XIX.—*Meteorological Tables. Royal Observatory, Hobart Town.* *By* COMMANDER KAY, R.N., F.R.S.

Latitude of the Observatory.....42° 52′ 13″ south.

Longitude of the Observatory .... 9 H. 49 M. 29 S. east.

1850.

MONTH.	Barometer recorded during the month at five Observation Hours.		Extremes of Temperature during the Month by Self-registering Thermometers.		Rain during the Month by Self-registering Rain Gauge.	Monthly Range of Temperature.
	Max.	Min.	Max.	Min.		
	in.	in.	°	°	in.	°
January	30·101	28·941	86·9	43·7	1·20	43
February	30·227	29·386	91·8	41·5	1·10	50
March	30·233	29·336	97·0	42·0	0·29	55
April	30·428	28·870	79·3	36·0	2·19	43
May	30·260	29·206	70·0	36·3	0·57	34
June	30·324	29·330	61·8	30·7	0·70	31
July	30·492	29·449	58·8	29·8	0·30	29
August	30·416	29·510	64·5	33·0	1·31	31
September.....	30·220	29·070	71·0	34·0	1·67	37
October	30·238	29·384	78·8	35·9	0·26	43
November.....	30·262	28·997	87·3	42·3	4·31	45
December	30·107	28·961	89·3	42·2	0·61	47

1851.

MONTH.	Barometer recorded during the Month at three Observation Hours.		Extremes of Temperature during the Month by Self-registering Thermometers.		Rain during the Month by Self-registering Rain Gauge.	Monthly Range of Temperature.
	Max.	Min.	Max.	Min.		
	in.	in.	°	°	in.	°
January	30·091	29·106	91·1	44·2	2·33	47
February	30·159	29·263	97·3	46·2	0·58	51
March	30·085	29·061	80·0	42·1	0·73	38
April	30·390	29·453	78·8	37·5	0·18	41
May	30·317	28·743	68·3	38·0	0·74	30
June	30·291	28·652	59·0	34·8	2·35	25
July	30·346	28·978	56·8	34·3	1·17	22
August	30·271	29·021	62·3	33·8	1·10	29
September	30·026	28·806	69·3	39·0	2·16	30
October	30·179	29·459	80·0	34·8	0·79	45
November	30·218	29·222	80.3	40·3	4·19	40
December	30·154	29·020	89·4	44·0	1·66	45

1852.

MONTH.	Barometer recorded during the Month at three Observation Hours.		Extremes of Temperature during the Month by Self-registering Thermometers.		Rain during the Month by Self-registering Rain Gauge.	Monthly Range of Temperature.
	Max.	Min.	Max.	Min.		
	in.	in.	°	°	in.	°
January	29·982	28·955	87·2	46·8	1·46	40
February	30·223	29·219	94·0	47·0	0·19	47
March	30·240	29·438	87·2	40·6	0·31	47
April	30·509	29·246	76·0	40·0	4·99	36
May	30·482	29·272	64·7	34·0	1·46	31
June	30·471	29·235	63·5	32.1	0·22	31
July	30·388	29·057	57·5	31·3	3·14	26
August	30·259	28·784	57·7	32·5	3·47	25
September	30·413	29·344	69·2	36·0	3·19	33
October	30·100	29·267	78·2	36·3	1·77	42
November	29·940	29·217	81·3	39·2	1·41	42
December	30·085	29·216	92·5	42·0	2·01	50

Mean Temperature in each Month for the Years 1850, 1851 and 1852, derived from the daily Maxima and Minima of Temperature, by Self-registering Thermometers.

1850.

MONTH.	Mean Maximum Temperature.	Mean Minimum Temperature.	Mean for the whole Month.
January	70°·43	51°·05	60°·74
February	69·11	50·42	59·76
March	71·64	51·42	61·53
April	63·82	46·58	55·20
May	58·02	44·14	51·08
June	53·40	39·54	46·47
July	51·35	35·35	43·35
August	51·72	39·63	45·67
September	register imperfect.		
October	66·18	44·97	55·57
November	65·19	47·85	56·52
December	71·29	51·41	61·35

Mean Temperature for the whole year..... 54°·29

1851.

MONTH,	Mean Maximum Temperature.	Mean Minimum Temperature.	Mean for the whole Month.
January	72°·09	52°83	62°·45
February	72·30	53·50	62·90
March	66·94	49·47	58·20
April	64·94	48·56	56·75
May	56·30	44·10	50·20
June	53·16	42·25	47·70
July	52·22	40·02	46·12
August	54·53	39·84	47·18
September	58·31	43·92	51·12
October	62·42	44·21	53·31
November	61·58	47·89	54·73
December	71.51	52·32	61.91

Mean Temperature for the whole year ..... 54°·38

1852.

MONTH.	Mean Maximum Temperature.	Mean Minimum Temperature.	Mean for the whole Month.
January	70°·39	51°·52	60°·95
February	73·61	53·58	63·60
March	70·27	51·63	60·95
April	61·35	48·75	55·05
May	55·49	42·26	48·83
June	51·19	39·28	45·23
July	50·80	38·45	44·62
August	51·61	40·62	46·11
September	59·07	43·39	51·23
October	61·27	44·80	53·03
November	65·67	48·47	57·07
December	62·28	51·15	56·71

Mean Temperature for the whole Year ..... 53°·62

Mean Temperature of 1850 ..... 54°·29
Mean Temperature of 1851 ..... 54·38
Mean Temperature of 1852 ..... 53·62

Mean Temperature of the Climate of Hobart Town for every Month in the Year, derived from Hourly Observations for Eight Years, 1841 to 1848.

YEAR.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	°	°	°	°	°	°	°	°	°	°	°	°
1841	65·38	62·60	61·45	52·84	49·41	46·21	42·57	46·67	49·30	54·04	59·02	60·01
1842	62·25	63·05	59·09	52·61	50·45	45·10	45·09	46·14	52·09	50·32	58·08	58·77
1843	61·90	63·10	60·02	52·51	51·40	47·75	44·16	47·17	49·10	53·92	59·85	61·06
1844	60·61	62·77	56·25	49·89	50·01	44·10	43·04	44·33	48·10	52·75	54·47	60·85
1845	63·04	60·44	59·13	54·16	48·39	45·05	45·47	46·43	51·90	54·63	58·15	61·66
1846	61·78	58·88	57·87	53·33	48·15	45·63	42·79	44·30	49·49	53·74	58·82	62·81
1847	61·76	60·85	57·94	53·27	47·60	43·09	43·94	47·88	51·22	52·45	54·80	62·80
1848	60·12	59·27	59·51	56·81	49·02	45·79	42·83	45·29	48·28	Hourly Observation discontinued.		
	°	°	°	°	°	°	°	°	°	°	°	°
Mean Monthly Temperature	62·11	61·37	58·91	53·18	49·30	45·34	43·73	46·03	49·93	53·12	67·60	61·14

Mean Annual Temperature from the result of Eight Years, Hourly Observations, 1841 to 1848 .... 53°·48

Mean Annual Temperature from Observations with the Max. and Min. Thermometers in 1849, 50, 51, 52 .... 53°·32

MEAN QUARTERLY TEMPERATURES.

Spring .... { September .... October .... November .... } 53°·55.

Summer .... { December .... January .... February .... } 61°·54

Autumn .... { March .... April .... May .... } 53° 80

Winter .... { June .... July .... August .... } 45°·03

Mean Annual range of Temperature between Summer and Winter .... 16°·5

Mean Height of the Barometer at Hobart Town for every Month in the Year, derived from Hourly Observations for Eight Years, 1841 to 1848.

Corrected to 32° Fahrenheit.

YEAR.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	in.	in.	in.	in.	in.	in.	in.	in.	in.	in	in.	in.
1841	29·725	29·801	29 988	29·738	29·924	29·913	30·005	29·882	29·795	29·835	29·627	29·739
1842	29·714	29·950	29·951	29·762	29·668	29·660	29·696	29·839	29·616	29·526	29·550	29·812
1843	29·832	29·869	29·851	29·917	29·954	29·813	29·680	29·804	29·509	29·614	29·671	29·740
1844	29·876	29·828	29·651	29·764	29·880	29·790	29·857	29·691	29·748	29·776	29·726	29·835
1845	29 759	29·758	28·891	29·980	29·817	29·799	29·866	29·542	29·903	29·924	29·622	29·664
1846	29·632	29·561	29·796	29·741	29·688	29·953	29·884	30·000	29·971	29·831	29·852	29·709
1847	29·691	29·870	29·772	29·818	29·834	29·644	29·490	29·769	29·898	29·852	29·632	29·728
1848	29·730	29·951	29·743	29·789	29·739	29·949	30·030	29·724	29·626			
Mean Monthly Pressure . .	in. 29·745	in. 29·818	in. 29·830	in. 29·814	in. 29·813	in. 29·815	in. 29·814	in. 29·781	in. 29·758	in. 29·765	in. 29·669	in. 29·747

Mean Annual Pressure in. 29·781, the cistern of the Barometer being 105 feet above the level of the sea, at mean tide.

Mean Annual Variation of the Meteorological Phenomena at Hobart Town, derived from Eight Years' Hourly Observations.

MONTH.	Temperature of the Air.	Elastic Force of Vapour.	Humidity of the Air.	Barometer.	Gaseous Pressure.
	°	°		in.	in.
January . .	+ 8·63	+ ·050	— 10	— ·032	— ·085
February .	+ 7·83	+ ·070	— 5	+ ·037	— ·032
March . .	+ 5·49	+ ·040	— 5	+ ·049	+ ·010
April . . .	— 0·30	+ ·004	+ 1	+ ·033	+ ·030
May . . .	— 4·18	— ·020	+ 6	+ ·032	+ ·053
June . . .	— 8·14	— ·046	+ 10	+ ·034	+ ·081
July . . .	— 9·75	— ·055	+ 12	+ ·033	+ ·089
August . .	— 7·45	— ·048	+ 7	+ ·002	+ ·049
September .	— 3·55	— ·032	+ 1	— ·023	+ ·010
October . .	— 0·36	— ·017	— 3	— ·016	+ ·002
November	+ 4·12	+ ·018	— 6	— ·112	— ·129
December .	+ 7·66	+ ·036	— 11	— ·034	— ·069

Mean Diurnal Variation of the Meteorological Phenomena at Hobart Town, derived from Eight Years Hourly Observations.

HOUR.	Temperature. of the Air.	Elastic Force of Vapour.	Humidity of the Air.	Barometer.	Gaseous Pressure.
	°	in.		in.	in.
Noon.	+ 6·10	+ ·017	— 11	— ·009	— ·024
1	+ 6·98	+ ·018	— 13	— ·023	— ·040
2	+ 7·17	+ ·017	— 13	— ·030	— ·045
3	+ 6·70	+ ·016	— 13	— ·034	— ·049
4	+ 5·66	+ ·012	— 11	— ·028	— ·039
5	+ 3·87	+ ·007	— 8	— ·022	— ·028
6	+ 1·76	+ ·003	— 4	— ·009	— ·012
7	+ 0·09	+ ·002	— 1	+ ·004	+ ·003
8	— 1·11	— ·000	+ 2	+ ·015	+ ·016
9	— 1·89	— ·001	+ 3	+ ·019	+ ·013
10	— 2·55	— ·004	+ 5	+ ·019	+ ·024
11	— 3·08	— ·006	+ 5	+ ·016	+ ·014
12	— 3·59	— ·008	+ 6	+ ·009	+ ·018
13	— 4·03	— ·011	+ 7	+ ·002	+ ·014
14	— 4·41	— ·013	+ 7	— ·002	+ ·012
15	— 4·81	— ·015	+ 8	— ·007	+ ·005
16	— 5·09	— ·018	+ 8	— ·009	+ ·010
17	— 5·21	— ·016	+ 8	— ·003	+ ·014
18	— 4·80	— ·013	+ 8	+ ·004	+ ·018
19	— 3·62	— ·008	+ 7	+ ·013	+ ·022
20	— 1·80	— ·002	+ 4	+ ·019	+ ·022
21	+ 0·49	+ ·004	— 1	+ ·020	+ ·017
22	+ 2·66	+ ·008	— 5	+ ·015	+ ·008
23	+ 4·55	+ ·013	— 8	+ ·003	— ·009

Mean Fall of Rain at Hobart Town for every Month in the Year, derived from Twelve Years' Observations with the Self-registering Rain Gauge.

YEAR.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	ANNUAL TOTAL.
	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
1841	0·03	3·10	0·33	1·11	0·53	1·23	1·01	1·32	0·82	2·41	1·75	0·31	13·95
1842	1·83	1·05	0·07	0·89	2·09	4·41	3·46	0·99	1·08	1·78	5·84	0·11	23·60
1843	0·55	0·11	0·02	1·96	0·10	1·91	2·97	1·09	0·99	1·47	1·70	0·56	13·43
1844	2·01	0·34	3·22	0·92	2·24	2·74	2·12	1·16	7·14	2·57	1·56	0·23	26·25
1845	0·58	1·91	1·55	0·24	0·72	4·27	0·72	0·63	0·73	1·19	3·75	0·39	16·68
1846	1·38	2·64	2·15	2·68	0·65	2·29	2·20	1·53	0·82	1·61	2·87	1·14	21·96
1847	0·73	0·07	2·67	1·74	1·49	0·56	1·73	0·60	0·39	1·74	2·21	0·53	14·46
1848	1·04	0·79	1·18	0·51	4·38	1·12	2·43	2·66	1·84	1·27	4·04	2·36	23·62
1849	0·74	1·02	2·37	1·44	3·82	2·25	5·98	2·75	1·91	1·42	8·92	0·90	33·52
1850	1·20	1·10	0·29	2·19	0·57	0·70	0·30	1·31	1·67	0·26	4·31	0·61	14·51
1851	2·33	0·58	0·73	0·18	0·74	2·35	1·17	1·10	2·16	0·79	4·19	1·66	17·98
1852	1·46	0·19	0·31	4·99	1·46	0·22	3·14	3·47	3·19	1·77	1·41	2·01	23·62
Average Monthly fall of Rain.....	in. 1·17	in. 1·07	in. 1·24	in. 1·57	in. 1·57	in. 2·00	in. 2·27	in. 1·55	in. 1·89	in. 1·52	in. 3·55	in. 0·90	in. 20·30

Average Annual Fall of Rain ..... in. 20·30

It will be perceived by a glance at this Table, that June, July, and November are the wettest months, and that in the latter month, there is, almost invariably, the greatest amount of rain, of any month in the year. Although these results show that a much larger amount of rain fell in the year 1849 than in any other year since these observations were commenced, it was confined to the southern parts of the island, as the principal quantity which fell in the months of July and November (viz., 15 inches) came from the south, with strong gales from that quarter. Its effect was not, therefore, felt much in the interior parts of the island, or not sufficiently to cause the disastrous floods that occurred in 1852. On the contrary, in 1852, although 10 inches less rain fell in Hobart Town than in 1849, the rivers in the northern and central parts of the island were so swollen, that bridges were swept away in all directions, and a vast amount of property destroyed.

The difference is owing to the quarter from whence the rain comes. In 1849, all the heavy rain was from the S.; in 1852, it all came from the N. E. and gradually veered round to N. and N. W.; so that all the mountain ranges from whence the rivers take their rise received an abundant supply, and every tributary stream being filled to overflowing helped to fill the main branches, which in their onward course swept every thing before them.

Two Volumes of the Magnetical and Meteorological Observations, made at Hobart Town under my direction, have been published by the British Government. They are principally devoted to the investigation of the Horary, Diurnal, and Annual variations of the Magnetic Elements, with their peculiar changes, to investigate which was the

great object to be attained in the establishment of an Observatory; and that object having been attained, the connection of the British Government with the Observatory in Tasmania will cease in April 1853. I would recommend a careful examination of the volumes in question, (which have been presented to the Society by Sir Wm. Denison, from the British Government), to those members of the Society who take interest in such researches; but I have not considered the subject to be one of sufficiently general interest to encourage me to lay the details before them. With reference to what has been done since the establishment of the Magnetic Observatories in various parts of the globe in 1840,—at the Annual Meeting of the British Association at Belfast, in September 1852, the President observed in his Address, that " terrestrial magnetism is a science which, perhaps more than any other, has profited by the impulse and systematic direction communicated to it by the British Association, and which, perhaps more than any other, required such external aid. In the infancy of a science, the phenomena of which present on our first acquaintance with them a great appearance of complexity, the path by which its progress may be advanced may be by no means easy to discern; and individual explorers may well, under such circumstances, be discouraged by doubts whether their labour will be recompensed by proportionate success, as well as disheartened by the little sympathy which is usually given to investigations which hold out but little immediate prospect of practical utility. Some there have been, however, from time to time, who, impressed with a persuasion of the position which magnetism deserves to take, and which, sooner or later, they believe it *will take*, amongst the physical sciences of the highest order, have not spared this precursive labour, and have been uniformly

conducted by it to the same general conclusion, viz., that, in order to obtain a sufficient foundation of facts upon which to raise a fitting superstructure of inductive reasoning, it would be necessary to organize a system of co-operative research in which the labours of many might be united, agreeably to concerted arrangements; and that as such researches would require to be carried on nearly at the same epoch at many distant parts of the globe, for which private resources were inadequate, public assistance must be sought.

"That this conclusion was extensively recognized and acquiesced in, is sufficiently attested by the readiness so generally manifested by governments and individuals, (in all countries where mental cultivation is regarded), to take part in the general system of magnetic co-operation proposed by this country in 1838. In the years which have since elapsed, the energy and zeal of those who have engaged in these researches *have accumulated a mass of observations which, as the fruits of systematic and concerted labour, is, I believe, wholly unprecedented.* The labour of digesting, comparing, and co-ordinating the body of facts thus obtained may certainly be stated to be *not less* than that expended in obtaining them; and as one process must necessarily be in great measure carried on subsequently to the other, we are now only beginning to reap the first fruits of this great co-operative undertaking in its results upon theory. The co-ordination and mutual connexion of so large a mass of materials is necessarily a work of time, but is progressing steadily towards completion; and, when presented in one connected view, will form the groundwork on which will securely rest a general theory of terrestrial magnetism corresponding to the present epoch. Until these combinations and calculations are performed,

it would be obviously premature to speak of numerical values, by which the magnetic forces at one part of the globe may be compared with those of another, or with forces of other descriptions; and for the same reason it is desirable to abstain for the present from notices of the geographical positions which particular lines, or as some may deem them critical points, in the magnetic resultants may occupy on the earth's surface at the present epoch. Such notices could only be as yet provisional, and liable to the amendments which more exact and extended calculation must be expected to produce. We are just beginning to profit by the collocation and study of the great body of facts which has been collected." *

The third volume of the Hobart Town Observations will discuss the peculiarities of the climate of Hobart Town, as exhibited in the extensive series of Meteorological Observations which have been made.

J. H. KAY,
Commander Royal Navy.

* Address of the President of the British Association at Belfast, September 1852.