24	30.011	29.902	75.52	105.0	50.0	NW SW SE	.78		
25	29.972	29.671	73.49	79.0	46.5	NW E W	.78		
26	29.630	29.394	75.51	115.0	50.5	NW	7.81		
27	29.779	29.655	68.57	102.5	49.0	NW	8.13		
28	29.885	29.849	73.53	109.5	49.0	NW W	13.02		
29	29.944	29.915	78.57	120.0	56.0	NW SE	2.86		
30	29.905	29.891	80.52	120.0	50.0	NW SE	1.30		
31	29.926	29.744	79.52	120.0	52.0	NW SE E	1.04		
Monthly									
mean 29.915 60.87 105.03 46.94. Total force 80.12 3.59									

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 sundown.

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

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*Leafing, Flowering, and Fruiting of a Few Standard Plants  
in the Royal Society's Gardens during the Month :—*

- 12th. Common Privet commencing to flower.
- 15th. First bunch red currants ripe.
- 20th. First bunch black currants ripe.
- 25th. Melia azederach commencing to flower.
- 31st. Doyenne d'Ete Pear commencing to ripen.

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Barometer mean, 29·915in., being 0·170in. above the average.  
 Temperature mean, 60·87°, being 0·25° below the ditto.  
 Solar intensity mean, 105·03°, being 2·06° above the ditto.  
 Dew point mean, 50·06°, being 1·04° above the ditto.  
 Humidity of air mean, '69, being '01 per cent. above the ditto.  
 Elastic force of vapor mean, '368, being '016 per cent. above the ditto.  
 Total amount of rain, 3·59in., being 1·86in. above the ditto.  
 Increase of spontaneous evaporation on rainfall, 1·38in.  
 Mean amount of ozone, 7·51, being 0·32 of chromatic scale above the ditto.  
 Electricity active on the 3rd, 4th, 5th, 6th, 7th, 26th, and 29th.  
 Heavy thunder, strong flashes of lightning, with much rain, on the 11th.

FRANCIS ABBOTT.

ANALYSIS OF THE OBSERVATORY RECORDS FOR  
 DECEMBER, 1866, IN CONJUNCTION WITH  
 THOSE OF BIRTHS, DEATHS, &c. BY E. SWARBRECK  
 HALL.

While December, 1865, had the smallest mortality for any December of the last ten years, the present month's deaths were more numerous than any, except 1862 and 1859, and exceeded last year's by upwards of 66 per cent., and the average of the previous nine years by about 15 per cent. In the analysis of the different meteorological phenomena of the present month, contrasted with December, 1865, it will be seen, that atmospheric pressure, wind movement and its purity, heat of the sun, elastic force of vapour, were all less favorable to health than in 1865. The weather generally, however, was both pleasant to the feelings, and conducive to vegetation.

*Atmospheric pressure* had the very high mean of 29·915 inches, being +·145 above the 20 years' standard mean, and +·253 higher than December, 1865, had. Only December, 1855, out of the previous 25 years, had a greater mean pressure. The maximum, 30·297, occurred on the 4th, and the minimum, 29·394, was recorded on the 26th. Only 1855 had a higher maximum, and only 1862 and 1847 had higher minima. The extreme range of pressure for the month was only ·903 of an inch, and has often been exceeded; December, 1865, had a range greater by +·180. The greatest movement in the mercurial column was a fall of ---·408 of an inch on the 23rd, followed by a rise next day of +·288. There were six other days on which the movement exceeded one-fifth of an inch. Continuous high pressure, with moderate deviations therefrom, either by rises or falls of the barometer, characterised this month.

*Wind-pressure* total was 80·12lbs., which is - 7·30lbs. less than the average of the previous nine years. *South-east* winds were the most numerous, but *north-west* had the greatest force. Though 1865 had a less total force than the present year, yet winds from *south-east, south, south-west, west*, the healthiest winds that blow, were about one-fourth more forcible than in the present December. The strongest winds recorded had 5·21lbs. pressure to the square foot, and were registered four times. There was a hot wind on the 23rd, but not of a very strong or oppressive character. There were only 9 *calms*, being - 4·25 less than the average of the previous eight years.

*Temperature* mean, 61·87 degrees, was -1·20 below the 20 years' average, though + 1·46 above December, 1865. The self-registering maxima and minima thermometers gave a mean below the observed ones, (as they have done consecutively since June last) *i.e.*, only 59·05 degrees. The mean of all the maxima or high-day temperatures was 69·13 degrees, being one degree less than last year. The minima or low-night temperatures had a mean of 49·00 degrees, which is -00·15 less than 1865 had. The highest temperature recorded was 80 degrees in the afternoon of the 23rd and 30th, and the lowest was 40 degrees of the night of the 7th. The mean of the wet-bulb self-registering thermometer was 54·00 degrees.

*Daily-range* of temperature had a mean of 20·16 degrees, being -·39 less than the 20 years' average, and -·20 less than 1865 had. The greatest range of any day was 31 degrees on the 13th, and the smallest 9 degrees on the 16th. Though the present month was warmer on the whole, and had a smaller daily variation of temperature, and less ozone, yet inflammatory affections of the respiratory organs were more prevalent than in 1865, and caused four deaths, all young children, while 1865 had not any.

*Solar-Intensity* mean, 105·03 degrees, was + 1·06 above the average of the previous 10 years, and + 2·74 more than 1865 had. The extremes were 117 degrees on the 9th, and 60 degrees on the 16th. Last year they were respectively, 119 and 58.

*Terrestrial-Radiation* had a mean of 46·94 degrees, which is -1·30 less than the average of the previous ten years, and -·76 less than 1865 had. No year of the previous ten, except 1858, had so low a mean of this instrument. The maximum was 56 degrees in the night of the 29th, the minimum 37·5 on

the 7th, a very wide range. Last year these extremes were only 53 and 42, or a less range by  $-7.5$  degrees.

*Rain* fell on 10 days, being  $-2.09$  less than the average of the previous eleven years, though one more than 1865 had. The total of rain gauged was 3.59 inches, being  $+2.27$  more than the 20 years' average for December, and  $+1.6$  more than 1865 had. It all fell during the first three weeks of the month, the ten last days being without a shower. On the 11th nearly an inch, and on the 20th somewhat more than an inch of rain fell, and on other days there fell enough to flush all water-courses and drains. A patch of *Snow* remained on Mount Wellington on the 1st day of the month, but was gone in a few days, and during the rest of the month snow never re-appeared.

*Humidity* mean 69, was  $+2$  more than the 20 years' average and  $+1$  more than 1865 had.

*Spontaneous Evaporation* was 4.97 inches, being less than in December 1865 by  $-.61$  of an inch.

*Elastic Force of Vapour* mean, 368, is  $+14$  more than the 20 years' average, and  $+24$  more than 1865 had. The range was from 244 to 554. Last year, with almost the same minimum, the maximum was only 510.

*Cloud* mean, 5.32, was  $-.14$  less than the 20 years' average, and  $-.98$  less than in December last year. *Ozone* had a range from the minimum, 6, to the maximum 9, and a mean of 7.51, which though  $+.32$  more than the average of the previous nine years, was less than 1865 by  $-.84$ . At the last meeting of the British Association a paper on ozone was read by Professor Daubeny, of Oxford. In the discussion thereon, Mr. Glaisher, of the Greenwich Observatory, the eminent President of the Meteorological Society of London, and so well known for his investigation of the earth's atmosphere by balloon ascents, stated as a result of his observations:—"That where there was ozone he found abundant health, and where there was none a great deal of sickness prevailed." This is in accordance with the result of my own experience for so many years in Tasmania. No records that I have seen, except those made in Madeira, can compare with this island for its abundance of nature's air-purifier, ozone.

*Electricity* this month was nearly equal to that of December 1865. There were the same number, 20, of positive indications with tension ranging from 3 to 7.5. Last year's tension was from 1.5 to 8. There were 37 negative indications this year, being one less than last. The tension respectively was, 1866, 1 to 6.5; 1865, 1 to 7. There were 5 "nils" this month, to 4 in 1865. *Thunder and lightning* with rain, occurred on the evening of the 11th.

The *Death* average for the nine years' Decembers, 1857-1865 is  $-44$ ; the present month had 6 more; two of the 50, however, are not properly included in the list, one, an inquest case, was supposed to have perished in October last; the other, also an inquest case, belonged to the Clarence Plains district. The table shows that only 1862 and 1859 had more deaths than the present month. Last year, the healthiest December on record, had 20 less.

Dec., 1866	Ages.	Decembers.									Avg. 9 yrs. Decs., 1857-1865.	
		Nov., 1866	65M in	1864	1863	1862	1861	1860	59Mar.	1858		1857
10	Under 1	3	8	11	3	13	9	10	14	7	15	10
4	1 to 5	1	1	1	4	5	4	3	10	7	7	4 6-9
7	5 to 20	4	5	4	4	3	3	4	2	3	3	3 4-9
10	20 to 45	9	7	7	6	15	10	7	17	15	6	10
6	45 to 60	8	2	8	11	8	9	8	13	4	7	7 7-9
13	60 and above	11	7	5	11	8	11	6	6	9	10	8 1-9
50		36	30	36	39	52	46	38	62	45	48	44

"Under 1 year of age," the number of deaths, 10 was exactly that of the nine years' average, and 2 more than last year had. At "1 to 5" years of age, the mortality, 4, was slightly below the average, but four times as many as

1865 had. At "5 to 20," the deaths, 7, were nearly double the average, two more than 1865 had, and above that of any year in the nine years tabled. At "20 to 45," the deaths, 10, were exactly the average number, though 3 more than in December, 1865. At "45 to 60," the mortality, 6, was below the average, though three times as many as 1865 had. At "60 and all ages above," the deaths, 13, were largely above the average, and in excess above any year of the nine. 1865 had little more than half as many as the present month.

Dec., 1865	Classes of Disease	Decembers.										Avg. 9 yrs. Decs., 1857-1865	
		Nov., 1866.	65	Min.	1864	1863	1862	1861	1860	59	Max.		1858
5	1. Zymotic	0	7	9	9	9	7	8	12	9	11	9	9
9	2. Constitutional	11	7	7	6	9	8	3	7	6	8	6	7-9
21	3. Local	20	11	15	18	25	20	19	32	21	23	20	4-9
10	4. Developmental	3	3	3	4	4	7	4	4	3	5	4	1-9
5	5. Violent &c.	2	2	2	2	5	4	4	7	6	1	3	6-9
50		36	30	36	39	52	46	38	62	45	48	44	

In the first class, *Zymotic diseases*, the deaths, 5, were little more than half the average, and 2 less than 1865 had. Not one of the five deaths indicated a generally impure condition of the atmosphere, but there was no doubt in several of them, that the diseases causing death were generated by local causes. The first, a death from *typhoid fever* in a young girl, could only be ascribed to defective drainage. The same disease had been treated years before in young boys in the same residence, and one of them ended fatally. The second was death from malignant *scarlet fever*, in a child. This disease and measles have for some time past prevailed extensively and with great fatality in Melbourne. Many children convalescing therefrom have come to Hobart Town to recruit. Some cases of measles existing in Hobart Town have been directly ascribed to the poison imported, though none have ended fatally. In the case of scarlet fever, while the suspicion is strong of an imported origin, there were local defects, in drainage, rendering persons under its influence peculiarly susceptible to miasmatic diseases. Cases of scarlet fever have been long unknown to the medical profession in Hobart Town, and the last deaths recorded therefrom were in July and February, 1865, two isolated cases. In the first six months of 1864, however, 11 deaths were recorded, 5 of them in April. The third zymotic death was from *metria* or *child bed fever* in a woman of 24, in one of the rural divisions of the registration district. No doubt local causes for the existence of the disease could be traced in that case. The fourth zymotic death was in a youth of 19, from *erisypelas*, admitted into hospital from a country district. The fifth death was from *dysentery*, in a woman of 55, at the Cascade Factory. Though bowel diseases often prevail extensively in this summer month, no other death but the foregoing, was registered from this cause. Temperature and rainfall were both eminently conducive to general atmospheric purity this month, but while the sewerage of the city continues in its present most defective condition, we shall never be safe from pestilential diseases, whenever the meteorological phenomena are adverse to health.

In the second or *Constitutional class of Diseases*, the deaths, 9, were largely in excess above the average, only 1862 had as many, and last year had 2 less. Five of these deaths were from *consumption*, four of them young people from 16 to 27 years of age, and two of them born in Tasmania. Three deaths in this class were from *cancerous diseases of internal organs*. The last death, a girl of 14, was registered as from *dropsy and chronic rheumatism*. In the 3rd or *Local class of Diseases*, the 21 deaths were a fraction above the average, but nearly twice as many as 1865 had. In the first order, *Diseases of the Brain and nervous system*, there were 10 deaths, being 4 more than 1865 had; five of them were from *apoplexy*, aged respectively, 37, 42, 60, 67, 72. No doubt the very high atmospheric pressure before alluded to, conducted to death from

this cause. Three children, two of them being under a month old, died from convulsions. Two men, 49 and 43 years old, died from brain disease. In the 2nd order of this class, *Diseases of the Heart and organs of circulation*, two persons, 57 and 58 years old, died, being the same in number as in December, 1865. In the 3rd order, *Diseases of the Lungs and organs of respiration*, the deaths were 5, four being young children from acute inflammations, the fifth being of a chronic character, terminating suddenly, in a man of 69. Last year had only one death, and that from chronic disease, in this order, though the weather was both colder and more variable, and therefore usually supposed to be more conducive to inflammatory affections of the organs of respiration. In the 4th order, *Diseases of the Stomach and Organs of Digestion*, a death from inflammation of the liver and bowels occurred in a woman aged 31. In 1865 there were two deaths in this order, but both from chronic diseases. In the 5th order, *Diseases of the Urinary Organs*, there were two deaths, aged respectively 23 and 64, both of a chronic character. Last year had no deaths in this, or any of the subsequent orders of this class. In the 4th or *Developmental class of diseases*, the deaths, 10, were more than double the average, and largely above any year of the previous nine, 1865 had only 3 deaths in this class. Three were children under four months old, the other six were from old age, being 60, 67, 71, 73, 78, 79, and 81 years old respectively. High atmospheric pressure, or rapid and extensive alterations of pressure, always extinguish the lives of many old and otherwise feeble persons. In the 5th, or *Violent and accidental class of diseases and deaths*, the number of deaths, 5, was considerably higher than the average. December, 1865, had only 2. One of these deaths was caused by burns, another by poison, (the accidental drinking of Burnett's disinfecting fluid,—chloride of zinc,) a third by a fall from a pony, (all children). The fourth was drowned in the river, from a boat run down by a steamer. The fifth was a newly born child found concealed in a cess-pool, supposed to have been deposited there in October last.

*Inquests* were 7, one of which died in Hospital, another at the Penitentiary. Last year there were only 4. In Hospital there died 12, including the inquest case. Four of them were from country districts. In December 1865 the deaths in Hospital were only half as numerous. At the Male Invalid Asylum at the Brickfields 2 died, 71 and 81 years old respectively. 1865 had the same in number. A woman aged 55 died in the Cascade Factory. One also died there in 1865. Of the 50 deaths, 26 were males, 24 females. It is seldom the sexes are so equally balanced as this, there being usually a great preponderance of males. Five died in the Glenorchy, 2 in the Queenborough divisions of the registration district, the rest in the city.

In the first week there died 12, in the second 12, in the third 11, in the fourth 13, in the last three days 2. The weekly distribution of the deaths is very equal, and it was likewise so in December 1865.

The *Births* registered were 51, being 10 less than in 1865.