

METEOROLOGY FOR AUGUST, 1864.

PRIVATE OBSERVATORY, HOBART TOWN.

Year.	Barometer reduced to standard temperature, 32 degrees.	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	29.882	46.67	62.0	30.0	15.6	.80	5	—	1.32
1842	29.839	46.17	57.8	35.3	12.7	.84	5	—	0.99
1843	29.811	47.25	61.8	33.2	12.5	.83	5½	—	1.09
1844	29.689	44.33	57.8	34.8	13.9	.86	5	—	1.16
1845	29.542	46.48	61.3	34.5	16.1	.78	4½	—	0.63
1846	29.999	44.28	59.6	30.2	14.6	.88	6	—	1.53
1847	29.774	47.94	65.7	34.8	15.9	.79	5½	—	0.60
1848	29.724	45.34	57.8	35.3	14.1	.84	6	—	2.66
1849	29.756	46.32	62.2	31.0	15.5	.83	5	—	2.74
1850	30.015	49.01	—	—	—	.80	6½	—	1.31
1851	29.604	46.65	62.3	33.8	14.7	.81	5¾	—	1.10
1852	29.734	45.17	57.7	32.5	11.0	.90	6¾	—	3.47
1853	29.789	46.33	65.1	30.5	14.3	.83	6½	—	0.87
1854	29.745	48.00	60.8	33.3	13.0	.81	7	—	0.23
1855	29.683	53.00	73.0	33.0	15.28	.78	6.20	—	0.69
1856	29.211	51.40	66.0	32.0	20.25	.72	5.23	—	1.70
1857	30.047	51.60	64.0	33.0	20.87	.73	5.22	7.12	1.02
1858	29.749	50.29	72.0	33.0	18.03	.79	5.23	7.96	1016
1859	29.875	50.18	72.0	34.0	17.87	.76	6.12	7.00	1.70
1860	30.160	49.45	68.0	32.0	19.87	.76	5.09	6.62	1.11
1861	30.057	49.95	72.0	34.0	22.41	.75	4.76	6.77	0.61
1862	29.925	50.64	82.0	32.0	21.71	.73	4.48	7.30	0.97
1863	29.808	47.90	66.0	34.0	16.90	.77	6.16	8.62	3.29
1864	29.854	48.22	65.0	34.0	16.45	.79	6.80	8.54	3.68

The mean in all cases is 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 the average.

Leafing, Flowering, and Fruiting of a few standard Plants in the Royal Society's Gardens during the month.

- 10th.—Sambucus Niger commencing to leaf.
 13th.—Horsechestnut buds commencing to break.
 15th.—Salix Babylonica (weeping willow) commencing to leaf.
 17th.—Gooseberry bushes commencing to break.
 22nd.—Elm commencing to flower.
 28th.—Poplar commencing to break.
 30th.—Apricots commencing to flower.

Barometer—Highest, 7th, 7 a.m., 30.307 in.
 Lowest, 17th, 1 p.m., 29.283 in.
 Mean for the month, 29.854 in.

Being .071 in. above the average.

Temperature—Highest, on the 7th, 65.00°.
 Lowest, on the 26th, 34.00°.
 Mean for the month, 48.22°.

Being 0.48° below the average.

Rain fell on the 1st, 3rd, 4th, 5th, 12th, 13th, 15th, 16th, 17th, 18th, 19th,

20th, 22nd, 23rd, 24th, 25th, 28th, 30th, and 31st, to the amount of 3·68in., being 1·62 in. above the average.

An unusual fall of snow on the 18th, lying on the ground and house tops.

Lightning on the 2nd and 14th.

Electricity active on the 5th, 6th, 7th, 27th, 29th, 30th, and 31st; nil on the 3rd, 12th, 22nd, and 23rd.

At 9 a.m., on the 4th, was observed, at Swansea, about 30° west of the sun, and apparently in the clouds, a large luminous spot, or mock sun, much larger than the real sun, and of a yellowish color, sufficiently bright to be painful to the eye.*

FRANCIS ABBOTT.

* Communicated by Dr. Story.



ANALYSIS OF THE OBSERVATORY RECORDS FOR AUGUST, 1864;
 IN CONJUNCTION WITH THOSE OF BIRTHS, DEATHS, &c. By
 E. SWARBRECK HALL.

Most of the meteorological phenomena of the month were propitious to health, and the long continued excessive deaths have at length given way to a mortality below the August average of the previous seven years.

Atmospheric pressure underwent frequent, sudden, and excessive fluctuations, though the month's mean, 29·854, is only +·071 more than the average of the 20 years' standard. The extremes of pressure were:—Maximum, 30·307 on the 7th, minimum, 29·283 on the 17th; consequently the range of the month was 1·024 inches. The extremes and the range were much greater than this in 1863. The greatest movement of the barometer in any twenty-four hours, was,—a rise of +·669 of an inch on the 18th, preceded by a fall in the previous twenty-four hours of —·538 of an inch. There was also the large rise of +·592 of an inch on the 5th, and +·217 more on the following day, on which day the greatest number of deaths occurred (5) of any day in the month. Altogether there were movements exceeding one-fifth of an inch, on eleven days of the month.

Wind force had a total of 47·09 lbs. being + 1·24lbs. more than the average of the previous seven years, though but little more than half of what August 1863 had. North, north-east, south-east, south-west, and north-west, all prevailed more than usual, but the first and the last by much the most so. South-west had the greatest excess above the average in force, then north-west followed by west, and lastly east, by a few decimals; all the others were below the average. The directions, however, indicated by the vane in Hobart city, by no means corresponded with those on Mount Nelson, Fortescue Bay, and Low Heads. From other conditions of these winds, moreover, it was certain that the currents from the south-west generally preponderated. The strongest winds recorded, 5·21 lbs., were noted three times, at 7 a.m. on the 5th, and at noon and sunset of the 15th. The calms were 39, which is + 3 above the four years' average.

Temperature, unlike the preceding five months of the year, had a mean below the 20 years' average by nearly half a degree (—·48) being only 48·22 degrees. In the previous nine years, only 1863 had a lower mean temperature, *i.e.*, 47·90 degrees. The mean temperature of the previous month (July) was warmer by nearly one degree. The self-registering maxima and minima thermometers for this month, gave a mean of 49·61 degrees. The extremes of temperature were unusually small for August; the maximum was only 65 degrees on the 7th, and the minimum 34 degrees on the 26th. A lower maximum (64) has only occurred once in the previous nine years (1857). Last year had the same minimum; but one degree higher maximum—1861 had also as high a minimum, but a maximum 7 degrees higher—1859 had, too, a minimum of 34, but with a maximum of 72—all the rest of the nine years had lower minima by one and two degrees. The extreme range of 31 degrees for this month, is much below any of the previous nine years, except 1857, which had precisely the same. This equable cold temperature, combined with free aerial movements, great atmospheric purity, and abundant moisture, was highly conducive to health and life, as the mortuary tables show.

The mean *daily range* of temperature was 16·45 degrees, only differing from the 20 years' average, by +·06 of a degree. At the same time it was from half to six degrees less than any of the previous eight years. The greatest range on any day, 28 degrees, took place on the 7th; the smallest, 7 degrees, occurred on the 23rd.

Solar intensity mean 79·40 degrees, was —2·37 below that of the previous 8 years. With so many cloudy and rainy days, such a result might be expected. The maximum heat was 93 degrees on the 7th. Five out of the eight years had higher maxima, the highest being 103·5 in 1862. The minimum solar temperature was 60, and noted on the 3rd and 17th.

Terrestrial radiation mean was, 37·53 degrees, being + 1·05 above the mean of the previous eight years. The maximum was 44 degrees on the 13th; the minimum was 30·50 on the 26th, and higher than any of the previous eight years had.

Rain fell on 19 days, to the aggregate amount of 3·68 inches, the former being + 6·34 days above the average of the previous nine years, and the latter + 1·62 inches above the August mean of the 20 years' standard—only 1858, out of the previous 23 years, had a greater amount of rain, *i.e.*, 10·16 inches, but that is also the maximum of all the months in all the years recorded. More-

over, it fell mostly within five successive days, while the downfall of the present month, was very fairly distributed throughout the month. The largest quantity recorded for any day was .73 of an inch, and noted on the 24th August, 1857, had nearly as much rain registered (3.47 inches) as the present month—last year had 3.29 inches, but all other years were much below. *Snow* showers were frequent and copious in the city on the 17th, and the unusual spectacle of streets, housetops, &c., mantled with it, was a rich treat to the young Tasmanians. Indeed the beautiful moonlight scene was one redolent with old associations of the home of their youth to many of the citizens too. Snow was never absent from Mount Wellington during the month, and additions thereon, were noted on the 4th, 5th, 16th, 17th, 18th, 24th, 27th, and 31st.

Humidity mean, 79, was nearly that of the 20 years' standard, being only half a degree less.

Elastic force of Vapor mean was 266, being — 11 less than the 20 years' mean, and — 16 less than the previous month of July had, a fact worthy of remembrance in connection with the very different amount of deaths in each month.

Spontaneous Evaporation amounted to much less than rain-fall being only 2.93 inches.

Cloud mean was 6.80, being + 1.21 above the 20 years' mean; indeed, with the exception of 1854, which had a mean of 7, it was the cloudiest August of 23 years.

Ozone, as might be expected, with the meteorological conditions previously detailed, was unusually abundant. The mean, 8.54, is + 1.20 above the seven years' average. Only August, last year, and September, 1857, slightly exceeded this amount, in any month since ozonometrical records have been kept. Saturation (10), was registered 13 times. The minimum was 5.5 on the 22nd at 7 a.m., the wind noted calm. The hygrometric condition of the air accompanying this copious supply of ozone, disarmed it of that tendency to produce inflammatory diseases of the air passages, which was alluded to in the July report.

Electricity was abundant, but with a greater proportion of positive to negative indications, than was noted in July. The former was recorded 13 times with maximum tension of 5.5; the latter, 37, with 5 "nil" was registered 12 times. *Lightning* was observed on the evening of the 2nd and 14th.

41 deaths occurred this month, the August average of the previous seven years, being + 8 5-7ths more. The previous month of July had 29 more. August last year had exactly 41 also, but 1860 had only 40, being the smallest mortality of any of the seven. The past eight months of 1864, contrasted with the same period of 1863, is now only one death in excess. The table following shows the relative proportion in ages of all:—

Aug., 1864.	Ages.	Augusts.							Avg. 7 yrs Augusts 1857-1863.		
		July, 1864.	1863	1862	1861	Min. 1860.	1859	Max. 1858		1857	
4	Under 1	16	7	7	9	11	6	28	11	11	2-7
3	1 to 5	4	4	7	3	4	8	16	2	6	2-7
4	5 to 20	7	5	3	10	1	4	4	3	4	2-7
9	20 to 45	13	7	7	14	7	8	12	14	9	6-7
11	45 to 60	18	8	7	1	6	14	6	16	8	2-7
10	60 and above	12	10	12	11	11	8	8	8	9	5-7
41		70	41	43	48	40	48	74	54	49	5-7

The present month, contrasted with the previous one of July, exhibits a considerable reduction of deaths in every group of ages, though most so in infants under one year old, the number in August being only one-fourth of those in July. This group, moreover, is little more than one-third of the seven years' average, and less in number than any year of the whole. From "1 to 5 years," the deaths are less than half of the seven years' average, 1861, however, had as small a mortality, and 1857 one less. But both of these years exceeded the present one in the total of all under 5 years old, and this is the test applied by the ablest sanitarians, as to the comparative rate of mortality of any season or place. August, 1864, therefore, under this aspect, was undoubtedly the healthiest August in the table given. In the group of ages, "5 to 20," the mortality was—two-sevenths below the seven years' average. Three years of the seven, however, had less, and two more exactly the same

number. It is the large number in 1861 which raises the average so much, and it arose in that year from the epidemic of measles, six of the ten deaths being from that disease, and five of the six at the Queen's Asylum for Destitute Children. At "20 to 45" years of age, the deaths were — 6-7ths below the seven years' average, though four of the seven had fewer deaths than this month. From "45 to 60" the deaths were + 3 2-7 above the seven years' average; two of the seven, however, considerably exceeded the present month. At "all ages above 60" the deaths were + 2-7ths in excess of the seven years' average. Two were between 60-65;—two 65-70;—four 70-75;—two respectively 87 and 88 years old.

Aug. 1864.	Classes of Disease.	Augusts.								Avg. 7 yrs 1857-1863.
		July, 1863	1863	1862	1861	Min. 1860	1859	Max. 1858	1857	
9	1 Zymotic	0	4	3	15	10	9	7	7	7 6-7
4	2 Constitutional	13	6	8	6	4	7	9	15	7 6-7
21	3 Local	42	23	24	21	19	28	49	29	27 4-7
6	4 Developmental	11	3	4	6	6	3	4	2	4
1	5 Violent	4	5	4	0	1	1	5	1	2 3-7
41		70	41	43	48	40	48	74	54	49 5-7

The *Zymotic class of diseases* had $\times 1.1-7$ more deaths than the seven years' average. The diseases were *Croup*, 3; *Fever*, 2; *Metritis*, 1; *Diarrhœa*, 1; *Syph. Consec.*, 1; *Worms*, 1. Both of the fever cases were from local nuisances, which good scavenging and drainage would have averted. The *Constitutional class of diseases* had but little more than half the average mortality. Two of the number only were from *Consumption*, and neither of the individuals were natives of Tasmania. The *Local class of diseases*—had 6 4-7 less than the seven years average. But the most marked contrast is between it and the previous month of July, and August, 1858. Of the forty-nine deaths in this class in August, 1858, twenty-one were diseases of the organs of respiration, mostly inflammatory; 17 were convulsions in children, from which affection not one death was recorded in the present month. The *Developmental class of diseases*, had + 2 more than the average. The *Accidental and Violent class*, had less than half the average, there being only a death from the machinery in a steam boat tearing a man's leg off. The only inquest for the month was on the case last named. August, 1863, had 5. In the hospital ten deaths took place, inclusive of the inquest case; another of the cases was brought there from a country district. August, 1863, had only 7 deaths in Hospital. At the Brickfields Male Asylum for Invalids 4 died, aged respectively 52, 64, 73, 73. August, 1863, had 3. A female invalid, aged 71 years, died at the Cascade Factory. Of the 41 deaths, 3 died in the Glenorchy district, the rest in the city. 26 were males, 15 females. On the 4th, 5th, 10th, 18th, 21st, 24th, 25th, no deaths took place. On the 6th, 5 deaths occurred, being the largest number for any day of the month. The greatest number of deaths on any two consecutive days, was 6, on the 6th and 7th. The next in number, was 5, on the 1st and 2nd, and 2nd and 3rd. The first week of the month being by far the most fatal period of the month, in part a continuation of the effects of the unfavorable weather in July, and to some extent owing to the rapid and extensive fluctuations of atmospheric pressure, before alluded to, and always so injurious to people laboring under chronic diseases. The first week of the month had 14 deaths; the second 10; the third 6; the fourth 8; the last three days 3.

The registered births were 74, being 20 less than August, 1863, had.