

# ROYAL SOCIETY.

## METEOROLOGY FOR JANUARY, 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.	
	In.	In.	°	°	°	°			
1	29.706	29.679	68.53	70	50.0		SE S	1.04	.18
2	29.991	29.845	64.47	105	43.0		SW	10.41	.22
3	30.175	30.158	64.48	101	47.0		W SE E	.52	
4	30.034	29.739	76.52	118	49.0		NW SW	1.04	
5	29.755	29.684	72.50	110	53.0		W NW SW	2.86	
6	29.882	29.837	74.50	112	49.0		NW	5.73	
7	29.987	29.976	69.55	98	50.0		E SE	1.04	
8	29.776	29.506	69.54	84	50.0		NW SE W	.78	
9	29.801	29.690	66.49	105	45.0		SW NE NW	3.38	.02
10	29.797	29.740	72.48	115	47.0		NW	10.41	
11	29.822	29.764	72.56	106	50.5		N SE W	.78	
12	30.015	29.970	67.49	107	45.0		NE SE SW	.78	
13	30.118	30.100	63.50	107	43.0		S SE E	1.04	.02
14	30.160	30.113	64.46	89	42.0		W E SE	.78	
15	30.079	29.992	70.51	115	48.0		SW SE	1.04	
16	29.930	29.606	73.46	122	43.0		W SE N	.52	
17	29.604	29.464	71.58	110	48.5		W N SW	3.38	
18	29.813	29.793	67.49	110	47.0		S E SE	1.04	
19	29.921	29.834	67.52	110	49.0		SW S	1.30	.02
20	30.008	29.960	68.43	112	40.5		NW SE	1.04	
21	29.803	29.585	72.43	112	45.5		NW SE SW	5.46	
22	29.660	29.590	67.51	81	48.0		SW W N	1.04	
23	29.744	29.558	71.55	99	51.0		N NW	3.38	
24	29.802	29.732	69.50	111	40.5		NW	1.30	.04
25	29.779	29.757	70.46	100	49.0		NW S	3.38	
26	30.086	30.029	65.52	78	50.0		SW S E	.26	
27	30.129	30.091	73.52	110	50.0		NE	.78	.06
28	29.949	29.846	76.57	115	53.0		NW SW	5.46	
29	30.049	30.030	72.52	107	50.0		S SE	.52	
30	30.008	29.747	78.53	120	48.5		NW E S	.78	
31	29.839	29.691	65.56	99	48.0		NE SW SE	.52	.07

[ Total force 71.79 . ]

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.

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

- 12th *Veronica augustifolia* in full flower.
- 16th First ripe Apricot gathered (Turkey).
- 19th *Grevillea robusta* in full flower.
- 20th First ripe Jargonelle Pear gathered.
- 24th Mulberries commencing to ripen.
- 25th *Catalpa syringæfolia* in flower.

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Barometer mean, 29·855 inches, being 0·140 inches above the average.

Temperature mean, 59·53°, being 4·04° below the average.

Solar intensity mean, 104·45°, being 6·55° ditto.

Dew point mean, 49·5°, being 1·19° ditto.

Humidity mean, '67, being '01° ditto.

Elastic force of vapor 347°, being 033° ditto.

Total amount of rain, '63 inches, being 0·87 inches below the average.

Mean amount of ozone 8·05, being 1·50 above the average.

Increase of spontaneous evaporation on condensation, 2·86 inches.

Electricity active on the 15th, 16th, 18th, 19th, 20th, 22nd, 23rd, 24th, and 31st.

FRANCIS ABBOTT,

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

One thousand eight hundred and sixty-five has commenced with weather of an abnormal character, though so favorable to life, that the mortality for January is considerably less than the average for the previous eight years. Nevertheless, January 1864 had greatly the superiority in this respect, not only over all other Januaries, but in comparison with any month of the twelve in a year of the eight years now tabled. By the seven years' standard January stands next to February for being the most fatal to life of the months of a year.

*Atmospheric pressure*, though continuously high and in a constant state of oscillation, had no very extensive fluctuation on any day, and the whole range of the month was only  $\cdot 711$  of an inch, being considerably less than that of any January of the previous twenty-four years recorded. 1846 had the nearest approximation, but even its range was  $\cdot 779$  of an inch. 1857 had the widest range, being  $1\cdot 492$  inches. The mean of the present month was  $29\cdot 855$ , being  $+1\cdot 140$  above the twenty years' adopted standard mean for January. Last year the mean was almost identical with that of the twenty years. The extremes of the present month were—maximum,  $30\cdot 175$ , on the 3rd; minimum,  $29\cdot 464$ , on the 17th. Last year the maximum was nearly as high, but the minimum very much lower. In fact, there is not on record so high a minimum for January as that of the present month. The greatest movement of the barometer on any day was a fall of  $\cdot 428$  of an inch on the 8th. The greatest rise was  $+3\cdot 329$  of an inch on the 18th. Altogether there were daily movements exceeding one-fifth of an inch only nine times.

*Wind force*,  $71\cdot 79$  lbs., though almost identical with the four years' average in Mr. Abbott's "Twenty Years' Meteorological Tables," is nevertheless  $-7\cdot 31$  lbs. below the average of January for the last eight years. At the same time the present month had greatly the predominance in winds blowing from the quarters most propitious to health. The frequency and strength of the south-west winds is without parallel in the month of January. The strongest wind noted had a pressure to the square foot of  $5\cdot 21$  lbs., and was registered on the 2nd, 6th, and 10th, two of the three being N.W. and one S.W. The calms were only 13, being  $4\cdot 47$ ths below the seven years' average.

*Temperature* mean,  $59\cdot 53$ , was only a few decimals higher than that of the previous month of December, and  $-4\cdot 04$  degrees lower than the 20 years' mean for January. It was also nearly two degrees less than January 1864 had. January 1853 had the lowest mean  $57\cdot 67$ .—1852, 1860, 1849, were nearly the same as the present month, but no other January in the last twenty-four years has had a mean below 60 degrees. The 14 years' records at the Royal Observatory give a mean of  $61\cdot 24$  degrees, and with the six subsequent years, the mean is  $63\cdot 57$  degrees. By the self-registering maxima and minima thermometers, the mean of the present month is  $60\cdot 11$  degrees, a much smaller variation from the foregoing than is usual. The maximum temperature 78 degrees on the 30th, is the lowest in the past 24 years, and three degrees below the maximum of January last year. The minimum temperature was 43 degrees, and noted on the 20th and 21st. 1862 had as low a minimum, and 1857 1856, 1855 each one degree lower. The extreme range of temperature, 35 degrees, exceeded that of January 1864 by two degrees, but was less than any other January of the previous 24 years. The mean of all the maxima was  $69\cdot 43$  degrees, and of its minima  $50\cdot 74$ .

The *daily range* of temperature had a mean of  $18\cdot 74$  degrees, being  $-1\cdot 90$  less than that of the 20 years, though  $+1\cdot 61$  degrees higher than January 1864 had. To this more variable temperature of the present month is principally to be ascribed the difference in mortality between the two months. The greatest range on any day was, 29 degrees on the 21st, being two degrees above that of last year's January. The smallest range was 9 degrees on the 30th.

*Solar-Intensity* had a mean of  $104\cdot 45$  degrees, being more than three degrees below January 1864, and  $-5\cdot 77$  less than the mean of nine years. The maximum, 122 degrees, was on the 16th, and one degree less than that of last year. The minimum was 70 degrees on the 1st.

*Terrestrial Radiation* mean was  $47\cdot 51$  degrees, being  $-4\cdot 15$  degrees below the mean of the previous nine years, and less than any one of them. The maximum was 53, on the 5th and 28th, and the minimum  $40\cdot 5$  on the 20th

and 24th. Both were three to four degrees less than the corresponding observations in January last year.

The *rain fall* was —87 of an inch below the 20 years' average, being only '63 of an inch; and the greater part of this, even, fell upon the first day of the month, after which there were mere sprinkling showers, insufficient to cause a flow in the surface channels. For January last year, though the total fall was but slightly more than that of the present month, yet it was distributed more beneficially for health purposes there being a sufficient deposit on the 24th day of the month to flush the drainage channels. Both months were preceded by copious falls in the preceding months of December. The wet days of the present month were 8, being only —70 below the average of the previous eight years. *Snow* never appeared on Mount Wellington during this month.

*Humidity* had the mean of 67, being —1 less than the 20 years' average.

*Elastic force of vapour* mean was 247 being —33 below the 20 years' mean.

*Spontaneous Evaporation* amounted to 3'49 inches. January 1864 had nearly twice as much.

*Cloud* mean, 6'75 is + 1'01 above the 20 years' mean. Only three years out of the 24 recorded, had so cloudy a January as this.

*Ozone* was more abundant than ever before registered for the month of January, having a mean of 8'05, or + 1'18 more than the average of the previous eight years. The strong and numerous breezes from the ocean quarters together with the electrical condition of the atmosphere, no doubt effected this purifying result, notwithstanding the paucity of rain.

*Electricity* had 16 positive indications, with a maximum tension of 6, being in both respects inferior to January 1864.—On the other hand the 45 records of negative with maximum tension of 9,—far exceeded the corresponding amount last year. There was only one "nil" registered, that is at the 1 p.m. observation on the 1st, when there was much rain, but little wind, with cold gloomy weather. No *lightning* was observed during the month, but *thunder* was heard, early in the morning of the 28th.

The 41 *deaths* for the month of January 1865, as the following table shows, is —12½ less than the average of the previous eight years, though + 17 more than January 1864 had; but the latter month was quite exceptional, having the smallest mortality of any month of the twelve in any of the last eight years. Both Decembers, too, had a death rate below the average.

Jan., 1865.	Ages.	Dec., 1864.	Januaries.								Avg. 8 yrs. Jans. 1857-1864.
			Min. 1864	1863	1862	1861	1860	1859	Max. 1858	1857	
10	Under 1	11	2	9	19	12	28	17	32	27	18 2-8
1	1 to 5	1	2	11	13	3	7	9	10	5	7 4-8
2	5 to 20	4	2	4	0	2	7	3	3	1	2 6-8
7	20 to 45	7	5	6	8	12	16	16	14	12	11 1-8
11	45 to 60	8	6	6	8	8	5	8	7	10	7 2-8
10	60 and above	5	7	9	7	8	9	3	8	5	7
41		36	24	45	55	45	72	56	74	60	53 7-8

In all the groups of ages under 45, the deaths were considerably below the average of the previous eight years. At all ages above 45, the deaths were one third more than the average, and greater than in any year in the table. The oldest was aged 82 years. In every group, but that from "1 to 5" years of age, the deaths were more numerous than in January 1864. The deaths under five years of age were little more than one fourth of the total of all ages, while the 8 years' average is not far short of one half. Every January, except that of 1864, had more deaths under five years old than the present month. With the annually increasing diminution in the average age of the population as a whole the foregoing fact affords the very strongest proof of the favorable meteorological conditions to health, existing during the month. Another



important fact is deducible from the table, *i.e.*, that while the total deaths for each year, since 1861, has been diminishing, those above 45 years of age have scarcely varied, indeed in the present month increased. This arises from the departure from the colony of so many healthy adults in the prime of life, leaving the infirm and aged behind.

Jan., 1865	Classes of Disease	Dec., 1864	Januaries.								Average of 8 years Januaries, 1857-1864.
			Min.				Max.				
			1864	1863	1862	1861	1860	1859	1858	1857	
10	1. Zymotic	9	9	15	24	11	24	13	17	11	14 6-8
3	2. Constitutional	7	7	9	4	1	7	7	8	7	6 2-8
24	3. Local	15	15	15	22	27	26	30	32	32	24 2-8
4	4. Developmental	3	3	2	3	2	12	5	14	7	.6
0	5. Violent	2	2	4	2	4	3	1	3	3	2 5-8
41		36	36	45	55	45	72	56	74	60	53 7-8

The *Zymotic* class of deaths was considerably below the average, and less than any year of the eight, except 1864. The ten deaths were: from diphtheria 1; puerperal-fever 1; dysentery 2; diarrhoea 4; (all the two last being children at and under twelve months old;) delirium tremens 2. The latter disease is very rarely registered thus, but gets recorded under other of its phases.

The *Constitutional* class had less than half of its death average. Two of the cases were registered consumption, one of the two, a man of 28, being born in Tasmania. The *Local* class had very nearly the average proportion of deaths, but 14 more than 1864 had. A comparative contrast, therefore, between these two will be instructive. In the 1st order, "diseases of the brain and nervous system," this year had 7 deaths, 1864 had only 3, all from apoplexy; while this year's were, apoplexy 2; epilepsy 1; convulsions 2 (both under three weeks old); brain disease 2. The 2nd order, "diseases of the heart and organs of circulation" 4; 1864 had 3. The 3rd class "diseases of the lungs and organs of respiration" (excluding consumption) 5; 1864 had not any. I before remarked that the colder and more variable temperature of the present month would account in a great measure for its excess of deaths over last January: in these diseases, it is in part exemplified, though the effect was comparatively small in the general population, the youngest of these persons being 47, and the oldest 72 years old. In the 4th order "diseases of the organs of digestion," 5 died; 1864 had 4. In the 5th order, "diseases of the urinary organs," the deaths were two this year, but not any last. The 6th order, "diseases of the organs of reproduction," 1865 one, 1864 none. The *Developmental Class* had one-third less than the average; of the four deaths, three were under two months old. No deaths in the class "Violent, &c.," took place, though the January average is 2½, and January last year had one. There was but one inquest on a death in this month, a man of 65 in the gaol, who died suddenly from the bursting of aneurism of the aorta. No inquests were held in January 1864. In the Public Hospital 10 deaths took place; 1864 had only 8. At the Male Invalid Asylum two deaths occurred, aged respectively 62 and 72; January 1864 had only one. Of the 41 deaths this month, 22 were males, 19 females. In the Glenorchy and Queenborough divisions of the district, 8 died, the rest in the city. The former is an unusually large proportion of the whole. In the first week of the month there died 8; in the second, 6; in the third, 12; in the fourth, 7; in the last three days, 8. The greatest number on any two consecutive days was 6, on the 20th and 21st, already alluded to for the low temperature; but for three successive days, the heaviest mortality was on the three last days of the month, 8. The hottest day of the month, was the 30th, and on these three days the aërial movement was less than the average of any other three in the month.

The *births* registered were 68, being one more than January 1864 had.

The "Vital Statistics" of all Tasmania, for 1864, were of a more hopeful character than those of the preceding year.

The registered *births* were 3,031, being 33 more than 1863 had.

While 1863 had a balance against the colony, in "departures," of 6 males, 337 females, 446 children, above "arrivals"; 1864 had 666 more "arrivals" than "departures" of adult males; though 189 less adult females, and 287 less children; the actual total numerical surplus of "arrivals" over "departures" being 190. Since the census of 1861 until the year under review, though the actual number of the total population has annually increased, it has been by the births so greatly exceeding the deaths, the proportion of the former being nearly  $2\frac{1}{4}$  to one of the latter.

The total *deaths* in all Tasmania for 1864 was 1,435; which, on a computed estimate of the population at 95,000 persons (including a calculated number of unregistered births) gives a death rate but slightly exceeding 15 in the 1,000; being nearly one-quarter per thousand less than 1863 had, and less than that of any previous year. The rate of 15 per 1,000, is the minimum rate of the healthiest districts in England and Wales. The whole rural death rate of Tasmania, after excluding Hobart city and Launceston, is very much lower than the minimum rate of England and Wales. In 1863, it was only  $10\frac{1}{4}$  per 1,000, and for 1864, though the population has increased, the actual number of rural deaths only exceeded the former year by 2; Hobart city exceeded it by 29, while Launceston had absolutely 16 less. No data exist by which the 1,883 increase in the population of 1864 over 1863, can be duly apportioned to the towns and country respectively, but I conclude that Hobart has had, if any, smaller share of it than Launceston and the country districts. When Hobart and Launceston shall have done all that modern sanitary science dictates to be requisite for the reduction of unnecessary deaths in town populations, the Tasmanian rate will become marvellously small. Every advancing year, since transportation ceased, and immigration became reduced, tends to prove that, as the island-born population increases its numerical proportion to that of the imported inhabitants, so does the death-rate diminish. By the ordinary laws of mortality it ought to be otherwise, for wherever the infantile element of the population is above the normal state it is usual to have a higher death rate. The interesting fact alluded to shows that the real salubrity of the Tasmanian climate—much as it has been lauded—has hitherto been understated by most writers on the subject.

It is greatly to be regretted, that in the admirable and instructive "*Statistical, Sanitary, and Medical Reports*," now annually emanating from the *Army Medical Department*, Tasmania should be grouped with continental Australia. In the last "report" published, 1862, it is said (page 108,) by Dr. Graham Balfour, (and his name gives a weight to the statement which those only well versed in Medical statistics can appreciate,) that "cases and deaths among the military from *tubercular diseases* is very high, and would seem to indicate, that the climate of the Australian colonies is not well suited to persons having a tendency to these diseases." For a long series of years I have been storing and publishing facts to show that in the civil population of Tasmania the data proves the climate of Tasmania to be supereminently "well suited" to avert the tubercular diathesis. Only one person belonging to the military, a sergeant of the 12th Regiment, aged 28, died from consumption in Tasmania in 1862. He had been left behind, as unfit for service, when the greater part of the troops left this island for New Zealand.