

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

The character of the weather this month was quite abnormal, and from its frequent and extensive fluctuations, was very fatal to diseased persons, and feeble old people. To the young and healthy the variable atmospheric conditions, from being accompanied with a high degree of aerial purity, was the reverse of injurious. Nevertheless, the mortality of the month somewhat exceeded the November average of the previous seven years. At all ages beyond five years old, there was an excess of deaths. From birth to five years of age, the deaths were little beyond half the average.

Atmospheric pressure mean, 29·846, was +·121 above the 20 years' adopted standard mean, while November 1863 was below it by,—·062. The minimum pressure was on the 3rd, 29·172; ; the maximum 30·277, on the 18th. The month's extreme range was consequently 1·105 inches, which is greater than that of any November since 1856. The greatest movement of the barometer in any twenty-four hours, was a rise of +·606 on the 4th; but on the 4th, also, there was one nearly as great, *i. e.* +·582. The greatest fall,—·565, was on the 12th. Other fluctuations of atmospheric pressure, exceeding one-fifth of an inch, occurred eleven times. The influence of these extensive perturbations, is clearly marked in the mortuary records.

This was a very *windy* November, the total force, 124·86 lbs, being, +17·83 lbs, more than the mean of the previous seven years. The calms noted were only 3, which is without parallel in any previous November recorded. *North-west* winds were the most frequent in number, but *south-west* had the greatest amount of force. The strongest wind of the month had 10·42 lbs pressure to the square foot, and came from the south-west, with squalls of rain, hail and snow, and a great depression of temperature.

Temperature mean, 58·07, differs little from that of the 20 years, being only +00·28 above; but erroneous conclusions might be drawn were the influence of the extreme variations in the month not duly weighed. The maximum shade temperature by the self-registering thermometer, was 85 on the 2nd, and the mean of all the maxima attained the high proportion of 70·13 degrees; while the minimum night temperature was 41 degrees, and the mean of all the minima so low as 48·76 degrees. The mean from both being about one degree more than that of the ordinary thermometers. The extreme range of temperature, 44 degrees, exceeded that of November 1863 by seven degrees.

The mean *daily range of temperature* was 21·23 degrees, being + 2·39 degrees more than the 20 years' average, only four Novembers in the previous 23 years have been higher. Last year's was—3·12 less. The greatest range on any day was, 37 degrees on the 19th. Only 1862, 1846, 1843, exceeded this. The least range on any day was 9 degrees on the 23rd.

Solar intensity attained the highest maximum of 125, twice in the month, on the 2nd and the 19th, 1862 had one degree less, but no other November on record was ever before so high by ten degrees. Last year's maximum was only, 114 degrees. The mean for the present month was 103·86 degrees, being higher than any November recorded (8 years) and + 3·05 above the mean of the whole. Last year's November was three and a half degrees less. As it will be shown, hereafter, that cloud mean was also above the average, it will be evident that the sun's rays this month were unusually powerful, while prevailing. The minimum of the solar-thermometer was 56 on the 21st.

Terrestrial radiation mean, 46·03, was —·51 below the average of the previous eight years. The maximum was 55 on the 7th; minimum 31 on the 10th.

The *rain* precipitated, amounted in the aggregate to 2·06 inches, which is —·70 below the 20 years' average; November, by that standard, being much the wettest month of the twelve. 1863 had rather more than double the rainfall of that of the present month. The number of days on which rain fell, was 13, which is + 0·22 above the average of wet days in November on nine years' records. For the first three weeks of the month, no day's rain was sufficient to make the channels run, the rain deposited being merely sprinkling showers. Vegetation suffered much during this period for want of a more copious supply. On the 21st, however, nearly an inch of rain fell, and thoroughly saturated the soil, and flushed all drains. Again on the 26th rather more than half an inch was gauged, and the channels were well cleansed. *Snow* and *hail* were mixed with the rain on the latter day, as it fell in the city; while Mount Wellington exhibited as hoary and ample a mantle as it ever had done during the winter. *Snow* was never altogether absent from Mount Wellington during the month, though at times only a few patches could be discerned from the city. Muttering of thunder was heard on the even-

ing of the 2nd, together with lightning, and the latter alone on the evening of the 4th.

Spontaneous Evaporation did not much exceed rainfall notwithstanding the windy character of the month. It only amounted to 2·59 inches.

Humidity had a mean of 68, which is —3 below the 20 years' average.

Elastic force of Vapor mean was 328, being only +1 higher than the average of the 20 years. The very unusually high force of 633 was recorded at 1 p.m. on the 12th, and 407 at 7 a.m. on the 23rd and at the three observations on the 30th, respectively were 310, 405, and 492. These conditions were adverse to health.

Cloud mean was 6·55, being +·46 above the 20 years' average, and notwithstanding the more liberal fall of rain and greater number of wet days in November, 1863, was also +·55 more than the cloud mean in that month.

Ozone mean was 8·41 being +1·11 more than the November average of the previous seven years, and higher than any of them. Acute inflammation of the air passages did not prevail much, and but four deaths from Bronchitis and Pneumonia were recorded. Had the hygrometrical state of the air been less favorable, a different result would have, no doubt, occurred, as the temperature and pressure of the air were both so variable.

Electricity exhibited a strength and activity for the whole month, without parallel, since records have been kept. The positive indications were 15 with a maximum tension of 9. Negative was recorded 42 times, with a maximum tension of 8·5. "Nil" was registered at 7 a.m. on the 21st, and at both observations on the 22nd. This is a noteworthy fact in association with the cases of lockjaw about and after this period, which will be commented upon hereafter.

Forty-three deaths occurred during the month, being +3 3·7 more than the average of the previous seven years' Novembers, which as the table following shows, is 39 4·7 :—

Nov., 1864.	Ages.	Novembers.							Avg. 7 yrs. Nov. 1857-1863.	
		Oct., 1864.	1863	1862	1861	Max. 1860	Min. 1859	1858		1857
4	Under 1	8	7	12	9	7	4	3	6	6 6-7
2	1 to 5	3	1	6	3	8	3	7	6	4 6-7
6	5 to 20	4	4	3	2	5	2	3	4	3 2-7
12	20 to 45	8	6	9	11	9	11	12	14	10 2-7
9	45 to 60	8	5	6	7	11	4	7	5	6 3-7
10	60 and above	10	7	9	7	11	5	6	10	7 6-7
43		41	30	45	39	51	29	38	45	39 4-7

The deaths under one year of age were all under six months old, and the number is very considerably below the seven years' average. At 1 to 5 years old the rate was less than half the seven years' mean. Altogether the deaths under 5 years of age (6) were less than one-seventh of the total deaths at all ages (43). No previous November had so small an infantile mortality, and this is considered the nicest test of salubrity. At from 5 to 20, the deaths were nearly double the average, a very unusual occurrence. In the three groups of ages, from 20 upwards, all were above the average. Of the ten above 60 years of age, four were above 80 years old, i.e. two at 82, one at 84, and one at 102, all inmates of the Male Invalid Asylum at the Brickfields. The centenarian up to a few months ago, was an active man, and in full possession of his ordinary mental faculties.

Nov., 1864.	Classes of Disease.	Oct., 1864.	Novembers.							Avg. 7 yrs. Nov. 1857-1863.
			1863	1862	1861	Max. 1860	Min. 1859	1858	1857	
1	1 Zymotic	2	3	8	3	4	4	6	4	4 4-7
11	2 Constitutional	6	6	7	4	5	6	6	4	5 3-7
20	3 Local	22	16	22	18	36	13	22	26	21 6-7
6	4 Developmental	6	2	5	8	2	3	1	4	3 4-7
5	5 Violent, &c.	5	3	3	6	4	3	3	7	4 1-7
43		41	30	45	39	51	29	38	45	39 4-7

Only one death occurred from zymotic disease, a babe less than five months old,

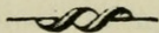
suddenly from congestion of the heart and lungs, arising from undeveloped chicken-pox. The average for November is above four times as many, and no one month of the seven had less than three times more than that of the present month. In this class of diseases November has the smallest average of any of the twelve months in a year, though May takes precedence in having the smallest average—38 4-7—from all causes. October 1861 had likewise only one death in this class, but July of 1864, had not even one. These are the only months in the last seven years that can compare favorably with the present month on this score. In the *Constitutional Class* the deaths were more than double the average. Of the 11 deaths, the youngest was from *Hydrocephalus* aged 6½ years, the next at 15½ years old from *Scrofula*, 6 were from *Consumption*, the youngest aged 22, being the only one born in Tasmania. 3 were from *Cancerous Affections*, aged 48, 49, 53. The *Local Class* had a mortality on the whole, somewhat below the average, but two of its eight orders had 15 out of the 20 deaths, being a very unusually large share of the whole. Diseases of the *Organs of Circulation*, had 7 from *Disease of the Heart*, 2 from *Aneurism of the Aorta*, and 1 from *Phlebitis* (inflammation of the veins.) Many of these were sudden deaths. Diseases of the *Organs of Respiration* had 5 deaths; four of the five acute affections, and from four months to 20 years old; the other was from *Asthma*, in a man aged 60. All but one of the remainder of the deaths in this class, were chronic affections and with the foregoing, succumbed to the rapid atmospheric variations. The class of *Developmental diseases*, is so much above the average owing to the number of deaths from *old age* before alluded to. Of the two infants, one only survived its birth, a quarter of an hour, and the other died at five months old, from *Congenital disease* transmitted by its mother. The *Violent and Accidental Class* of diseases had a little more than the average. A woman of 37 died in Hospital from *burns* inflicted in a country district, beyond the Hobart Registry. A child under two years old died from a *scald*. The other three deaths in this class were from *Traumatic-Tetanus* (Lockjaw from injuries) aged respectively 10½, 31, 33 years. All occurred between the 23rd and 28th inclusive, being the fourth and most fatal week of the month. Deaths from *Traumatic-Tetanus* occurred in June and March (one each) also of this year. In 1863 there were no deaths from this disease, but there was one from *Idiopathic-tetanus* in November. In 1862 there were one from each variety, in January and February respectively. There were not any from either cause in 1861, 1860, 1859. In February 1858 there was one. In 1857 there were 3, June, August, and November respectively one each. It is, therefore, of deep interest to ascertain whether the unusually large mortality from this cause in the present month, was associated with any peculiar atmospheric conditions prevailing at the time. The wound in the thigh from a small stone discharged from a pistol, in the boy, was not in itself a dangerous wound. The two men had previously had a simple operation performed upon them in hospital (hæmorrhoids excised by ligature.) From the elaborate examination of all the meteorological phenomena of the period, I can answer the enquiry proposed affirmatively, but the details are too prolix to publish in this report.

The *inquests* during the month were 5, including one that died in the hospital, but received from a rural district. In 1863 the inquests were only 3. In *hospital* the deaths were 14, including the case on which an inquest was held. Four of these individuals were received from districts, beyond the boundaries of the Hobart Town Registration District. In November, 1863, the hospital deaths were only 8. At the *Male Invalid Asylum* 5 deaths took place. Four of them have been alluded to before, the fifth, and youngest, was 68 years old. In 1863 only 2 deaths took place in that establishment. In the *Queen's Asylum for Destitute Children*, two boys aged respectively 7½, and 6½ years, died. The first died from *heart-disease*. He had congenital malformation of the chest. The other died in *convulsions*, how induced is unknown. The day preceding his death, the solar thermometer was at its maximum of intensity for the month—125. Whether he had been exposed to its influence on that day, I do not know, but on the 2nd, the sun was equally powerful, and on many other days its rays were sufficiently intense to produce *insolation* (sun-stroke) to those exposed to it with bare heads or with such ill-adapted coverings as the boys there have to wear. The deaths in this Institution during 1864, now nearly expired, have been altogether 3, and the daily average strength of the children, aged from 3 to 14 years, has been above 500. The rate of mortality therefore was little more (6 per 1,000 instead of 5) than that existing amongst the country children in Tasmania of corresponding ages, being a rate few countries in the world have exhibited. But in 1863, there were only two deaths in the Queen's Asylum and none at all in 1862—so that in the last three years there have only been five deaths altogether—a rate of mortality considerably less than that of the country districts. From an average of the 19 years previous to this charity

being handed over to the Colonial Government, the annual death-rate was about six times as much as that of the present year. In two years of the nineteen, (lately most incorrectly eulogised in a communication to the press, for the perfect management the Institution then exhibited),—1853-1854—the deaths were respectively 10 and 53, while the daily strength averaged only about 476 and 424 respectively. In 1853 all the ten deaths were above four years old, but in 1854, fifteen out of the fifty-three deaths were under three years of age. In 1843, when the maximum of deaths in this Institution (54) took place, out of an average daily strength of about 492 1-7; only six of them were below three years old, that is between two and three. The saving of life, therefore, in the five years since the improvements introduced into this establishment at the close of 1859—principally in the dietary—has been about 65, a large number indeed, but not so many as there might have been had the deaths in the first two of the five years been as low as the last three have been.

Of the 43 deaths this month, 4 died in the Glenorchy division of the district, the rest in the city. Twenty-nine were males, 14 females, being an undue proportion of the former. No deaths took place on the 12th and 30th, and the greatest number on any day was 4 on the 28th. The most fatal period of the month was the three days 26th to 28th inclusive, when eight deaths took place. The next in number was 6 from 20th to 22nd. In the first week of the month the deaths were 10, in the second 7, in the third 12, in the fourth 13, in the last two days 1.

The registered *births* were 77, being 33 more than were registered in November, 1863.





Hall, Edward Swarbreck. 1864. "Analysis of the observatory records for November 1864, in conjunction with those of births, deaths &c." *Papers and proceedings of the Royal Society of Tasmania* 105–108.

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