



SUPPLEMENT

To the HONGKONG GOVERNMENT GAZETTE of 5th March, 1887.

GOVERNMENT NOTIFICATION.—No. 87.

The following Annual Weather Report of the Director of the Observatory, for 1886, is published for general information.

By Command,

FREDERICK STEWART,
Acting Colonial Secretary.

Colonial Secretary's Office, Hongkong, 5th March, 1887.

ANNUAL WEATHER REPORT FOR 1886.

At the end of January the NE monsoon increased and blew with the force of a whole gale in the China Sea as far south as $+8^{\circ}$ latitude, at the same time it blew a gale along the southern coast of China and the barometer fell since the 30th of that month. On the night between the 3rd and the 4th of February it blew a whole gale in Hongkong. In March the height of the NE monsoon seems to have been unusually small. The direction of the wind at Victoria Peak was more different from its direction at sea level than is usual during this month, the direction, of course, veering with increasing height, and the lower level of the clouds was nearly every day below 2000 feet. Fog prevailed, the clouds frequently sinking to sea level. At the same time the temperature fell less than half the usual amount with increasing elevation in the air. This may perhaps throw some light on the fact that explorers in certain tropical regions have attributed so very small dimensions to the NE monsoon.

The amount of rain during the summer fell short of the usual quantity during every month except July, when the excess was due to the heavy thunderstorms on the 15th. This is very striking on comparing the monthly rainfall at Stone Cutters' Island with the mean of nine years' rainfall (1878-1886 incl.):—

Month.	Mean.	Rainfall.	Excess
	1886.	1886.	above mean.
January,	0.80	2.05	+ 1.25
February,	1.71	1.40	- 0.31
March,	3.65	1.26	- 2.39
April,	6.63	3.77	- 2.86
May,	10.66	2.59	- 8.07
June,	13.66	10.02	- 3.64
July,	16.83	28.62	+ 11.79
August,	17.50	8.12	- 9.38
September,	9.73	3.28	- 6.45
October,	5.45	3.11	- 2.34
November,	1.10	0.00	- 1.10
December,	0.43	1.16	+ 0.73
Year,	88.15	65.38	- 22.77

At the Observatory the cisterns of the barograph and the standard barometer are placed 110 feet above Mean Sea Level. The bulbs of the thermometers are 109 feet above Mean Sea Level and 4 feet above the ground except the terrestrial radiation thermometer, which is about one inch above the ground. The rim of the pluviograph, which is $11\frac{1}{4}$ inches in diameter, is placed 106 feet above Mean Sea Level and 21 inches above the ground. The cups of the anemograph are 150 feet above Mean Sea Level and 45 feet above the ground.

At Victoria Peak the instruments, except the radiation thermometers and the rain-gauge, are placed in the look-out. The cistern of the barometer is 1816 feet above Mean Sea Level. The bulbs of the thermometers are about 4 feet above the floor, except the maximum thermometer, which is a few inches higher. The radiation thermometers are placed at the same height above the ground as at the Observatory. The rim of the rain-gauge is 8 inches in diameter and is one foot above the ground.

At Stone Cutters' Island the rim of the rain-gauge is 8 inches in diameter and is placed 2 feet 4 inches above the ground and about 15 feet above Sea Level.

The Monthly Weather Reports are arranged as follows:—

Table I exhibits the hourly readings of the barometer reduced to $32^{\circ}.0$ Fahrenheit, but not to sea level, as measured (at two minutes to the hour named) from the barograms.

Table II exhibits the hourly readings of the temperature of the air round the Observatory as determined by aid of the rotating dry bulb thermometer and the thermograms (at two minutes past the hour named), and also the extreme temperatures during the day.

Table III exhibits the hourly readings of the temperature of evaporation round the observatory as determined by aid of the rotating damp bulb thermometer and the thermograms (at two minutes past the hour named), and also the solar radiation maximum (black bulb) and terrestrial radiation (grass-minimum) temperatures, read at 10 p. and entered for the same day.

The thermometers are rotated round a nearly horizontal axis (which is kept about 4 feet above the ground) the observer generally walking along facing the wind, so that the bulbs describe screws of small pitch. The diameter of the screw described by the damp is larger than that described by the dry bulb. These observations are generally made every hour during the day and as often as possible during the night.

Table IV exhibits the mean relative humidity in percentage of saturation (the humidity of air saturated with moisture being 100) and mean tension of aqueous vapour present in the air expressed in inches of mercury, for every hour in the day and for every day in the month, calculated by aid of Blanford's tables from the data exhibited in Tables II and III.

Table V exhibits the duration of sun-shine expressed in hours as registered by aid of the sun-shine recorder from half an hour before to half an hour after the hour (true time) named.

Table VI exhibits the amount of rain expressed in inches registered from half an hour before to half an hour after the hour named.

Table VII exhibits, for every hour in the day, the velocity of the wind and its direction in numbers (8=E, 16=S, 24=W, 32=N) as measured from the anemograms. The velocity is the number of miles traversed by the wind, from half an hour before to half an hour after the hour named. The direction is read off at the hour, except when the wind is very light and changeable, when the average direction during the hour is estimated, taking into account the velocity from different quarters. The direction is not noted when the velocity is below 1.5 miles an hour.

Table VIII exhibits, for every hour in the day, the mean velocity of the wind reduced to 4 and also to 2 directions, as well as the mean direction of the wind:—

The number of miles traversed by winds from directions 31, 32 and 1 and half the number of miles from 30 and 2 are termed (N). The number of miles from 3, 4 and 5 and half the number of miles from 2 and 6 are termed (NE), etc. We have then:—

$$N=(N) + (NE) \cos 45^\circ + (NW) \cos 45^\circ.$$

$$E=(E) + (NE) \cos 45^\circ + (SE) \cos 45^\circ.$$

etc

which are the components exhibited in this table.

Table IX exhibits the direction (to two points) and force (0-12) of the wind at Victoria Peak, and sea disturbance (0-9) at Cape d'Aguilar.

Table X exhibits the readings of the barometer reduced to 32° Fahrenheit, but not to sea level, and of the thermometers at Victoria Peak.

Table XI exhibits the relative humidity and tension of vapour at 10 a., 4 p. and 10 p. daily at the Observatory and at Victoria Peak.

Table XII exhibits the amount (0-10), name and direction whence coming, of the clouds. Where the names of upper and lower clouds are given, but only one direction, this refers to the lower clouds.

Table XIII exhibits the amount of rain measured at 10 a. and entered to preceding day at different stations and the duration of precipitation at the Observatory.

The following Annual Report is arranged as follows:—

Table I exhibits the mean height of the barometer at the Observatory and at the Peak expressed in inches, the latter being the mean of the 10 a., 4 p. and 10 p. observations, and the excess of the hourly values at the Observatory above the mean.

The mean diurnal range in the different months came out as follows: January, 0.111, February, 0.118, March, 0.094, April, 0.087, May, 0.086, June, 0.069, July, 0.067, August, 0.073, September, 0.082, October, 0.091, November, 0.112, December, 0.110. The average range was 0.092 or 0.004 larger than in the two previous years. The mean tension of aqueous vapour was smaller this year than during the previous years, and both these circumstances were no doubt due to the scarcity of rain.

The height of the rock on which the look-out at Victoria Peak is placed has been calculated from the mean of the barometric observations made in 1886 to be 1812 feet, and from the mean of all those made during the past three years to be 1813 feet, adopting for the first year the temperatures observed in Stevenson's screen reduced to the true air-temperature, which were as follows: January, 1884, 61° 5, February, 56° 7, March, 61° 5, April, 66° 5, May, 73° 4, June, 78° 7, July, 81° 5, August, 81° 3, September, 80° 4, October, 76° 6, November, 67° 2, December, 59° 9. Year, 1884, 70° 4.

Table II exhibits the mean temperature in degrees Fahrenheit at the Observatory and at the Peak, the latter being the mean of the 10 a., 10 p., maximum and minimum temperatures, and the excess of the hourly values at the Observatory above the mean. The hottest part of the day is between 1 p. and

2 p. and the coldest about 6 a. but the lowest temperature occurs a little earlier in summer than in winter. When the wind calms down after sunset the existence of a secondary maximum of temperature may occasionally be traced.

The daily range of temperature is smaller in summer than in winter both owing to the greater amount of clouds and to the circumstance that the force of the wind is so small during the night in the former season. From table XVIII it is seen that the mean range was exactly the same at the Observatory as at the Peak.

The monthly extremes of temperature are exhibited in Table XVI and XVII. The ranges are about twice as great in winter as in summer.

The mean diurnal variability of temperature or the mean of the changes of mean daily temperature from day to day, irrespective of sign, during each month of 1885 was as follows: January, 2°.37, February, 2°.10, March, 2°.32, April, 2°.30, May, 1°.44, June, 1°.14, July, 1°.21, August, 1°.25, September, 0°.93, October, 1°.28, November, 2°.18, December, 2°.23. Year, 1885, 1°.73.

The mean diurnal variability of temperature in 1886 was as follows: January, 1°.85, February, 2°.15, March, 2°.86, April, 1°.63, May, 1°.63, June, 1°.59, July, 0°.98, August, 0°.92, September, 0°.81, October, 1°.13, November, 1°.49, December, 1°.64. Year, 1886, 1°.56.

It is seen from these figures that the temperature is twice as changeable in winter as in summer. Such absence of abrupt changes of temperature indicates in a temperate or arctic climate circumstances favourable to the health of the inhabitants but according to Dr. BORUS, the late distinguished climatologist, great constancy of temperature during the tropical summer may be considered the reverse of favourable.

Table III exhibits the relative humidity in percentage of saturation at the Observatory and at the Peak, the latter being the mean of the 10 a., 4 p. and 10 p. values, and the excess of the hourly values above the mean at the Observatory. The air is farthest from saturation about 1 p. and nearest saturation about midnight. The average relative humidity is registered at 8 a. and 6 p. The diurnal variation is greatest during the last month of the year when the air is comparatively dry.

Table IV exhibits the tension of vapour in inches of mercury at the Observatory and at the Peak, the latter being the mean of observations made at 10 a., 4 p. and 10 p., and the excess of the hourly values above the mean at the Observatory. The daily variation is small along the coast of China especially in summer but during the past year it was much greater than in 1885 and this was no doubt owing to the scarcity of rain. There was least vapour in the air at about 11 a. and most at 10 p.

The monthly ranges in vapour tension (at 10 a., 4 p. and 10 p. only) are exhibited in Tables XVI and XVII. They were twice as great in winter as in summer.

Table V exhibits the total number of hours of bright sunshine. The minimum occurred in February and the maximum in November. The duration of sunshine in percentage of possible duration was obtained as explained in last year's report.

Table VI exhibits the total hourly rainfall and Table VII, the number of hours during which rain was registered. It rains more often at sunrise than at sunset.

The approximate hourly intensity of the rainfall *i.e.* the hourly rainfall divided with the number of hours, during portion of which it rained, or heavy dew fell, was calculated from the Means and Totals in Tables VI and VII and shows, that the rain is heaviest shortly after noon and lightest about midnight:—

1 a. 0.048	7 a. 0.065	1 p. 0.121	7 p. 0.038
2 " .072	8 " .071	2 " .121	8 " .134
3 " .059	9 " .100	3 " .205	9 " .169
4 " .079	10 " .105	4 " .143	10 " .064
5 " .073	11 " .112	5 " .142	11 " .056
6 " .067	Noon .098	6 " .057	Midt. .071

The true mean hourly intensity was obtained from the data in Table XI and shows, that the rain was heaviest in July and lightest in February and November:—

January, 0.022, February, 0.012, March, 0.036, April, 0.057, May, 0.042, June, 0.073, July, 0.174, August, 0.144, September, 0.136, October, 0.108, November, 0.012, December, 0.033. Year, 0.074.

The rain was much lighter in the past year than in the two previous years, the rainfall being much smaller while its duration was about the same.

Table VIII exhibits the velocity of the wind expressed in miles per hour and the excess of the hourly values above the mean at the Observatory. The velocity at the Peak is computed from the force estimated there at 10 a., 4 p. and 10 p. The wind was strongest at both stations in February and lightest in September. The daily variation was explained in last year's report.

Table IX exhibits the mean direction of the wind at the Observatory and at the Peak. The excess of the hourly direction at the Observatory above the mean, expressed in degrees, is counted from North through East towards South. The results of the discussion of previous years' observations are confirmed. The daily variation was greatest in September. The two mean directions have been

obtained by simply taking the averages of the monthly directions in degrees without regard to force. This is perhaps, everything considered, the best method in this case and the two annual means directions for 1885 in last year's report ought therefore to be altered to E 10° S and E 29° S.

In order to further elucidate the diurnal variation in force and direction of the wind in this region,—a subject of great importance to the shipping,—the mean directions and forces in 1885 at Victoria Peak and South Cape, Formosa, have been calculated. The observations at the latter station are made carefully by the staff of the lighthouse. The observers stand about 150 feet above sea level, but as they are now and then guided in their estimations by the amount of sail carried by such vessels as happen to pass, the figures may be taken to represent the force of the wind at a lower level.

MEAN DIRECTION *and* FORCE of WIND at VICTORIA PEAK in 1885.

Month. 1885.	7 a.		10 a.		1 p.		4 p.		7 p.		10 p.	
	Direction	Force.	Direction	Force.	Direction	Force.	Direction	Force.	Direction	Force.	Direction	Force.
January,	E	4.2	E 5° N	4.3	E 1° N	4.1	E 1° N	4.1	E 5° N	4.2	E 5° N	4.3
February,	E 10° N	4.6	E 11° N	4.6	E 13° N	4.3	E 18° N	4.2	E 21° N	4.3	E 26° N	4.4
March,	E 13° S	4.3	E 13° S	4.3	E 14° S	4.0	E 16° S	3.9	E 15° S	4.2	E 15° S	4.2
April,	E 27° S	4.4	E 35° S	4.4	E 38° S	4.5	E 38° S	4.3	E 38° S	4.4	E 43° S	4.5
May,	S 33° E	4.3	S 28° E	4.3	S 29° E	4.4	S 21° E	4.3	S 22° E	4.4	S 18° E	4.5
June,	S 8° E	4.6	S 13° E	4.3	S 16° E	4.4	S 15° E	4.5	S 18° E	4.6	S 20° E	4.7
July,	S 30° W	4.4	S 30° W	4.4	S 28° W	4.4	S 18° W	4.3	S 19° W	4.5	S 19° W	4.6
August,	S 18° E	4.3	S 15° E	4.4	S 17° E	4.3	S 11° E	4.5	S 14° E	4.6	S 21° E	4.6
September,	E 11° S	3.9	E 7° S	3.9	E 35° S	4.1	E 32° S	4.0	E 31° S	4.1	E 32° S	4.2
October,	E 12° N	4.6	E 11° N	4.7	E 5° N	4.5	E 1° S	4.4	E 5° N	4.2	E 6° N	4.3
November,	E 20° N	4.2	E 18° N	4.3	E 19° N	4.0	E 23° N	3.9	E 18° N	3.9	E 20° N	3.9
December,	E 7° N	4.5	E 6° N	4.5	E 2° N	4.3	E 6° N	4.2	E 8° N	4.3	E 11° N	4.5
Year,	E 28° S	4.4	E 28° S	4.4	E 31° S	4.3	E 31° S	4.2	E 29° S	4.3	E 28° S	4.4

MEAN DIRECTION of WIND at SOUTH CAPE, FORMOSA, in 1885.

1885.	3 a.	6 a.	9 a.	Noon.	3 p.	6 p.	9 p.	Midt.	Mean.
January,	N 45° E	N 43° E	N 44° E	N 46° E	N 44° E	N 42° E	N 43° E	N 46° E	N 44° E
February,	N 42° E	N 42° E	N 52° E	N 53° E	N 44° E	N 44° E	N 45° E	N 42° E	N 45° E
March,	N 38° E	N 42° E	N 42° E	N 40° E	N 46° E	N 39° E	N 40° E	N 40° E	N 41° E
April,	E 31° N	E 26° N	E 27° N	E 26° N	E 9° N	E 20° N	E 23° N	E 26° N	E 23° N
May,	N 9° W	N 3° W	N 16° W	N 25° W	N 57° W	N 62° W	N 41° W	N 44° W	N 32° W
June,	E 27° N	E 7° N	E 24° S	E 23° S	S	W 18° S	S	E 15° N	E 42° S
July,	W 4° N	W 2° S	W 2° N	W 2° N	W 3° S	W 9° S	W 2° N	W 7° N	W
August,	W 9° N	W 32° N	W 25° N	W 12° N	W 3° S	W 4° N	W 8° S	W 10° N	W 10° N
September,	N 19° W	N 8° W	N 6° W	N 27° W	N 50° W	N 43° W	N 29° W	N 29° W	N 26° W
October,	N 42° E	N 43° E	N 45° E	N 43° E	N 43° E	N 42° E	N 42° E	N 43° E	N 43° E
November,	N 45° E	N 43° E	N 44° E	N 45° E	N 45° E	N 45° E	N 45° E	N 45° E	N 45° E
December,	N 43° E	N 43° E	N 43° E	N 44° E	N 42° E	N 42° E	N 42° E	N 43° E	N 43° E
Year,	N 24° E	N 26° E	N 29° E	N 27° E	N 22° E	N 20° E	N 20° E	N 22° E	N 26° E

MEAN FORCE of WIND at SOUTH CAPE, FORMOSA, in 1885.

1885.	3 a.	6 a.	9 a.	Noon.	3 p.	6 p.	9 p.	Midt.	Mean.
January,	3.1	3.2	3.0	2.9	2.6	2.6	2.7	3.0	2.9
February,	4.0	4.0	4.0	3.7	3.4	3.3	3.4	3.7	3.7
March,	3.1	3.2	3.0	2.8	2.8	2.7	2.8	3.1	2.9
April,	2.8	2.5	2.6	2.5	2.2	2.3	2.3	2.6	2.5
May,	2.6	2.6	2.7	2.8	2.6	2.5	2.1	2.5	2.6
June,	2.3	2.4	2.2	2.2	2.5	2.1	2.0	2.2	2.2
July,	2.8	2.9	2.8	2.8	2.9	3.0	2.7	2.8	2.8
August,	2.2	2.3	2.5	2.5	2.4	2.2	1.9	2.0	2.2
September,	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3
October,	3.5	3.6	4.1	3.9	3.7	3.6	3.7	3.7	3.7
November,	4.0	3.9	4.4	4.4	4.1	3.8	3.8	4.1	4.1
December,	3.7	3.6	3.7	3.7	3.6	3.5	3.5	3.7	3.6
Year,	3.0	3.1	3.1	3.0	2.9	2.8	2.8	3.0	3.0

At the height of Victoria Peak the direction of the wind is nearly constant throughout the day. Only a slight tendency to veer during the daytime can perhaps be traced. Above this altitude as remarked in last year's report there is possibly a slight tendency to variation in the opposite direction. The force of the wind is likewise very constant. It seems to be rather stronger at night than in the day time but this cannot be decided as yet with certainty.

In Southern Formosa the wind comes from NE without change in winter. This is the mean direction either diurnal or annual from October till March incl. On the contrary the direction appears to be very changeable in summer. With regard to the diurnal variation in the force the result published last year is confirmed. The maximum wind-force appears to be registered about sunrise and the minimum about sunset, but the variation is very small. The diurnal variation in the direction is scarcely perceptible but from the mean of the twelve months it would even appear as if the wind were backing a little during the day time, but the veering of the wind during the day time is very prominent in summer.

Table X exhibits the total distance traversed by, as well as the duration and average velocity of winds from bi-quadrantal points. The velocity is a maximum for E winds but there is slight secondary maximum for SW winds. The SW monsoon was not so strong as in 1885, which perhaps accounts for the scarcity of rain.

Table XI exhibits the rainfall measured at 10 a. and entered to preceding day. Each day on which not less than 0.01 inches was measured, is counted. The rainfall increases quickly with the height at least up to 2000 feet notwithstanding the far greater force of the wind up there. We have no means of observing what takes place at a still higher level but Indian Meteorologists have ascertained that the rain reaches a maximum somewhere about 4000 feet above the level of the sea in India.

Table XII exhibits particulars concerning different phenomena. Fog occurred frequently in March. Electric phenomena prevailed in August but the thunderstorms were not so violent as in 1885. Unusual visibility of distant objects was most noticeable in August. Dew was frequent during the early summer. Rainbows were seen oftener than usual owing to the lightness of the rains. Solar halos and coronas were most frequent in August.

Table XIII shows the frequency of clouds of different forms from observations made 8 times a day.

The number of days on which clouds were observed to be below 2000 feet was as follows:— January, 12, February, 16, March, 28, April, 25, May, 18, June, 16, July, 22, August, 15, September, 3, October, 5, November, 0, December, 3. The number of days on which they were observed to be below 1000 feet was as follows:—January, 3, February, 10, March, 21, April, 17, May, 7, June, 3, July, 5, August, 0, September, 0, October, 0, November, 0, December, 2.

The mean direction of the clouds (whence coming) was as follows:—

1886.	Lower.	Upper.	Cirrus.
January,	ESE	WSW	—
February,.....	E by S	W	—
March,.....	SE	W by S	—
April,	ESE by S	W by S	W
May,.....	SE by S	W by N	NW by W
June,	S	NNE	—
July,	S by E	NE by E	ENE
August,	SW by S	NE	NNE
September,	ESE	NW by W	W by S
October,	E	WSW	NW
November,	ESE	WSW	WSW
December,	ESE	W by S	—

Table XIV exhibits the amount of cloud, which is greatest in the morning and least in the evening as well as greatest in February and least in December.

Table XV exhibits the amount (0-9) of sea-disturbance; which is only about half as great in summer as in winter.

Table XVI and XVII exhibit the extremes of some of the meteorological elements.

Table XVIII exhibits the mean of the readings of the black bulb maximum thermometers in vacuo and the excess above the mean maximum air-temperatures, the average of the number of degrees by which the minimum air-temperature exceeded that indicated by a minimum thermometer freely exposed with its bulb one inch above the grass, the average weight of the aqueous vapour in the air and the diurnal range of temperature.

During the past year the indications of a bright bulb solar radiation maximum thermometer in vacuo have been registered daily at 10 p. The readings are exhibited below. This thermometer was compared at Kew with the readings of the black bulb in vacuo and with the maximum air-temperature. The results of the comparisons, about 360 in number, were kindly communicated to me by Mr. WHIPPLE, the Director of the Kew Observatory. Compared to the black bulb in vacuo the bright bulb reads possibly a little higher in Hongkong but the results in both places are really alike within the probable error of such observations. At Kew it was compared with the maximum temperature in the thermograph-screen and at Hongkong with the same but corrected by aid of eye-observations of thermometers rotated hourly. At Hongkong the bright-bulb thermometer readings exceed the air-temperature by a larger amount than at Kew owing to the smaller daily range of temperature. In England maximum air-temperature corresponding to a certain mean daily temperature is much greater than within the tropics.

BRIGHT BULB SOLAR RADIATION MAXIMUM THERMOMETER COMPARISONS.

Black Bulb.	Mean Difference.		Air Max.	Mean Difference.	
	Kew.	Hongkong.		Kew.	Hongkong.
80°	-18°	—	60°	+19°	+18°
90°	-24°	—	70°	+19°	+21°
100°	-28°	-26°	80°	+18°	+22°
110°	-30°	-31°	—	—	—
120°	-35°	-32°	—	—	—
130°	-36°	-34°	—	—	—
140°	—	-35°	—	—	—

SOLAR RADIATION BRIGHT BULB MAXIMUM TEMPERATURE IN 1886.

Date. 1886.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
1,	88.7	78.7	88.9	98.4	95.3	92.9	109.3	113.6	110.4	101.2	93.8	86.8
2,	86.7	62.3	88.3	100.6	97.6	90.3	111.0	109.3	108.1	106.1	94.3	86.1
3,	88.3	60.1	92.3	91.8	92.8	110.6	108.7	110.6	109.1	107.7	95.9	86.5
4,	86.4	58.1	82.8	99.4	105.8	97.3	110.6	112.2	110.4	94.0	97.4	89.6
5,	84.9	61.7	64.7	102.7	104.8	107.6	106.9	114.3	110.6	106.0	99.1	93.5
6,	77.4	90.4	83.9	99.0	101.7	108.1	109.8	117.6	107.9	103.7	102.2	92.7
7,	91.1	76.7	84.3	98.9	100.9	105.7	109.0	110.7	104.9	101.6	99.1	91.1
8,	90.2	78.9	89.3	98.3	97.7	105.2	87.3	114.3	109.1	103.3	95.0	86.7
9,	102.3	70.7	90.7	94.1	96.8	110.1	97.8	110.5	93.6	103.4	97.4	86.5
10,	90.6	57.7	77.8	101.3	77.8	111.2	112.6	110.8	106.0	107.7	100.0	89.8
11,	92.4	62.0	87.3	98.7	94.4	102.1	108.2	110.7	105.6	108.8	96.7	87.1
12,	79.6	71.5	89.4	86.8	103.9	99.8	106.8	110.1	110.7	106.2	94.9	83.1
13,	84.6	72.6	98.7	78.8	104.3	83.7	110.3	107.3	111.8	102.2	96.1	72.2
14,	91.2	80.8	82.8	79.3	110.0	92.7	104.6	109.8	110.2	103.9	93.4	91.9
15,	80.7	70.1	90.6	87.8	103.7	107.6	81.2	105.8	107.6	100.3	98.3	86.3
16,	76.3	70.3	89.7	73.4	107.5	109.2	90.3	99.8	111.9	103.7	96.1	84.6
17,	80.7	59.5	93.6	73.8	108.7	109.8	86.6	106.7	113.0	102.0	98.9	83.6
18,	79.7	57.2	91.4	91.2	108.2	105.8	82.6	110.6	112.6	102.3	96.3	90.7
19,	85.6	70.9	94.3	92.3	108.3	94.3	102.8	109.3	112.9	104.7	91.6	88.4
20,	80.2	78.8	91.5	83.7	110.5	106.6	106.1	113.2	106.6	107.8	96.0	89.8
21,	68.8	71.8	95.8	92.7	109.1	109.3	105.2	110.1	109.8	107.8	100.4	68.7
22,	76.3	81.4	93.9	79.8	87.7	106.3	106.6	110.8	113.3	99.6	96.3	58.9
23,	92.2	83.2	93.6	90.3	108.0	110.1	110.3	108.7	112.4	101.4	91.3	76.8
24,	66.7	73.4	65.2	91.6	109.6	110.7	107.9	111.3	103.3	99.8	89.8	87.4
25,	65.8	76.1	64.7	97.2	106.1	107.3	110.8	105.6	102.7	105.2	99.4	86.7
26,	63.1	88.7	76.0	91.6	103.5	111.1	109.1	79.4	103.8	104.3	96.5	85.6
27,	69.8	80.6	69.3	94.6	96.4	110.5	108.6	103.3	102.2	99.3	90.6	84.8
28,	67.2	77.7	83.8	72.7	102.4	112.9	112.7	106.0	101.8	101.3	94.2	85.2
29,	55.6	...	82.0	94.2	107.7	107.3	109.3	107.7	102.7	107.2	101.8	82.2
30,	78.3	...	90.2	102.3	111.2	108.3	108.6	110.4	102.0	98.3	89.7	69.6
31,	77.8	...	88.6	...	97.7	...	109.9	107.9	...	97.8	...	86.7
Mean,.....	80.6	72.2	85.7	91.2	102.3	104.8	104.6	108.7	107.6	103.2	96.1	84.5
Below Black Bulb,	31.4	26.1	31.5	30.6	35.5	33.8	33.5	36.7	36.3	35.3	36.4	32.6
Above Air Max.,..	18.5	15.8	20.0	18.9	22.7	21.5	20.4	23.2	23.3	23.0	23.1	20.3

Table XVIII exhibits also the height to which one must ascend in order to have the monthly mean temperature lowered one degree. The figures have been obtained from the data in Table II. Of course the fall of temperature within some ten or twenty feet of the ground is much greater especially on a hot day, but the effect of this is eliminated by observing the temperature at the same height above ground at both the upper and the lower station. The results obtained for each month during the past three years are exhibited below. The results for 1884 have been re-computed by aid of the true air-temperatures given above. It is seen that the height varies from about 200 to about 700 feet, but of course the results in individual instances vary to a somewhat greater extent, and this must often make the true astronomical refraction different from that obtained from the tables. Moreover the temperatures adopted in the construction of the tables may have been very different from the true air-temperatures and when subsequently these tables are used in other places to clear the observations from the effects of refraction, it is very doubtful whether the thermometers are exposed in exactly the same way as where the tables were constructed and even so the process is not strictly accurate if the true air-temperature is not exactly determined. It would therefore be of importance to have the rotating thermometer introduced in astronomical observatories. This instrument is particularly well adapted for occasionally determining the temperature during the night. No account is taken of the effect of the barometric gradient in the neighbourhood, which tends to make the value of the refraction different in different azimuths. The rates at which the temperature falls with increasing height in a cyclone and in an anticyclone are different. For these reasons the refraction is one of the most uncertain elements in practical astronomy.

	1884.	1885.	1886.	Mean.
January,	280	224	299	268
February,	289	251	294	278
March,	533	397	656	529
April,	437	416	406	420
May,	341	275	294	303
June,	271	275	258	268
July,	251	294	267	271
August,	255	328	280	288
September,	262	310	280	284
October,	258	294	280	277
November,	271	284	234	263
December,	258	322	222	267
Mean,	309	306	314	310

The speed with which the temperature falls on ascending in the atmosphere is seen to be a function of the humidity. The change is much smaller in damp than in dry weather.

TABLE I.
Mean Height of the Barometer at the Observatory and at the Peak for each month in the Year 1886, and Mean Diurnal Variation at the Observatory.

Month.	Mean.												Mean.												
	1 a.	2 a.	3 a.	4 a.	5 a.	6 a.	7 a.	8 a.	9 a.	10 a.	11 a. Noon.	1 p.		2 p.	3 p.	4 p.	5 p.	6 p.	7 p.	8 p.	9 p.	10 p.	11 p.	Midt.	Observatory.	Peak.
January.....	+011	+002	-005	-011	-011	.000	+016	+036	+053	+057	+047	+020	-016	-038	-054	-054	-034	-020	-002	+010	+016	+019	+016	30.040	28.245
February.....	+012	+002	-005	-011	-009	+003	+022	+039	+053	+058	+047	+024	-011	-037	-054	-060	-041	-028	-006	+007	+014	+017	+014	30.068	28.255
March.....	+008	-006	-021	-028	-023	-008	+011	+035	+046	+051	+043	+024	-002	-023	-039	-043	-041	-029	-002	+015	+024	+022	+022	29.954	28.192
April.....	+003	-011	-023	-023	-014	-005	+012	+029	+040	+044	+037	+023	+001	-019	-032	-043	-041	-001	-001	+014	+022	+023	+016	29.845	28.111
May.....	+001	-013	-018	-016	-009	+006	+021	+033	+030	+043	+037	+026	+007	-012	-029	-042	-035	-026	-009	+004	+015	+014	+005	29.801	28.098
June.....	+003	-008	-013	-015	-011	+002	+015	+023	+030	+030	+026	+016	+003	-013	-026	-036	-030	-015	+003	+017	+030	+027	+017	29.677	27.986
July.....	+002	-010	-018	-019	-013	-004	+009	+021	+030	+033	+028	+017	+001	-016	-028	-039	-040	-021	.000	+021	+027	+019	+016	29.642	27.956
August.....	+001	-008	-015	-017	-011	-001	+015	+030	+037	+038	+031	+014	-007	-025	-039	-044	-041	-029	+003	+021	+025	+022	+015	29.788	28.039
September.....	+001	-012	-020	-021	-014	.000	+017	+034	+045	+045	+033	+012	-012	-033	-044	-046	-040	-030	-014	+008	+020	+024	+016	29.874	28.152
October.....	+004	-006	-009	-010	-003	+012	+031	+045	+057	+053	+032	+006	-024	-045	-055	-054	-045	-033	-014	+003	+015	+019	+018	30.026	28.270
November.....	+014	+004	-003	-005	-005	+007	+023	+039	+051	+050	+038	+010	-026	-048	-059	-058	-047	-032	-015	+001	+011	+019	+014	30.086	28.290
Means.....	+005	-006	-014	-016	-011	+001	+016	+032	+042	+044	+036	+017	-007	-027	-040	-046	-043	-032	-019	.000	+013	+022	+021	29.868	28.131

TABLE II.
Mean Temperature at the Observatory and at the Peak for each Month in the Year 1886, and Mean Diurnal Variation at the Observatory.

Month.	Mean.												Mean.												
	1 a.	2 a.	3 a.	4 a.	5 a.	6 a.	7 a.	8 a.	9 a.	10 a.	11 a. Noon.	1 p.		2 p.	3 p.	4 p.	5 p.	6 p.	7 p.	8 p.	9 p.	10 p.	11 p.	Midt.	Observatory.	Peak.
January.....	-09	-12	-16	-19	-19	-21	-22	-16	-06	+06	+14	+19	+23	+26	+24	+20	+13	+04	00	-01	-03	-06	-10	58.7	53.0
February.....	-08	-09	-12	-13	-15	-15	-16	-11	-04	+05	+09	+15	+17	+18	+16	+14	+10	+04	+02	+02	00	-01	-02	53.6	47.8
March.....	-09	-13	-14	-15	-18	-17	-17	-11	-02	+08	+12	+20	+24	+21	+19	+16	+09	-01	-05	-03	-03	-04	-04	62.0	59.4
April.....	-07	-09	-10	-12	-12	-14	-11	-04	+03	+09	+15	+14	+15	+15	+14	+10	+05	+01	-01	-02	-02	-03	-05	69.4	65.2
May.....	-14	-15	-17	-20	-21	-20	-12	-03	+07	+12	+17	+26	+27	+25	+24	+18	+11	+04	-03	-05	-06	-08	-09	75.7	69.9
June.....	-12	-14	-15	-16	-16	-15	-07	+02	+07	+13	+14	+15	+20	+19	+18	+12	+09	+04	-03	-07	-07	-08	-09	79.8	73.2
July.....	-13	-14	-14	-17	-17	-18	-10	-01	+06	+11	+16	+20	+23	+23	+21	+16	+11	+05	-02	-06	-09	-11	-12	80.6	74.2
August.....	-14	-16	-16	-19	-19	-19	-12	-02	+10	+19	+23	+26	+27	+27	+27	+24	+13	+03	-05	-08	-11	-12	-14	81.2	75.1
September.....	-22	-24	-26	-26	-27	-27	-18	-07	+09	+22	+26	+34	+36	+37	+35	+27	+16	+05	-02	-06	-12	-14	-20	79.7	73.6
October.....	-14	-15	-18	-20	-21	-21	-15	-03	+04	+15	+19	+25	+27	+27	+25	+20	+12	+01	-03	-06	-08	-10	-15	76.8	70.7
November.....	-13	-17	-21	-25	-28	-28	-27	-13	+01	+13	+24	+30	+32	+32	+29	+23	+13	+06	+03	-01	-04	-05	-07	69.0	61.7
December.....	-14	-18	-20	-22	-25	-25	-28	-28	-16	-01	+14	+23	+30	+35	+36	+31	+23	+05	+01	-02	-03	-06	-10	59.8	52.1
Means.....	-12	-15	-17	-19	-20	-20	-16	-07	+03	+12	+18	+23	+25	+25	+24	+19	+11	+03	-01	-04	-05	-07	-09	70.5	64.7

TABLE III.

Mean Humidity at the Observatory and at the Peak for each Month in the Year 1886, and Mean Diurnal Variation at the Observatory.

Month.	Mean.												Peak.													
	1 a.	2 a.	3 a.	4 a.	5 a.	6 a.	7 a.	8 a.	9 a.	10 a.	11 a.	Noon.		1 p.	2 p.	3 p.	4 p.	5 p.	6 p.	7 p.	8 p.	9 p.	10 p.	11 p.	Midt.	Observatory.
January,	+5	+4	+4	+3	+3	+3	+4	+3	-1	-5	-6	-7	-7	-8	-7	-5	-2	0	+3	+2	+3	+4	+4	+5	67	84
February,	+4	+1	+2	+2	+1	+1	+2	0	-1	-2	-3	-5	-6	-6	-6	-4	-2	0	+1	+1	+2	+4	+4	+5	75	89
March,	+2	+2	+2	+2	+2	+2	+2	0	0	-3	-5	-4	-7	-6	-4	-2	+1	+1	+1	+2	+3	+3	+3	+3	87	91
April,	+3	+3	+3	+3	+3	+3	+3	0	-2	-3	-5	-4	-4	-4	-4	-2	0	0	+1	+2	+3	+4	+4	+4	81	94
May,	+4	+4	+4	+4	+4	+4	+3	-1	-3	-5	-7	-8	-8	-7	-6	-4	-1	-2	+2	+3	+3	+3	+4	+4	83	92
June,	+3	+3	+3	+3	+3	+3	+3	-1	-2	-4	-5	-5	-6	-6	-6	-5	-4	-2	+2	+3	+3	+3	+4	+4	83	93
July,	+4	+4	+4	+4	+4	+4	+4	+1	0	-2	-3	-5	-5	-5	-4	-3	-2	-1	+1	+2	+2	+4	+4	+5	82	93
August,	+5	+5	+5	+5	+5	+5	+5	+2	-2	-6	-7	-7	-8	-7	-8	-4	-1	+1	+1	+3	+4	+4	+5	+5	79	79
September,	+7	+7	+7	+6	+5	+4	+2	-2	-7	-9	-10	-11	-10	-9	-9	-7	0	+2	+2	+5	+7	+6	+7	+7	67	84
October,	+5	+4	+5	+5	+5	+4	+2	-2	-4	-7	-7	-8	-8	-8	-7	-5	-3	0	+2	+2	+3	+3	+4	+4	72	84
November,	+7	+6	+5	+4	+4	+3	+2	-2	-5	-7	-9	-10	-10	-10	-8	-4	-3	-1	+3	+5	+6	+7	+6	+7	59	72
December,	+6	+7	+7	+5	+2	0	-1	-5	-8	-10	-11	-12	-10	-10	-7	-4	0	+2	+4	+5	+6	+7	+10	+10	55	67
Means,	+5	+4	+4	+4	+4	+3	+2	-1	-3	-5	-6	-7	-7	-7	-6	-5	-3	0	+2	+3	+4	+4	+5	+5	75	86

TABLE IV.

Mean Tension of Aqueous Vapour at the Observatory and at the Peak for each Month in the Year 1886, and Mean Diurnal Variation at the Observatory.

Month.	Mean.												Peak.													
	1 a.	2 a.	3 a.	4 a.	5 a.	6 a.	7 a.	8 a.	9 a.	10 a.	11 a.	Noon.		1 p.	2 p.	3 p.	4 p.	5 p.	6 p.	7 p.	8 p.	9 p.	10 p.	11 p.	Midt.	Observatory.
January,	+0.14	+0.06	-0.02	-0.06	-0.06	-0.09	-0.08	-0.02	-0.12	-0.15	-0.14	-0.12	-0.09	-0.07	-0.07	-0.02	+0.04	+0.05	+0.14	+0.11	+0.18	+0.17	+0.16	+0.12	0.358	0.351
February,	+0.04	+0.03	-0.07	-0.06	-0.10	-0.10	-0.09	-0.08	-0.06	-0.05	-0.03	-0.05	-0.05	-0.06	-0.06	+0.02	+0.02	+0.04	+0.10	+0.10	+0.12	+0.15	+0.16	+0.17	0.317	0.311
March,	-0.01	-0.08	-0.11	-0.12	-0.17	-0.16	-0.11	-0.04	-0.02	-0.04	-0.01	+0.09	+0.04	+0.04	+0.06	+0.02	+0.07	+0.01	-0.09	-0.03	+0.10	+0.13	+0.14	+0.14	0.493	0.489
April,	+0.08	+0.04	-0.02	-0.07	-0.07	-0.15	-0.12	-0.07	-0.05	-0.02	-0.07	-0.06	-0.04	-0.04	-0.02	+0.03	+0.01	+0.01	+0.03	+0.05	+0.09	+0.10	+0.09	+0.03	0.627	0.597
May,	+0.02	+0.05	-0.06	-0.09	-0.04	-0.02	-0.01	-0.06	-0.03	-0.14	-0.15	-0.08	-0.05	-0.11	-0.06	-0.02	-0.00	+0.01	+0.01	+0.10	+0.13	+0.15	+0.15	+0.15	0.753	0.683
June,	+0.00	-0.01	-0.00	-0.07	-0.03	-0.00	+0.10	+0.07	+0.09	+0.06	+0.09	+0.01	+0.08	+0.08	+0.02	+0.00	-0.07	-0.04	-0.07	-0.05	+0.06	+0.08	+0.00	+0.06	0.844	0.770
July,	-0.01	-0.04	-0.04	-0.09	-0.04	-0.03	+0.09	+0.05	+0.09	+0.06	+0.09	+0.01	+0.08	+0.08	+0.13	+0.02	-0.10	-0.07	-0.08	-0.07	-0.05	-0.01	-0.03	-0.02	0.867	0.802
August,	+0.04	+0.03	-0.02	-0.03	-0.03	+0.02	+0.11	+0.10	+0.03	-0.10	-0.11	+0.07	+0.02	+0.03	-0.13	+0.02	-0.10	-0.01	-0.12	+0.01	+0.09	+0.06	+0.04	+0.03	0.874	0.813
September,	+0.20	+0.15	+0.14	+0.06	-0.09	-0.13	-0.13	-0.27	-0.41	-0.43	-0.52	-0.35	-0.26	-0.19	-0.13	-0.06	+0.06	+0.16	+0.26	+0.39	+0.43	+0.38	+0.35	+0.29	0.687	0.667
October,	+0.23	+0.13	+0.09	+0.07	0.00	-0.10	-0.11	-0.16	-0.21	-0.25	-0.26	-0.18	-0.09	-0.09	-0.02	0.00	+0.07	+0.09	+0.15	+0.15	+0.16	+0.13	+0.16	+0.13	0.673	0.643
November,	+0.29	+0.18	+0.11	-0.03	-0.11	-0.18	-0.23	-0.28	-0.31	-0.35	-0.36	-0.32	-0.31	-0.25	-0.17	0.00	+0.01	+0.07	+0.27	+0.36	+0.43	+0.44	+0.37	+0.32	0.425	0.413
December,	+0.22	+0.20	+0.17	+0.03	-0.14	-0.24	-0.28	-0.33	-0.35	-0.36	-0.37	-0.36	-0.23	-0.17	-0.07	+0.04	+0.15	+0.17	+0.22	+0.27	+0.28	+0.34	+0.39	+0.38	0.286	0.284
Means,	+0.10	+0.05	+0.01	-0.04	-0.07	-0.10	-0.08	-0.10	-0.11	-0.15	-0.16	-0.12	-0.08	-0.07	-0.05	0.00	+0.01	+0.04	+0.09	+0.14	+0.17	+0.18	+0.16	+0.15	0.597	0.569

TABLE V.

Total Hourly Duration of Sunshine for each Month in the Year 1886, and Total Monthly Duration of Sunshine.

Month.	6 a.	7 a.	8 a.	9 a.	10 a.	11 a.	Noon.	1 p.	2 p.	3 p.	4 p.	5 p.	6 p.	Total Record.	Total Possible.	Percentage of Possible.
January, .....	...	3.2	10.6	13.3	13.7	14.5	15.2	16.0	14.7	13.9	12.7	4.3	...	132.1	311	42
February, .....	...	1.2	3.3	2.2	3.1	3.5	3.4	4.3	3.3	3.4	1.8	0.7	...	30.2	294	10
March, .....	...	...	2.9	4.6	7.8	10.4	6.8	8.1	6.1	6.2	6.7	3.1	...	62.4	344	18
April, .....	...	2.9	6.2	9.5	8.9	10.0	13.0	11.8	12.0	11.2	9.9	4.4	0.8	100.6	353	28
May,	1.1	9.5	12.4	13.0	14.2	17.0	18.8	18.5	19.5	18.2	16.8	14.9	5.4	179.3	380	47
June,	1.7	11.0	12.4	15.1	16.9	15.0	13.0	14.1	14.6	14.0	12.1	11.3	4.7	155.9	376	41
July,	1.7	11.3	13.9	15.9	17.5	18.5	18.6	17.6	19.6	17.7	13.6	12.0	3.4	181.3	384	47
August,	2.5	13.7	18.0	22.0	19.3	18.3	15.3	18.7	21.0	18.1	17.7	13.8	3.5	201.9	370	55
September,	0.4	15.4	20.6	24.1	25.8	25.5	25.6	23.4	22.5	24.2	21.3	16.0	0.9	245.7	340	72
October, .....	...	8.4	16.4	18.4	21.4	22.7	24.3	25.0	24.0	24.7	22.7	17.4	...	225.4	331	68
November, .....	...	9.1	24.7	26.7	27.5	28.3	27.8	27.9	27.9	27.8	25.8	14.5	...	268.0	306	88
December, .....	...	7.2	23.1	24.3	24.1	24.1	24.2	23.8	23.1	22.0	22.2	9.7	...	227.8	307	74
Sums,	7.4	92.9	164.5	189.1	200.2	207.5	206.0	209.2	208.3	201.4	183.3	122.1	18.7	2010.6	4096	49

TABLE VI.
Total Hourly Rainfall for each Month in the Year 1886.

Month.	1 a.	2 a.	3 a.	4 a.	5 a.	6 a.	7 a.	8 a.	9 a.	10 a.	11 a.	Noon.	1 p.	2 p.	3 p.	4 p.	5 p.	6 p.	7 p.	8 p.	9 p.	10 p.	11 p.	Midt.	Sum.
January,	0.170	0.260	0.080	0.070	0.035	0.070	0.095	0.075	0.010	0.210	0.185	0.075	0.050	0.155	0.025	0.155	0.005	0.005	0.070	0.015	0.025	0.175	0.075	0.075	2.015
February,	0.045	0.015	0.095	0.025	0.220	0.025	0.015	0.015	0.035	0.015	0.110	0.005	0.070	0.100	0.040	0.040	0.045	0.040	0.070	0.040	0.260	0.235	0.070	0.085	1.535
March,	0.035	0.150	0.075	0.090	0.120	0.170	0.090	0.015	0.065	0.085	0.110	0.005	0.055	0.080	0.025	0.145	0.125	0.125	0.040	0.040	0.030	0.240	0.360	0.115	2.590
April,	0.025	0.010	0.405	0.565	0.065	0.030	0.025	0.025	0.065	0.085	0.870	1.040	0.970	0.555	0.110	0.180	0.105	0.210	0.100	0.070	0.010	0.010	0.165	0.015	5.675
May,	0.080	0.080	0.105	0.135	0.115	0.090	0.085	0.150	0.095	0.055	0.115	0.095	0.035	0.040	0.385	0.050	0.015	0.010	0.005	0.010	0.020	0.005	0.005	0.005	1.775
June,	0.270	0.480	0.165	0.520	0.850	0.745	0.400	0.870	1.040	0.560	0.420	0.800	0.705	0.295	0.675	0.545	0.195	0.230	0.115	0.390	0.135	0.125	0.055	0.040	10.625
July,	0.940	0.360	0.915	0.980	1.195	1.075	1.030	0.720	1.275	1.680	0.365	0.485	0.630	1.255	3.855	2.985	2.800	0.610	0.370	0.755	1.430	1.175	0.515	0.835	28.235
August,	0.025	0.360	0.050	0.275	0.430	0.600	0.400	0.635	0.530	1.285	0.950	0.605	0.945	0.225	0.060	0.020	0.020	0.020	0.020	0.125	0.335	0.155	0.240	0.815	9.080
September,	0.095	0.030	0.230	0.230	0.145	0.105	0.090	0.010	0.020	0.010	0.130	0.005	0.010	0.040	0.215	0.055	0.005	0.005	0.010	0.595	1.270	0.025	0.055	0.005	2.995
October,	0.010	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	1.095	1.015	0.005	0.005	0.005	2.815
November,	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.050
December,	0.045	0.070	0.005	0.015	0.060	0.130	0.075	0.040	0.035	0.005	0.035	0.055	0.140	0.125	0.015	0.175	0.035	0.035	0.145	0.105	0.095	0.090	0.210	0.070	1.775
Mean,.....	0.137	0.157	0.154	0.250	0.273	0.258	0.191	0.212	0.274	0.334	0.262	0.262	0.282	0.222	0.530	0.322	0.307	0.109	0.072	0.269	0.383	0.176	0.155	0.172	5.764

TABLE VII.
Number of Hours, during portion of which it rained, for each Month in the Year 1886.

Month.	1 a.	2 a.	3 a.	4 a.	5 a.	6 a.	7 a.	8 a.	9 a.	10 a.	11 a.	Noon.	1 p.	2 p.	3 p.	4 p.	5 p.	6 p.	7 p.	8 p.	9 p.	10 p.	11 p.	Midt.	Total.
January,	1	2	2	3	1	2	4	4	2	2	2	2	1	1	2	2	1	1	1	1	1	1	3	2	41
February,	4	1	3	1	4	1	2	2	...	3	...	...	1	2	2	2	2	2	2	2	4	5	3	5	51
March,	4	3	2	...	2	3	...	1	...	5	2	1	...	...	2	3	2	2	3	2	3	4	5	3	54
April,	3	1	2	2	1	2	3	...	4	7	4	7	6	4	6	5	3	2	2	2	...	1	3	3	73
May,	3	1	1	2	3	4	3	3	2	1	1	1	2	1	2	2	2	2	1	1	1	1	...	...	42
June,	6	7	6	8	10	6	7	8	7	6	5	7	6	6	6	4	6	7	4	5	4	4	3	...	138
July,	6	6	11	8	14	16	7	11	11	9	8	6	8	5	5	7	6	3	6	5	6	9	7	7	187
August,	3	2	1	4	4	6	4	3	3	3	5	5	3	3	2	...	...	1	2	2	3	3	4	4	69
September, .....	...	2	2	3	1	2	...	1	1	...	1	...	1	1	1	...	...	1	...	1	4	1	2	...	25
October,	1	...	1	1	2	2	2	1	2	1	...	1	...	...	...	...	...	1	1	2	1	1	1	1	24
November,	1	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	6
December,	2	1	1	3	2	2	2	2	1	1	...	2	1	2	3	2	2	1	2	1	1	2	2	1	39
Total,.....	34	26	32	38	45	46	35	36	33	38	28	32	28	22	31	27	26	23	23	24	27	33	33	29	749

TABLE VIII.
Mean Hourly Velocity of the Wind at the Observatory and at the Peak for each Month in the Year 1886, and Mean Diurnal Variation at the Observatory.

Month.	Mean.												Peak.													
	1 a.	2 a.	3 a.	4 a.	5 a.	6 a.	7 a.	8 a.	9 a.	10 a.	11 a.	Noon.		1 p.	2 p.	3 p.	4 p.	5 p.	6 p.	7 p.	8 p.	9 p.	10 p.	11 p.	Midt.	Observatory.
January,	-0.2	-0.3	0.0	0.0	-0.5	-1.4	-1.1	-0.8	+0.1	+0.8	+1.5	+1.4	+1.0	+1.0	+0.7	-0.4	-1.5	-1.8	-1.2	-0.4	+0.7	+0.8	0.0	13.7	26	
February,	+0.6	+0.4	-0.8	-0.9	-0.5	-0.5	-1.5	-1.4	-0.1	+0.8	+1.6	+0.4	+1.4	+1.6	+0.9	+0.2	-0.8	-2.2	-1.2	0.0	+0.3	+0.4	-0.1	16.5	29	
March,	-1.0	-0.7	-1.1	-0.9	+0.8	+0.1	+1.1	+1.2	+1.7	+2.0	+2.8	+2.0	+2.2	+1.5	+1.1	+0.4	+0.6	-0.6	-1.5	-2.8	-2.0	-2.6	-2.5	16.1	26	
April,	-2.3	-1.6	-0.8	-1.8	-1.1	+1.3	+1.9	+2.1	+2.4	+2.1	+3.1	+2.6	+1.8	+1.4	+0.8	0.0	+0.2	-0.7	-1.6	-2.0	-1.4	-1.9	-2.2	16.5	27	
May,	-0.9	-2.1	-1.7	-0.9	-1.6	-1.5	-0.7	+0.1	+0.8	+1.8	+2.7	+2.5	+2.4	+2.1	+2.5	+2.0	+0.6	-0.5	-1.3	-1.2	-1.6	-1.0	-0.9	14.4	26	
June,	-0.4	-0.5	-1.0	-2.3	-1.7	-1.5	-1.2	+0.3	+0.2	+1.1	+1.9	+2.3	+3.2	+2.4	+1.7	0.0	-0.7	-0.7	-1.5	-0.6	-0.2	-1.2	-0.9	11.3	27	
July,	-1.7	-1.9	-1.7	-0.5	-0.2	+0.1	-1.6	-1.1	+0.2	+0.6	+1.9	+1.4	+2.9	+2.2	+2.7	+2.0	+0.9	+0.2	-0.6	-1.5	-2.3	-2.2	-1.6	11.3	27	
August,	-1.7	-1.5	-1.1	-1.7	-2.1	-2.5	-2.9	-2.3	0.0	+1.4	+3.3	+3.2	+3.4	+4.5	+3.9	+3.6	+3.1	+1.2	-0.6	-1.6	-2.3	-2.1	-2.5	9.3	24	
September,	-1.7	-1.3	-1.4	-1.4	-0.7	-1.7	-1.3	+0.8	+1.5	+1.8	+1.6	+2.9	+2.7	+3.0	+3.4	+2.5	+0.8	-0.2	-1.4	-1.5	-1.8	-2.3	-1.5	9.1	23	
October,	-0.5	-0.6	-0.9	-1.6	-2.1	-1.4	-1.2	+0.6	+0.8	+1.9	+3.2	+2.7	+2.3	+1.8	+1.6	+0.5	0.0	-1.1	-1.4	-2.1	-1.8	+0.3	+0.1	-0.5	14.9	25
November,	+0.1	-0.1	-0.4	-1.0	-0.4	-1.1	-2.0	-0.7	-0.3	+1.0	+0.9	+2.8	+2.0	+0.9	+1.5	+1.1	-0.3	-1.8	-2.2	-0.9	+0.3	+1.1	+1.2	15.3	25	
December,	+0.1	0.0	-0.3	-0.6	+0.5	-0.4	-0.4	+0.6	+2.2	+3.2	+1.9	+1.3	-0.1	-0.3	+0.7	+0.4	-1.0	-2.3	-2.2	-1.7	-0.6	-0.5	+0.1	0.0	14.2	27
Mean,	-0.8	-0.8	-0.9	-1.1	-0.8	-0.9	-0.9	0.0	+0.8	+1.5	+2.2	+2.1	+1.9	+1.9	+1.4	+0.5	-0.7	-1.3	-1.5	-1.3	-0.9	-0.9	-1.0	13.5	26	

TABLE IX.
Mean Direction of the Wind at the Observatory and at the Peak for each Month in the Year 1886, and Mean Diurnal Variation at the Observatory.

Month.	Mean.												Peak.													
	1 a.	2 a.	3 a.	4 a.	5 a.	6 a.	7 a.	8 a.	9 a.	10 a.	11 a.	Noon.		1 p.	2 p.	3 p.	4 p.	5 p.	6 p.	7 p.	8 p.	9 p.	10 p.	11 p.	Midt.	Observatory.
January,	+5°	1°	-4°	-2°	-6°	-4°	-4°	-3°	-8°	+3°	-5°	+1°	+4°	+10°	+11°	+10°	+3°	1°	0°	+5°	0°	-5°	-7°	+1°	E 24° N	E 28° N
February,	-6°	-8°	-10°	-6°	-8°	-4°	1°	-3°	-5°	+3°	+2°	+5°	+7°	+11°	+2°	+4°	+5°	+5°	+7°	+3°	+2°	-1°	-5°	-3°	E 16° N	E 12° N
March,	-3°	-2°	-3°	0°	0°	-2°	0°	+2°	+1°	+1°	+3°	+3°	+4°	+4°	+4°	+5°	+1°	0°	-1°	-1°	-1°	0°	-1°	-2°	E 5° N	E 30° S
April,	-2°	-3°	-6°	-4°	0°	-2°	-1°	-1°	-2°	-6°	+1°	+2°	+5°	+8°	+7°	+10°	+7°	+2°	+1°	+3°	-1°	-1°	-1°	0°	E 1° N	E 20° S
May,	-4°	-9°	-4°	-5°	-6°	-5°	-1°	-1°	-2°	-2°	-10°	+1°	+2°	+8°	+9°	+10°	+5°	+2°	+1°	+3°	-14°	-15°	-5°	-6°	E 5° S	E 43° S
June,	-12°	+10°	+3°	+3°	+3°	+2°	+3°	+2°	+2°	-8°	-5°	-7°	+1°	+7°	+9°	+2°	+7°	+3°	-7°	-9°	-6°	-2°	-2°	-4°	E 44° S	E 38° S
July,	+3°	+13°	+19°	+22°	+22°	+26°	+32°	+28°	+10°	+11°	-19°	-5°	0°	-7°	-7°	-7°	-22°	-19°	-22°	-28°	-28°	-23°	-14°	-7°	E 41° S	E 98° S
August,	-21°	-14°	-27°	-31°	-31°	-32°	-30°	-42°	-40°	-19°	+3°	+29°	+30°	+38°	+34°	+34°	+28°	+25°	+24°	+22°	+10°	+2°	+2°	+1°	S 10° W	S 18° W
September,	+1°	-3°	-6°	-9°	-8°	-9°	-9°	-10°	-8°	0°	+4°	+6°	+8°	+10°	+11°	+10°	+8°	+9°	+3°	-2°	-3°	-5°	0°	+1°	E 19° N	E 13° N
October,	+0°	-4°	-15°	-20°	-27°	-26°	-23°	-24°	-10°	-8°	+4°	+13°	+17°	+23°	+20°	+14°	+12°	+11°	+11°	+8°	+8°	+6°	+8°	+4°	E 11° N	E 5° N
November,	-1°	-4°	-10°	-18°	-20°	-24°	-26°	-26°	-12°	-3°	+9°	+12°	+16°	+11°	+14°	+17°	+15°	+11°	+6°	+7°	+8°	+6°	+8°	+2°	E 28° N	E 16° N
December,	-3°	-2°	-3°	-5°	-6°	-6°	-5°	-7°	-7°	-2°	+1°	+6°	+9°	+11°	+9°	+9°	+6°	+3°	+2°	0°	-2°	-3°	-3°	-2°	E 36° N	E 23° N
Mean,	-3°	-2°	-3°	-5°	-6°	-6°	-5°	-7°	-7°	-2°	+1°	+6°	+9°	+11°	+9°	+9°	+6°	+3°	+2°	0°	-2°	-3°	-3°	-2°	E 5° S	E 23° S

TABLE X.

Total Distance traversed by, as well as Total Duration and Average Velocity of Winds from eight different points of the Compass during the Year 1886.

WIND.	Total Distance.	Duration.	Velocity.
	Miles.	Hours.	Miles per Hour.
N,	12683	1011	12.5
NE,	11658	887	13.1
E,	72495	4219	17.2
SE,	5658	538	10.5
S,	5227	520	10.1
SW,	6044	504	12.0
W,	3342	431	7.8
NW,	1418	214	6.6
Calm,	208	436	0.5
Sums and Mean,	118733	8760	13.5

TABLE XI.

Total Rainfall, Duration of Rain, and Number of Days on which Rain was collected at the Observatory, Stone Cutters' Island and the Peak for each month of the Year 1886.

Month.	OBSERVATORY.			STONE CUTTERS' ISLAND.		VICTORIA PEAK.	
	Amount. <i>ins.</i>	Duration. <i>hrs.</i>	Days.	Amount. <i>ins.</i>	Days.	Amount. <i>ins.</i>	Days.
January,	2.015	93	10	2.05	8	2.67	6
February,	1.535	127	9	1.40	2	2.53	7
March,	2.590	72	10	1.26	4	3.25	6
April,	5.680	99	12	3.77	9	6.36	9
May,	3.560	85	7	2.59	4	4.97	6
June,	8.875	122	21	10.02	18	17.34	18
July,	28.320	163	25	28.62	24	31.02	17
August,	8.955	62	14	8.12	14	10.48	8
September,	2.995	22	8	3.28	8	4.42	4
October,	2.815	26	7	3.11	5	1.71	1
November,	0.050	4	2	...	0	...	0
December,	1.775	54	4	1.16	3	2.66	3
Year,	69.165	929	129	65.38	99	87.41	85

TABLE XII.

Total Number of Days on which Different Meteorological Phenomena were noted and Total Number of Thunderstorms during each Month of the Year 1886.

Month.	Fog.	Electric Phenomena.	Lightning.	Thunder.	Thunderstorms.	Unusual Visibility.	Dew.	Rainbows.	Lunar Halo.	Lunar Corona.	Solar Halo.	Solar Corona.
January,	1	...	...	...	...	1	...	...	1	...	1	...
February,	3	...	...	...	...	2	...	...	...	...	...	...
March,	8	5	5	5	4	...	3	...	1	...	2	1
April,	4	8	5	7	2	2	6	...	...	...	2	...
May,	1	9	9	1	1	4	9	...	...	2	...	...
June, .....	...	12	12	3	1	3	8	1	6	6	3	...
July, .....	...	20	19	9	4	1	2	3	4	3	8	2
August, .....	...	24	20	12	3	7	6	4	4	...	7	8
September,	3	9	9	5	3	5	7	1	1	5	2	2
October,	2	3	3	1	1	3	5	2	1	...	1	1
November, .....	...	...	...	...	...	3	2	...	...	3	...	...
December,	1	...	...	...	...	3	2	...	...	...	...	...
Sums,	23	90	82	43	19	34	50	11	18	19	26	14

TABLE XIII.

Total Number of Times that Clouds of different forms were observed in each Month of the Year 1886.

Month.	c.	c-str.	c-cum.	sm-cum.	cum.	cum-str.	str.	R-cum.	cum-nim.	nim.
January, .....	...	19	9	22	63	2	11	8	53	37
February, .....	...	2	...	17	67	...	40	13	64	52
March, .....	...	10	4	10	99	...	19	17	64	47
April,	3	14	5	16	116	...	11	6	69	46
May,	3	25	25	28	157	...	9	4	56	31
June,	3	46	27	23	119	11	8	8	49	53
July,	17	59	31	10	136	8	12	4	54	60
August,	14	78	34	31	176	15	7	6	44	26
September,	8	41	46	46	117	3	7	3	20	9
October,	4	6	19	14	140	...	13	9	34	13
November,	2	32	19	18	114	...	3	3	10	...
December,	1	20	4	10	47	...	11	2	16	22
Sums,	55	352	223	245	1351	39	151	83	533	396

TABLE XIV.

Mean Percentage of Clouded Sky and Mean Diurnal Variation in each Month of the Year 1886.

Month.	1 a.	4 a.	7 a.	10 a.	1 p.	4 p.	7 p.	10 p.	Mean.
January,.....	- 1	+ 3	+ 5	+ 1	- 1	- 1	- 3	- 2	65
February,	+ 3	+ 2	+ 1	- 1	- 1	0	- 5	+ 3	96
March,	+ 3	- 1	+ 3	- 2	- 1	- 4	0	+ 1	92
April,	+ 6	- 1	+ 4	+ 1	- 1	- 3	- 3	- 1	82
May,	0	+ 4	+11	+ 3	0	- 9	- 5	- 5	71
June,	- 8	+ 2	+ 8	- 1	+ 6	+ 7	- 1	-15	76
July,	- 6	+ 5	+ 1	+ 1	+ 2	+10	+ 6	-19	76
August,	+ 1	0	- 4	- 5	+ 1	+14	+ 7	-11	71
September,...	- 3	+13	+ 3	-12	+ 1	- 1	- 6	+ 2	51
October,.....	+ 6	+15	+ 9	- 4	- 6	- 9	- 9	0	48
November,...	+16	+16	- 3	-13	-11	- 8	- 8	+12	35
December, ...	+ 4	+ 7	- 2	- 5	- 1	- 1	- 2	+ 3	31
Mean,	+1.7	+5.4	+3.0	-3.1	-1.0	-0.4	-2.4	-2.7	66

TABLE XV.

Mean Sea Disturbance in each Month of the Year 1886.

Month.	4 a.	10 a.	4 p.	10 p.	Mean.
January,	2.3	2.6	2.1	2.5	2.4
February,	2.9	2.6	2.4	2.7	2.6
March,	1.7	2.1	1.6	1.5	1.7
April,	2.0	2.4	2.4	1.9	2.2
May,	1.6	1.9	1.8	1.7	1.8
June,	1.7	1.9	1.8	1.7	1.8
July,	1.5	1.7	1.7	1.6	1.6
August,	1.0	1.3	1.4	1.1	1.2
September,	1.4	2.0	1.6	1.4	1.6
October,	3.0	3.2	3.0	3.0	3.0
November,	2.7	3.1	2.8	2.8	2.9
December,	2.2	2.4	1.9	2.2	2.2
Mean,	2.0	2.3	2.0	2.0	2.1

TABLE XVI.

Monthly Extremes of the Principal Meteorological Elements registered at the Observatory during the Year 1886.

Month.	Barometer.		Temperature.		Humidity. Min.	Vapour Tension.		Rain.		Wind Velocity. Max.	Radiation.	
	Max.	Min.	Max.	Min.		Max.	Min.	Daily Max.	Hourly Max.		Sun Max.	Terr. Min.
1886.												
January,	30.331	29.686	74.4	41.8	24	0.549	0.102	0.775	0.210	41	142.0	38.3
February, .....	.272	.772	63.5	43.7	32	.499	.115	0.540	0.195	46	128.0	44.7
March, .....	.150	.683	76.3	52.0	64	.717	.310	0.960	0.675	46	132.4	50.7
April, .....	.017	.623	78.3	60.5	50	.823	.357	1.815	0.600	35	142.8	57.7
May,	29.997	.654	88.3	65.8	42	.911	.314	1.265	0.315	30	153.3	60.4
June, .....	.880	.426	87.8	70.7	57	.966	.638	2.595	0.630	37	153.3	68.5
July, .....	.823	.475	88.4	73.9	63	.957	.750	13.480	3.480	38	156.8	70.9
August, .....	.815	.403	89.7	74.7	62	.952	.755	4.230	1.240	34	156.8	73.3
September, .....	.951	.547	88.4	72.3	34	.896	.360	1.040	0.990	30	155.2	67.3
October,	30.117	.606	86.1	60.8	41	.869	.292	2.240	1.075	38	147.0	60.8
November, .....	.183	.720	80.0	58.1	26	.617	.194	0.030	0.025	38	142.2	53.1
December, .....	.260	.890	71.5	50.8	14	.487	.064	1.115	0.165	54	132.6	40.5
Year,	30.331	29.403	89.7	41.8	14	0.966	0.064	13.480	3.480	54	156.8	38.3

TABLE XVII.

Monthly Extremes of the Principal Meteorological Elements registered at Victoria Peak during the Year 1886.

Month,	Barometer.		Temperature.		Humidity. Min.	Vapour Tension.		Rain. Daily Max.	Wind Force. Max.	Radiation.	
	Max.	Min.	Max.	Min.		Max.	Min.			Sun Max.	Terr. Min.
1886.											
January,	28.493	27.957	61.8	36.0	57	0.531	0.150	1.56	6		31.5
February, .....	.448	28.057	62.0	36.7	66	.490	.168	1.12	7	129.4	33.7
March, .....	.345	27.983	68.8	47.8	57	.664	.265	1.15	7	138.0	45.3
April, .....	.251	.934	74.5	54.8	78	.726	.422	2.10	6	141.0	55.3
May, .....	.243	.970	78.0	61.3	71	.851	.432	3.89	7	146.4	58.1
June, .....	.146	.764	79.2	64.8	70	.882	.575	5.12	7	148.2	63.6
July, .....	.137	.823	81.0	69.8	82	.894	.706	14.56	7	151.0	67.2
August, .....	.105	.748	81.1	70.0	82	.882	.730	5.18	6	153.9	68.2
September, .....	.225	.889	81.5	66.1	56	.858	.469	1.98	7	152.9	59.4
October, .....	.329	.945	79.7	58.5	54	.812	.321	1.71	7	144.3	51.2
November, .....	.387	28.002	70.3	48.3	44	.564	.196	...	6	134.0	46.2
December, .....	.440	.119	65.3	40.1	24	.406	.100	1.46	7	124.2	41.2
Year,	28.493	27.748	81.5	36.0	24	0.894	0.100	14.56	7	153.9	31.5

TABLE XVIII.

Average Readings of Solar Radiation Thermometers and Excess over Maximum Thermometers as well as Excess of Minimum over Terrestrial Radiation Thermometers, Mean Weight of Aqueous Vapour in Troy Grains in each cubic foot of air and Diurnal Range of Temperature at the Observatory and at the Peak, and average height in feet at which the Temperature of the air was 1° lower during 1886.

Month.	Solar Radiation Thermometer.		Solar Radiation. Excess over Maximum.		Terrestrial Radiation.		Weight of Aqueous Vapour.		Diurnal Range.		Height of 1° Decrease.
	Observatory.	Peak.	Observatory.	Peak.	Observatory.	Peak.	Observatory.	Peak.	Observatory.	Peak.	
1886.											
January,	112.0	107.6	49.9	52.0	+3.3	+3.4	3.74	3.92	6.6	5.3	299
February,	98.3	97.2	41.9	46.0	+0.9	+1.9	3.53	3.51	5.6	7.0	294
March,	117.2	113.7	51.5	50.6	+0.9	+1.7	5.41	5.41	6.6	8.1	656
April,	121.8	114.9	49.5	46.7	+1.3	+1.6	6.80	6.52	5.4	5.6	406
May,	137.8	127.2	58.2	54.4	+1.9	+2.1	7.85	7.39	6.7	5.2	294
June,	138.6	130.0	55.3	53.8	+2.8	+1.2	8.96	8.29	6.4	5.8	258
July,	138.1	131.6	53.9	54.8	+2.7	+1.1	9.19	8.60	6.8	4.5	267
August,	145.4	136.2	59.9	58.4	+1.6	+1.8	9.26	8.72	7.6	4.9	280
September,	143.9	140.0	59.6	62.7	+4.1	+3.9	7.30	7.18	8.1	6.8	280
October,	138.5	131.6	58.3	56.9	+3.0	+2.7	7.19	6.95	6.3	7.2	280
November,	132.5	124.5	59.5	57.9	+4.4	+2.6	4.60	4.53	7.6	9.3	234
December,	117.1	114.1	52.9	56.7	+5.5	+0.2	3.16	3.18	8.5	12.1	222
Mean,	128.4	122.4	54.2	54.2	+2.7	+2.0	6.42	6.18	6.8	6.8	314

W. DOBERCK,
Government Astronomer.

Hongkong Observatory, 7th February, 1887.