



SUPPLEMENT

To the HONGKONG GOVERNMENT GAZETTE of 28th April, 1888.

GOVERNMENT NOTIFICATION.—No. 180.

The following Annual Report of the Director of the Observatory, for the year 1887, which was laid before the Legislative Council on the 27th instant, is published for general information.

By Command,

FREDERICK STEWART,
Colonial Secretary.

Colonial Secretary's Office, Hongkong, 28th April, 1888.

HONGKONG OBSERVATORY,
28th January, 1888.

SIR,—For the information of His Excellency the Governor I have the honour to forward my Annual Report for 1887.

2. The distribution of the work among the different officials connected with the Observatory has been the same as explained in last year's report. The amount of information collected here concerning typhoons during the past year has been much greater than during previous years, and this work has pressed heavily on the clerks, who are, however, at the same time learning to do their work more quickly.

3. The Eastern Extension and the Great Northern Telegraph Companies, who so courteously transmit the extensive system of meteorological messages free of charge through their cables, rendered the greatest assistance during the stormy weather in September last by giving me information about the changes in the weather setting in at those stations, which were nearest the centres of the typhoons. The *China Coast Meteorological Register*, in which the daily information about the weather is published, being printed in several local newspapers the Government has not hitherto found it necessary to print a daily weather-report, so that the expenses, which are elsewhere by far the heaviest item in the cost of meteorological offices, are at the present time altogether saved in this Colony.

4. The salaries of several members of the staff being considered small in proportion to the practical importance of their duties, His Excellency has been pleased to allow me to submit applications for increases of salary when the estimates for next year are under consideration.

5. One year's trace made by the self-recording tide-gauge is now ready and no funds for hourly readings being available, I have had the honour to suggest that the monthly magnetic observations might be discontinued for some years, in order to allow the tabulation of tides to be proceeded with in the meantime, this subject, although not hitherto included in the work of the Observatory, being of very great importance.

6. * * * * *

7. Lunar distances are now less often than formerly observed on board ship to determine the longitude. There is no doubt that the too accurate and in consequence too complicated methods of reduction generally followed have been partly the cause of this. Occultations of stars claim still more complicated calculations to determine the longitude and are scarcely more accurate, being moreover phenomena of comparatively rare occurrence. The eclipses of Jupiter's Satellites promise to furnish a means of obtaining the longitude on board ship with more ease and accuracy than can be obtained from Lunars. It has therefore been my wish to pay attention to those observations as of importance to the shipping, and I expect to be able to do so in the course of the year.

8. As stated in the "Instructions for making Meteorological Observations, &c.," meteorological instruments forwarded by observers, who regularly send their registers to the Observatory, are verified here free of cost. During the past two years the following number of instruments has been verified and certificates issued:—

Barometers: 8; Thermometers: 12; Anemometer: 1.

The index-errors of barometers read off on board ship in typhoons are generally determined by aid of readings made near to or in this port, which are compared with the hourly readings in the Observatory.

9. The number of transits observed during the past year was 313, and the inclination of the axis was determined 132 times. All the chronometers were cleaned and oiled and their rates satisfactorily adjusted in the course of the year by a local firm of jewellers. The sidereal standard clock was stopped on the 7th October, 1887, and its rate corrected. The mean daily rates during ten-day periods are exhibited in the following table, where — means gaining, and + losing rate:—

TABLE I.
Rate of Sidereal Standard Clock in 1887.

Period.	Rate.	Temp.	Bar.	Period.	Rate.	Temp.	Bar.
December 31-10,.....	-2. ^s 12	62. ^o 3	30. ^{ins} 02	June 29- 9,.....	-3. ^s 73	82. ^o 1	29. ^{ins} 70
January 10-20,.....	-2. 23	63. 3	29. 98	July 9-19,.....	-3. 84	82. 8	29. 62
" 20-30,.....	-2. 20	61. 6	29. 92	" 19-29,.....	-3. 97	81. 4	29. 47
" 30- 9,.....	-2. 18	59. 4	29. 95	" 29- 8,.....	-3. 96	83. 3	29. 63
February 9-19,.....	-2. 05	60. 4	30. 15	August 8-18,.....	-3. 91	81. 8	29. 73
" 19- 1,.....	-2. 28	62. 3	29. 94	" 18-28,.....	-3. 92	79. 9	29. 70
March 1-11,.....	-2. 32	61. 3	29. 97	" 28- 7,.....	-4. 04	81. 8	29. 74
" 11-21,.....	-2. 36	61. 3	29. 95	September 7-17,.....	-4. 23	83. 1	29. 54
" 21-31,.....	-2. 34	62. 7	29. 94	" 17-27,.....	-4. 25	82. 3	29. 69
" 31-10,.....	-2. 48	67. 0	29. 94	" 27- 7,.....	-4. 12	79. 8	29. 76
April 10-20,.....	-2. 91	73. 1	29. 77	October 7-17,.....	+0. 51	78. 5	29. 91
" 20-30,.....	-2. 78	69. 7	29. 89	" 17-27,.....	+0. 60	75. 9	29. 93
" 30-10,.....	-2. 93	72. 1	29. 79	" 27- 6,.....	+0. 81	73. 1	29. 99
May 10-20,.....	-3. 11	74. 6	29. 79	November 6-16,.....	+0. 79	71. 7	29. 97
" 20-30,.....	-3. 33	78. 0	29. 75	" 16-26,.....	+1. 00	69. 3	30. 06
" 30- 9,.....	-3. 49	79. 8	29. 69	" 26- 6,.....	+1. 01	68. 1	30. 01
June 9-19,.....	-3. 72	82. 7	29. 63	December 6-16,.....	+1. 14	67. 3	30. 04
" 19-29,.....	-3. 78	83. 2	29. 68	" 16-26,.....	+1. 17	65. 1	30. 05

10. As stated in the time-ball notice published in the *Government Gazette* on the 10th January, 1885, the ball is not dropped on Sundays or Government Holidays. The ball was dropped every working day in the past year, but failed to drop at 1 p. on May 27th, June 25th and October 27th, the failure being caused the first time by a broken covered wire in the polarized relay, the second time by the switch not having been properly turned, and the third time by the battery having become weak in comparison to the elasticity of the spring on the lock. On every occasion the defect was remedied and the ball dropped allright at 2 p.

TABLE II.
Errors of Time-Ball in 1887.
— means too late. + means too early.

Date.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1, .....	...	+0. ^s 3	0. ^s 1	+0. ^s 6	...	0. ^s 1	0. ^s 1	...	0. ^s 1	0. ^s 1	0. ^s 1	+0. ^s 2
2, .....	...	+0. 3	0. 1	0. 1	0. ^s 1	0. 1	0. 1	0. ^s 1	0. 1	...	-0. 2	+0. 3
3,	0. ^s 1	+0. 4	-0. 2	...	0. 1	0. 1	...	0. 1	0. 1	0. 1	-0. 5	+0. 3
4,	0. 1	+0. 4	-0. 3	0. 1	+0. 2	0. 1	0. 1	0. 1	...	0. 1	0. 1	...
5,	0. 1	+0. 4	-0. 3	0. 1	0. 1	...	0. 1	0. 1	0. 1	0. 1	0. 1	0. 1
6,	0. 1	...	...	0. 1	0. 1	+0. 2	0. 1	0. 1	0. 1	-0. 2	...	0. 1
7,	0. 1	+0. 7	-0. 4	0. 1	0. 1	+0. 3	-0. 2	...	0. 1	-0. 3	0. 1	-0. 3
8,	-0. 2	+0. 9	-0. 4	...	...	0. 1	-0. 2	0. 1	+0. 3	0. 1	+0. 2	-0. 4
9, .....	...	0. 1	0. 1	+0. 2	+0. 5	+0. 3	0. 1	0. 1	+0. 5	...	...	0. 1
10,	-0. 4	-0. 3	0. 1	...	0. 1	+0. 5	...	0. 1	+0. 2	0. 1	...	+0. 3
11,	+0. 3	-0. 5	0. 1	...	+0. 2	+0. 7	+0. 3	0. 1	...	0. 1	-0. 3	...
12,	+0. 6	-0. 8	0. 1	+0. 7	+0. 3	...	0. 1	-0. 2	+0. 6	0. 1	-0. 3	0. 1
13,	+0. 9	...	...	+0. 9	+0. 5	+0. 5	0. 1	0. 1	+0. 7	0. 1	...	-0. 2
14,	0. 1	0. 1	0. 1	+1. 2	-0. 2	0. 1	0. 1	...	0. 1	+0. 2	0. 1	-0. 2
15,	0. 1	0. 1	0. 1	+0. 7	...	0. 1	0. 1	0. 1	-0. 2	0. 1	0. 1	-0. 3
16, .....	...	-0. 2	0. 1	0. 1	-0. 3	+0. 2	0. 1	0. 1	-0. 4	...	0. 1	-0. 3
17,	0. 1	0. 1	0. 1	...	0. 1	+0. 2	...	-0. 2	0. 1	-0. 2	0. 1	0. 1
18,	0. 1	0. 1	+0. 2	+0. 5	0. 1	+0. 3	+0. 3	-0. 2	...	0. 1	0. 1	...
19,	0. 1	+0. 2	+0. 2	0. 1	0. 1	...	+0. 4	-0. 3	0. 1	0. 1	-0. 2	0. 1
20,	0. 1	...	...	0. 1	0. 1	0. 1	+0. 5	0. 1	0. 1	-0. 2	...	0. 1
21,	0. 1	+0. 4	0. 1	0. 1	0. 1	...	+0. 6	...	0. 1	0. 1	0. 1	0. 1
22,	0. 1	+0. 7	0. 1	-0. 4	...	0. 1	+0. 2	0. 1	0. 1	0. 1	0. 1	0. 1
23, .....	...	+1. 0	-0. 2	-0. 5	0. 1	0. 1	0. 1	0. 1	0. 1	...	0. 1	0. 1
24, .....	...	0. 1	-0. 3	...	0. 1	0. 1	...	0. 1	+0. 2	0. 1	0. 1	...
25,	+0. 2	+0. 3	0. 1	-0. 7	-0. 2	0. 1	+0. 2	0. 1	...	0. 1	0. 1	...
26,	+0. 2	0. 1	0. 1	0. 1	-0. 3	...	0. 1	+0. 2	+0. 4	0. 1	0. 1	...
27,	+0. 2	...	...	0. 1	0. 1	0. 1	0. 1	+0. 2	+0. 5	0. 1	...	...
28,	+0. 2	0. 1	+0. 3	-0. 2	+0. 2	0. 1	0. 1	...	0. 1	-0. 2	+0. 4	-0. 2
29,	+0. 3	...	0. 1	+0. 2	...	0. 1	0. 1	0. 1	-0. 3	-0. 3	0. 1	-0. 3
30, .....	...	...	+0. 2	0. 1	...	0. 1	+0. 2	0. 1	-0. 4	...	+0. 2	-0. 4
31,	+0. 3	...	+0. 4	...	+0. 8	...	...	0. 1	...	0. 1	...	-0. 5

11. The probable errors of the signal in the different months of 1887 (with the average percentage of clouded sky added in parenthesis) were as follows:—January 0°.18 (90), February 0°.31 (64), March 0°.15 (75), April 0°.28 (72), May 0°.17 (81), June 0°.16 (71), July 0°.15 (73), August 0°.11 (59), September 0°.20 (64), October 0°.11 (27), November 0°.14 (41), December 0°.18 (43).—The mean of the probable errors was 0°.18.

12. The absolute values of the magnetic elements were observed by Mr. F. G. FIGG and Mr. MAHOMET ALARAKIA every month as usual, and the report is ready.

13. The monthly weather reports have all been published as soon as ready. They are arranged exactly as explained in last year's report. The clouds are classified as follows:—

Cirrus (c) is the finest and most lofty of all the clouds. It looks like hair, thread or feathers.

Cirro-cumulus (c-cum) is also a high cloud, but is more rounded in shape than the former and looks like small woolly tufts.

Cirro-stratus (c-st.) form a sheet of uniform thickness high up in the atmosphere. They are often seen in long straight streaks, that appear to radiate from a point of the horizon. When covering the whole sky they form a sort of vaporous transparent veil.

Stratus (str) is also a layer of cloud of generally uniform thickness but belongs to the lower regions of the atmosphere. It presents no variety of shade.

Cumulus (cum) consists of rounded heaps like enormous balls of wool.

Cumulo-stratus (cum-str) is a cumulus dark and flat at its base traversed by horizontal streaks of dark cloud. It has often a coppery hue.

Strato-cumulus (str-cum) is intermediate between cumulus and stratus. When the number of entries are counted, half is added to cumulus and the other half to stratus.

Roll-cumulus (R-cum) is formed by cumulus clouds lying apparently in long horizontal rolls.

Small-cumulus (sm-cum) are small white cumulus. They belong to a level between cirro-cumulus and cumulus.

Nimbus (nim) is a cloud from which rain is seen falling.

Cumulo-nimbus (cum-nim) has a uniform dark appearance like the true nimbus, but no rain is actually seen falling from it at the time of observation.

14. The weather in January 1887 was quite abnormal. The rainfall was about six times larger than the average. The amount of clouds and the dampness were also excessive particularly the former, so that the rainy season appeared to have set in in the midst of the dry season and that was the case at every station in China from which reports are received. On the contrary the weather was remarkably dry and clear in March, gradients for NE winds continuing till the 29th of that month. On the 8th of April the damp weather set in, but the rainfall was very deficient in that month and also in May. The 1st of June was extremely dry and the barometric tide and daily variation of temperature excessive for the season as might be expected. The middle of that month was very squally with strong SW monsoon. Showers in the early morning hours were distinctly marked but electric phenomena were unusually rare. The thunderstorms during July came from unusual directions. In August the SW monsoon was strong, and the clouds unusually low, as was in fact the case all through the summer but still the rainfall was below the average. September was characterised by an unusual number of typhoons in this neighbourhood as remarked at the end of the report for that month. The weather in October was very dry, clear and fine. On the 21st during N wind it was hotter in the puffs, reminding one of the Föhn in Switzerland. December was very dry and warm. At night time there occurred frequently a sudden change in the direction of the wind from about E to about N with considerable rise of temperature and great decrease of humidity.

15. Tables III-X inclusive exhibit the annual means and totals of meteorological phenomena and their frequency. The arrangement of the tables is explained in previous annual weather-reports. Tables XI and XII exhibit the five-day means arranged as in previous years. The total amount of rain measured daily at 10 a. and entered to preceding day was 66.29 at the Observatory, 61.73 at Stone Cutters' Island and 78.34 at the Peak. The total duration registered at the Observatory was 863 hours. The rainfall was at least 0.01 inch on 153 days at the Observatory, on 112 days at Stone Cutters' Island and on 84 days at the Peak. The accuracy of these observations is in a great measure due to the painstaking care of Mr. F. G. FIGG.

TABLE III.
Mean Values and Hourly Excess above the Mean of Meteorological Elements in 1887.

	Mean or Total.												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.
Pressure,	+005	-007	-015	-018	-013	+001	+017	+032	+043	+044	+035	+017	-007	-028	-040	-045	-041	-032	-018	.000	+013	+022	+022	+015	28.107
Temperature,	-1.4	-1.5	-1.6	-1.8	-2.0	-2.0	-1.4	-0.4	+0.7	+1.5	+2.1	+5.2	+2.8	+2.7	+2.4	+1.8	+1.0	+0.1	-0.4	-0.6	-0.8	-0.9	-1.2	-1.3	71.1
Humidity,	+5	+5	+4	+4	+4	+3	+2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7.2
Vapour Tension,	+013	+008	+001	-003	-008	-009	-007	-010	-013	-015	-011	-012	-006	-007	-003	-003	-001	+003	+008	+013	+015	+017	+015	0.605	
Sunshine (Total),	0.108	0.152	0.130	0.313	0.358	0.251	0.304	0.322	0.453	0.302	0.266	0.222	0.136	0.204	0.199	0.285	0.239	0.196	0.166	0.100	0.199	0.185	0.289	2104.5	
Rainfall,	35	39	39	52	52	53	53	46	40	43	26	38	31	27	36	39	32	24	30	30	25	30	42	890	
Hours of Rain (Total),	0.037	0.047	0.040	0.072	0.083	0.057	0.059	0.084	0.136	0.084	0.123	0.070	0.053	0.091	0.066	0.088	0.090	0.098	0.066	0.063	0.095	0.074	0.083	0.045	
Intensity of Rain,	-1.0	-0.8	-0.7	-0.7	-0.9	-1.1	-1.1	-0.8	+0.5	+1.5	+1.6	+1.9	+2.3	+2.5	+2.3	+1.6	+0.9	-0.3	-1.4	-1.6	-1.4	-1.2	-1.3	-1.1	13.9
Wind-Velocity,	-3°	-3°	-5°	-6°	-7°	-9°	-9°	-7°	-2°	0°	+3°	+9°	+8°	+10°	+8°	+9°	+7°	+4°	+3°	+1°	+1°	+2°	-4°	-4°	E 5° S
Wind-Direction,	+1	...	...	...	...	...	+5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	63	
Cloudiness, .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1.9
Sea-Disturbance, .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	122.3
Solar Radiation, .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	53.8
Excess of do. do., .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	53.1
Terr. Radiation, .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	+2.8
Total,	35	39	39	52	52	53	53	46	40	43	26	38	31	27	36	39	32	24	30	19	25	30	42	890	

TABLE IV.
Number of Hours, during portion of which it rained, for each Month in the Year 1887.

Month.	Number of Hours												Total.											
	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.
January,	5	5	4	6	5	5	5	6	5	4	2	3	3	3	2	2	5	5	4	4	4	3	7	107
February,	3	1	1	3	1	3	5	4	2	3	2	2	4	1	4	4	2	2	1	1	1	1	4	60
March,	5	7	4	4	6	6	4	4	3	3	3	4	3	3	2	3	4	1	2	2	2	4	4	94
April,	5	4	4	4	4	6	4	4	4	3	3	4	3	2	3	4	3	3	2	2	4	5	4	89
May,	3	4	3	3	3	2	4	3	1	3	3	1	1	2	2	1	2	2	...	...	1	1	2	48
June,	1	1	4	7	8	4	9	4	6	7	1	2	2	1	1	2	2	...	...	...	1	3	6	79
July,	3	7	8	6	11	10	10	9	8	9	4	7	6	3	4	9	4	3	...	...	3	4	6	147
August,	3	1	1	6	7	6	5	6	5	6	4	6	4	4	5	5	5	3	...	...	3	3	3	101
September,	5	5	6	5	4	5	3	3	2	1	1	5	2	5	7	7	2	4	...	...	4	6	7	107
October,	1	1	...	2	...	...	1	2	2	1	1	1	1	1	...	1	...	...	...	...	...	...	...	18
November,	1	2	2	...	2	2	1	1	1	2	1	2	2	2	...	1	...	...	...	...	...	...	...	24
December, .....	...	1	2	2	1	1	1	1	1	1	1	1	1	...	...	...	...	...	...	...	...	...	...	16
Total,	35	39	39	52	52	53	53	46	40	43	26	38	31	27	36	39	32	24	30	19	25	30	42	890

TABLE V.

Total Distance traversed by, as well as Total Duration and Average Velocity of Winds from eight different Points of the Compass during the year 1887.

WIND.	TOTAL DISTANCE.	DURATION.	VELOCITY.
	Miles.	Hours.	Miles per Hour.
N,	9522	874	11.0
NE,	12070	905	13.3
E,	73095	4168	17.5
SE,	8314	583	14.3
S,	5738	566	10.1
SW,	6911	506	13.7
W,	3838	475	8.1
NW,	1813	279	6.5
Calm,	251	404	0.6
Sums and Mean,	121652	8760	13.9

TABLE VI.

Total Number of Days on which different Meteorological Phenomena were noted and Total Number of Thunderstorms during each month of the year 1887.

Month.	Fog.	Electric Phenomena.	Lightning.	Thunder.	Thunderstorms.	Unusual Visibility.	Dew.	Rain-bow.	Lunar Halo.	Lunar Corona.	Solar Halo.	Solar Corona.
January,	2	...	...	...	...	...	1	1	...	...	...	...
February, .....	...	...	...	...	...	...	2	1	...	...	...	...
March,	3	3	2	2	...	...	3	1	...	...	1	...
April,	7	7	5	3	1	1	8	...	2	...	1	...
May,	2	6	6	1	1	...	8	...	2	1	2	...
June, .....	...	7	5	3	...	7	2	2	5	2	13	...
July, .....	...	18	16	11	4	8	6	4	11	2	6	...
August, .....	...	12	12	9	2	1	16	2	5	2	6	...
September, .....	...	13	13	6	3	1	8	3	3	2	6	1
October, .....	...	1	1	1	1	...	2	...	1	...	...	...
November,	1	...	...	...	...	...	11	...	1	2	2	...
December,	1	...	...	...	...	1	10	...	...	3	...	...
Sums,	16	67	60	36	12	19	77	14	30	14	37	1

TABLE VII.

Total Number of Times that Clouds of different Forms were observed in each month of the year 1887.

Month.	c.	c-str.	c-cum.	sm-cum.	cum.	cum-str.	str.	R-cum.	cum-nim.	nim.
January, .....	...	...	2	33	100	...	19	12	82	58
February,	2	7	2	11	92	...	22	10	31	29
March, .....	...	3	4	31	88	1	39	27	42	42
April,	1	25	5	15	97	...	18	33	26	41
May, .....	...	17	9	39	160	...	13	27	40	24
June,	4	108	14	9	205	2	1	9	7	17
July,	6	114	25	17	153	20	15	8	13	33
August,	12	78	9	34	146	11	12	4	16	29
September,	1	66	24	21	122	11	12	36	10	32
October,	2	34	5	21	108	...	5	6	4	5
November, .....	...	57	2	28	59	...	14	7	4	10
December, .....	...	7	2	55	77	1	19	10	1	9
Sums,	28	516	103	314	1407	46	189	189	276	329

TABLE VIII.

Month.	Baro- metric Tide.	Mean diurnal variabi- lity of Tempera- ture.	Tem- perature decrease. Height for 1°	RAIN FALL.		Hourly Intensity of Rain.	MEAN DIRECTION OF CLOUDS WHENCE COMING.			NUMBER OF DAYS WITH CLOUDS BELOW.	
				Mean 1878- 1887 inclus.	1887.		Lower.	Upper.	Cirrus.	2000 ft.	1000 ft.
January,	<i>ins.</i> 0.106	° 1.83	<i>feet.</i> 348	<i>ins.</i> 1.47	<i>ins.</i> 8.430	<i>ins.</i> 0.058	E	W by S	...	25	14
February,	0.112	1.78	387	1.66	1.895	0.022	E by N	W	...	12	6
March,	0.106	1.63	370	3.53	2.950	0.026	E by S	W	...	19	10
April,	0.097	2.44	370	6.55	5.640	0.052	S by E	W by S	WSW	22	13
May,	0.085	1.39	328	9.82	2.045	0.036	SE by E	NW	...	26	11
June,	0.077	0.80	230	12.67	5.475	0.096	S by W	NE	NE	25	4
July,	0.062	1.15	284	16.41	12.075	0.124	SE by S	NE by N	NNE	25	7
August,	0.067	1.06	294	16.93	13.155	0.152	S by E	NE by N	ENE	22	2
September, ...	0.082	1.15	279	9.89	10.955	0.146	E	E by S	E	6	0
October,	0.090	1.02	294	5.06	2.030	0.104	ENE	WSW	N	2	1
November, ...	0.101	1.51	279	1.04	0.790	0.036	ENE	WSW	...	2	1
December,	0.102	2.32	310	0.49	0.850	0.061	E by S	WSW	...	3	...
Year,	0.091	1.51	314	85.52	66.290	0.076	...	...	...	189	69

TABLE IX.

Monthly Extremes of the Principal Meteorological Elements registered at the Observatory during the year, 1887.

MONTH.	BAROMETER.		TEMPERATURE.		HUM.	VAPOUR TENSION.		RAIN.		WIND VELOCITY.	RADIATION.	
	Max.	Min.	Max.	Min.	Min.	Max.	Min.	Daily Max.	Hourly Max.	Max.	Sun Max.	Terr. Min.
January, ...	30.184	29.759	69.7	48.9	53	0.585	0.227	3.920	0.470	42	140.4	44.0
February, ...	.307	.815	70.0	42.8	53	.495	.201	0.895	0.135	38	137.7	39.7
March, .....	.135	.702	78.4	53.8	24	.631	.173	1.090	0.235	45	142.7	51.1
April, .....	.158	.615	82.2	56.5	32	.787	.174	3.205	0.875	42	145.9	54.0
May,	29.908	.597	88.4	67.2	36	.867	.314	1.110	0.330	35	156.1	65.8
June, .....	.821	.506	89.0	73.3	34	.960	.372	0.905	0.500	31	150.1	69.5
July, .....	.824	.270	89.8	73.8	61	1.008	.768	2.240	1.320	50	153.6	73.6
August, ...	.836	.526	88.6	72.9	53	0.951	.692	3.215	0.920	51	149.7	71.5
September, ..	.904	.070	90.7	73.5	55	.991	.659	5.855	1.390	69	158.6	70.6
October, ...	30.085	.631	84.8	64.6	32	.818	.318	1.660	0.930	35	149.3	61.7
November, ..	.168	.830	77.9	56.0	16	.644	.136	0.560	0.100	36	142.5	54.0
December, ..	.305	.891	73.5	44.8	12	.550	.044	0.830	0.140	36	138.8	42.8
Year,	30.307	29.070	90.7	42.8	12	1.008	0.044	5.855	1.390	69	158.6	39.7

TABLE X.

Monthly Extremes of the Principal Meteorological Elements registered at Victoria Peak during the year, 1887.

MONTH.	BAROMETER.		TEMPERATURE.		HUM.	VAPOUR TENSION.		RAIN.	WIND.	RADIATION.	
	Max.	Min.	Max.	Min.	Min.	Max.	Min.	Daily Max.	Force Max.	Sun Max.	Terr. Min.
January,	28.360	28.031	65.3	45.7	65	0.563	0.244	5.01	7	135.9	41.2
February, .....	.467	.039	66.9	39.2	67	.543	.203	0.79	7	132.3	37.6
March, .....	.321	.016	72.3	47.2	38	.637	.216	1.39	7	137.1	42.8
April, .....	.330	27.926	76.5	50.3	34	.745	.158	2.04	7	137.1	46.3
May, .....	.146	.903	78.3	60.5	63	.845	.412	1.02	6	143.6	60.4
June, .....	.093	.861	79.5	67.3	72	.864	.619	2.50	6	140.5	65.6
July, .....	.111	.594	81.3	72.0	84	.894	.733	2.79	7	149.7	70.4
August, .....	.111	.853	81.3	69.7	80	.900	.699	4.26	9	143.8	67.0
September, ..	.186	.509	81.6	71.3	73	.962	.717	1.72	10	148.1	69.4
October, .....	.318	27.950	78.3	61.4	52	.795	.370	0.73	5	140.7	57.4
November, .....	.378	28.097	72.2	52.7	30	.601	.211	0.52	7	131.2	49.3
December, .....	.388	.128	68.2	44.2	38	.529	.136	0.82	6	134.3	41.3
Year,	28.467	27.509	81.6	39.2	30	0.962	0.136	5.01	10	149.7	37.6

TABLE XI.

Five-Day Means of the principal Meteorological Elements observed in Hongkong in 1887.

Five-Day Period.	Barometer.	Temperature.	Humidity.	Vapour Tension.	Wind Velocity.	Nebulosity.	Sunshine.	Rain.
January..... 1- 5	29.962	60.9	83	0.444	17.8	7.9	5.0	0.000
"..... 6-10	30.075	58.3	72	.358	20.8	7.4	4.6	0.000
".....11-15	29.974	62.6	87	.498	19.0	9.5	2.9	0.004
".....16-20	.987	59.6	79	.406	14.6	9.5	1.9	0.003
".....21-25	.930	58.6	86	.430	13.2	9.4	1.2	0.425
".....26-31	.932	53.1	87	.352	7.2	10.0	0.2	1.195
February..... 1- 5	.937	51.0	86	.310	7.0	10.0	0.2	0.308
"..... 6-10	.936	51.2	84	.313	10.8	9.0	1.3	0.122
".....11-15	30.126	54.6	72	.315	12.8	4.7	5.5	0.001
".....16-19	.181	57.9	70	.337	17.1	1.4	9.9	0.000
".....20-24	29.964	61.1	74	.402	23.0	6.3	6.7	0.002
".....25- 1	.928	59.7	83	.424	13.8	8.2	2.2	0.223
March..... 2- 6	.943	59.4	89	.452	21.4	10.0	0.6	0.086
"..... 7-11	.990	60.6	78	.412	18.1	8.3	2.0	0.008
".....12-16	.911	61.5	84	.463	24.2	9.5	1.5	0.035
".....17-21	.982	58.7	72	.356	13.2	6.1	4.2	0.229
".....22-26	30.043	61.0	58	.310	18.2	5.3	7.5	0.010
".....27-31	29.831	67.2	73	.493	11.4	5.5	6.0	0.004
April..... 1- 5	.990	64.3	61	.377	15.5	3.1	9.6	0.000
"..... 6-10	.885	69.6	80	.579	8.5	5.5	6.8	0.001
".....11-15	.823	71.5	89	.690	13.9	9.3	2.2	0.655
".....16-20	.711	73.8	88	.733	6.8	7.3	4.5	0.047
".....21-25	.914	64.7	87	.541	16.0	9.7	0.1	0.388
".....26-30	.866	70.2	83	.619	14.5	8.4	3.0	0.037
May..... 1- 5	.811	70.1	85	.630	19.5	9.1	1.5	0.033
"..... 6-10	.772	74.2	87	.737	9.2	6.5	4.7	0.013
".....11-15	.794	73.0	72	.586	15.7	9.5	2.6	0.025
".....16-20	.789	75.9	83	.739	14.2	7.4	4.8	0.014
".....21-25	.810	75.8	86	.767	20.3	8.3	4.2	0.001
".....26-30	.693	79.2	83	.824	11.5	8.0	5.2	0.323
June..... 31- 4	.746	77.5	76	.718	12.7	7.1	4.0	0.212
"..... 5- 9	.640	80.6	83	.864	11.0	7.3	8.1	0.184
".....10-14	.641	82.0	80	.871	16.6	8.6	6.0	0.325
".....15-19	.623	82.8	80	.894	12.5	8.2	4.7	0.153
".....20-24	.681	83.0	77	.873	10.4	5.9	8.8	0.174
".....25-29	.672	83.0	76	.855	9.6	5.9	10.6	0.047
July..... 30- 4	.714	81.3	84	.891	8.0	7.6	5.1	0.116
"..... 5- 9	.687	80.8	85	.893	10.1	9.1	4.4	0.658
".....10-14	.705	82.6	79	.880	14.8	4.9	10.1	0.269
".....15-19	.532	81.7	81	.875	14.7	7.4	5.5	0.437
".....20-24	.440	80.4	84	.870	15.1	8.4	2.4	0.462
".....25-29	.499	81.4	84	.895	9.0	7.2	5.0	0.415
August.....30- 3	.572	83.2	80	.911	17.8	6.2	9.2	0.058
"..... 4- 8	.693	82.4	77	.849	11.3	5.5	10.1	0.007
"..... 9-13	.738	81.9	79	.861	7.4	3.0	11.2	0.018
".....14-18	.700	78.7	85	.827	19.0	7.4	4.4	1.009
".....19-23	.710	78.5	86	.842	8.3	6.9	5.0	0.779
".....24-28	.698	79.0	85	.838	6.3	7.5	4.2	0.797
September.....29- 2	.765	81.5	77	.829	4.4	3.0	10.7	0.028
"..... 3- 7	.725	81.6	76	.824	20.9	7.1	7.0	0.197
"..... 8-12	.446	82.6	77	.853	16.2	7.1	4.5	0.383
".....13-17	.642	81.7	80	.874	20.2	7.9	6.5	1.347
".....18-22	.727	81.7	81	.873	23.7	6.4	6.6	0.159
".....23-27	.729	82.2	79	.871	22.0	6.1	7.9	0.073
October.....28- 2	.754	79.7	73	.747	8.8	5.0	8.4	0.068
"..... 3- 7	.741	78.9	50	.501	13.0	2.4	10.8	0.006
"..... 8-12	.908	76.7	65	.593	8.5	1.4	9.9	0.000
".....13-17	.915	77.5	70	.661	13.2	1.8	9.6	0.000
".....18-22	.870	75.8	68	.598	13.0	5.3	4.4	0.367
".....23-27	29.983	73.4	56	.461	14.9	0.9	10.5	0.000
November.....28- 1	30.003	71.2	60	.463	14.6	2.8	9.6	0.000
"..... 2- 6	29.977	71.6	69	.535	12.5	3.2	8.9	0.000
"..... 7-11	.934	71.6	66	.513	17.2	5.4	6.4	0.000
".....12-16	30.004	68.8	56	.396	10.7	5.9	5.7	0.010
".....17-21	.091	68.2	53	.361	17.1	2.3	9.5	0.000
".....22-26	.038	68.8	52	.365	10.7	0.5	9.9	0.000
December.....27- 1	29.977	65.7	60	.379	11.6	8.9	2.5	0.148
"..... 2- 6	30.038	64.2	59	.361	10.6	3.7	6.2	0.167
"..... 7-11	.006	66.7	65	.427	12.7	1.9	8.7	0.000
".....12-16	.082	64.2	63	.385	13.4	9.1	1.9	0.002
".....17-21	.039	62.7	66	.375	14.9	3.1	8.3	0.000
".....22-26	.068	62.3	60	.341	8.3	5.1	6.4	0.001
".....27-31	.087	59.8	42	.228	14.3	2.0	8.5	0.000

TABLE XII.

Five-Day Means of the principal Meteorological Elements observed at Victoria Peak in 1887.

Five-Day Period.	Barometer.	Temperature.	Humidity.	Vapour Tension.	Wind Force.	Rain.
January 1- 5	28.182	56.8	86	0.410	4.5	0.00
" 6-10	.281	51.4	83	.335	5.5	0.00
" 11-15	.214	58.3	95	.476	4.5	0.00
" 16-20	.210	53.6	90	.380	4.3	0.00
" 21-25	.157	54.2	93	.399	4.6	1.43
" 26-30	.106	48.5	94	.324	5.1	1.19
February 31- 4	.144	45.6	94	.293	5.0	0.58
" 5- 9	.140	46.0	94	.298	4.4	0.11
" 10-14	.321	49.6	84	.319	4.1	0.00
" 15-19	.383	53.4	79	.344	4.2	0.00
" 20-24	.183	56.3	83	.394	5.0	0.00
" 25- 1	.149	55.4	93	.420	3.9	0.44
March 2- 6	.159	55.3	97	.432	4.8	0.07
" 7-11	.203	56.0	87	.399	4.9	0.05
" 12-16	.137	56.5	93	.438	5.3	0.33
" 17-21	.193	52.0	84	.339	4.4	0.07
" 22-26	.253	54.9	70	.312	4.3	0.00
" 27-31	.095	63.9	75	.464	4.1	0.00
April 1- 5	.221	59.3	63	.344	4.5	0.00
" 6-10	.141	65.8	80	.521	3.9	0.00
" 11-15	.104	67.2	98	.660	5.5	0.55
" 16-20	.001	69.0	90	.650	4.4	0.00
" 21-25	.126	60.3	96	.519	4.3	0.49
" 26-30	.116	63.8	94	.583	4.6	0.07
May 1- 5	.074	64.9	95	.598	5.1	0.18
" 6-10	.051	69.4	93	.693	3.7	0.04
" 11-15	.062	67.7	86	.595	4.6	0.00
" 16-20	.073	70.0	92	.700	4.5	0.00
" 21-25	.083	70.7	95	.725	4.3	0.00
" 26-30	27.998	72.3	96	.765	4.9	0.29
June 31- 4	28.031	71.1	91	.705	4.1	0.07
" 5- 9	27.954	73.5	94	.791	4.0	0.00
" 10-14	.947	74.2	97	.827	5.7	0.67
" 15-19	.946	74.6	97	.843	4.9	0.07
" 20-24	.997	75.1	96	.843	5.1	0.16
" 25-29	.985	74.6	95	.820	4.5	0.00
July 30- 4	28.019	75.1	92	.814	3.7	0.71
" 5- 9	27.993	74.4	95	.819	5.0	0.46
" 10-14	28.017	76.1	92	.841	4.1	0.00
" 15-19	27.844	75.8	93	.836	4.6	0.31
" 20-24	.767	73.9	93	.791	4.5	0.73
" 25-29	.826	75.0	94	.824	4.4	0.90
August 30- 3	.884	75.7	96	.853	4.9	0.00
" 4- 8	28.010	74.7	95	.824	4.3	0.00
" 9-13	.046	76.3	89	.817	3.1	0.00
" 14-18	.001	72.8	91	.749	4.7	1.15
" 19-23	.016	73.4	92	.765	3.5	0.73
" 24-28	.006	73.3	93	.771	3.3	1.24
September 29- 2	.063	76.2	89	.810	2.8	0.00
" 3- 7	.015	74.9	89	.793	4.9	0.18
" 8-12	27.774	75.7	89	.806	4.9	0.64
" 13-17	.932	75.2	93	.823	5.1	0.45
" 18-22	.984	74.5	95	.829	5.1	0.08
" 23-27	28.011	75.4	91	.819	4.8	0.04
October 28- 2	.084	74.7	87	.763	3.3	0.07
" 3- 7	.035	71.9	67	.551	3.7	0.00
" 8-12	.186	71.4	75	.585	3.3	0.00
" 13-17	.188	71.7	91	.728	3.6	0.10
" 18-22	.152	68.8	87	.627	4.3	0.19
" 23-27	.244	67.1	71	.490	4.3	0.00
November 28- 1	.250	65.4	76	.477	4.1	0.00
" 2- 6	.229	65.3	82	.535	4.0	0.00
" 7-11	.177	65.2	81	.518	4.3	0.00
" 12-16	.235	62.0	70	.407	3.8	0.00
" 17-21	.316	62.1	60	.346	4.5	0.00
" 22-26	.284	62.8	62	.377	3.9	0.00
December 27- 1	.196	58.1	71	.343	4.6	0.18
" 2- 6	.231	58.3	71	.355	3.9	0.16
" 7-11	.238	61.8	67	.388	4.3	0.00
" 12-16	.298	57.7	73	.365	4.5	0.00
" 17-21	.259	55.8	76	.357	4.3	0.00
" 22-26	.274	56.8	71	.346	3.6	0.00
" 27-31	.267	54.1	59	.264	4.7	0.00

16. Investigations concerning typhoons were continued during the past year. The results are partly contained in the already published *Results of Further Researches concerning Typhoons*, partly in a report containing exhaustive investigations of all the typhoons in 1886 and their paths, which is ready as well as the two maps exhibiting the paths, and partly in two minor papers about to be published one of which draws attention to an additional means of forecasting typhoons while the other explains the cause why typhoons are so frequent in the China Sea in September. It is hoped that these investigations will by degrees lessen the terrors of the Eastern Seas and that masters of vessels trading out here will in the future be enabled not only to escape damage from typhoons but to benefit by the favourable winds so as to make quicker voyages. The typhoons of 1887 have been provisionally investigated by aid of daily weather-maps drawn from the 1st July till the 1st November and by other means. In addition to the observations furnished by stations on shore, the log-books of 143 different vessels containing entries on 1561 days (counting those made on board different ships separately) are available. A great number of log-books have of course been looked through without entries bearing on typhoons having been found. The final investigation of the typhoons of 1887 will occupy my time during the next half year.

17. The remarks concerning typhoons, meteorological signals, and storm-warnings published in the *China Coast Meteorological Register* issued in the forenoon from here are reprinted below. The remarks, if not otherwise stated, refer to the state of the weather at 9 a. or 10 a. The position of the centre of the typhoon, as determined from a provisional discussion of observations subsequently received, is added in small print. The basis on which the information was founded is explained in a pamphlet: "The Law of Storms in the Eastern Seas," published in September, 1886:—

1887, April 16th.—'The barometer is falling over Luzon but steady along the coast. Gradients for SW winds are very gentle. The temperature and the humidity are high and cloudy weather prevails.'

1887, April 17th.—'The barometer is falling at all stations except Wladivostock and the fall is greatest in Manila. There appears to be a typhoon in the neighbourhood of Luzon. The temperature is high, the humidity moderate and cloudy weather prevails.'

The typhoon appears to have been at some distance E of the Philippines.

1887, April 18th.—'The barometer continues to fall in the South but has risen in the North. The temperature and the humidity are rather high and cloudy weather prevails.'

1887, April 19th.—'The typhoon has probably passed northwards in the Pacific. The barometer has risen except in Bolinao. Gradients for NE winds are moderate. The temperature and the humidity are high and cloudy weather prevails.'

This typhoon probably recurved in the Pacific.

1887, April 20th.—'The barometer is rising except in Nagasaki where it has fallen and gradients are very slight in southern China. The temperature and the humidity are high and the weather is overcast.'

1887, May 11th.—'The barometer is still falling over Luzon but has risen along the coast. Gradients for NE winds continue steep in southern and moderate in northern China. The temperature is moderate, the humidity rather high and the weather overcast.'

Typhoon in $15\frac{1}{2}^{\circ}$ N, $126\frac{1}{2}^{\circ}$ E, (according to Faura).

1887, May 12th.—'The barometer is very low but steady over Luzon and has fallen along the coast. Gradients for NE winds remain steep. The temperature and the humidity are moderate and the weather is cloudy in the South and fine in the North.'

Typhoon in $18\frac{1}{2}^{\circ}$ N, $126\frac{1}{2}^{\circ}$ E (according to Faura).

1887, May 13th.—'The barometer is nearly steady but gradients for NE winds continue steep. The temperature is high, the humidity very low and the weather cloudy. At 10 a. the following telegram was sent to the Treaty Ports:—"There appears to be a typhoon at some distance to the East of Luzon."'

Typhoon in about 25° N, 119° E.

1887, May 14th.—'The barometer has risen and gradients for NE winds are moderate. The temperature is moderate, the humidity low and cloudy weather prevails.'

This Typhoon recurved south of Japan.

1887, May 26th.—'The barometer has fallen. There is a depression SE of Shanghai. The temperature is moderate, the humidity high and the weather overcast and wet.'

The typhoon appears to have been situated in the Pacific East of Luzon moving NNWestward.

1887, May 27th.—‘There is a decided fall in the barometer at all stations owing to the approach of the typhoon indicated yesterday. The temperature and the humidity are high and cloudy weather prevails.’

The typhoon appears to have been E of the Balintang Channel.

1887, May 28th.—‘The barometer has risen except in the North. The typhoon is situated south of Japan and is moving northwards. The temperature and the humidity are high and cloudy weather prevails.’

The centre appears to have been in about 30° N, 129° E.

1887, July 11th.—‘The barometer has risen in the south and fallen in the North. Gradients are moderate for SE winds. The temperature and the humidity are high and the weather is cloudy. A small typhoon has passed Westward across the China Sea.’

Typhoon in northern Annam.

1887, July 15th.—‘The barometer has fallen along the SE coast of China and has risen elsewhere. The temperature is rather high, the humidity moderate and cloudy weather prevails.’

1887, July 16th.—‘The barometer has risen over Luzon and fallen along the coast. There is a depression in the China Sea with steep gradients for SW winds south of the centre and for NE winds north of the centre. The temperature and the humidity are rather high and cloudy weather prevails.’

Fresh wind and high sea were reported by ships in the China Sea. Lowest pressure appears to have been situated near the Paracels.

1887, July 18th.—‘The barometer is falling particularly in the SE. Gradients are moderate for S winds over the China Sea and for SE winds along the E coast of China. The temperature is high, the humidity moderate and the weather cloudy.’

There appears to have been a typhoon in the neighbourhood of the Pratas Shoal.

1887, July 19th.—‘The barometer is falling particularly in Hongkong. There is a large typhoon in the China Sea SE of Hongkong probably travelling towards the SE coast of China. The temperature and the humidity are moderate and overcast weather prevails.’

Typhoon in about 21° N, 115° E.

1887, July 20th.—‘Directions to hoist the Red Drum were issued at 1.45 a. on the 19th. At 5 a. the following notice was issued: “There is a large typhoon approaching from the SE. Telegraphic communication is interrupted.” At 4.30 a. on the 20th directions to fire typhoon-gun one round were issued, at 7.30 a. to hoist South Cone and at noon to hoist Red Ball.—At 10 a. an attempt was made to issue the following notice: “Typhoon S of and close to Hongkong moving Westward,” but this failed for want of direct telegraphic communication with the offices of the E. E. A. & C. Tel. Co., in Queen’s Road.’

Typhoon in about 21° N, 114° E.

1887, July 21st.—‘The barometer has risen except about the gulf of Tonquin. The following notice was issued at 4 p. yesterday: “The typhoon appears to be crossing Hainan.” Gradients are moderate for E winds in China. The temperature is low and the humidity great.’

Typhoon in about 20½° N, 109° E.

1887, July 22nd.—‘The barometer has fallen in Haiphong owing to the approach of the past typhoon. It is possible that another typhoon has approached Northern Formosa from the East. The Red Ball was removed yesterday about 1.15 p.’

The past typhoon appears to have entered southern Tonquin. Another typhoon in about 27° N, 124° E.

1887, July 23rd.—‘The typhoon that crossed the China Sea passed south of Haiphong during the night. The typhoon that approached Northern Formosa has entered the mainland south of Shanghai. The North-Cone was hoisted yesterday at 4 p. The barometer has fallen slightly in the S.E.’

This typhoon entered the mainland during the previous night in the neighbourhood of Wenchow.

1887, July 24th.—‘Directions to take down the North Cone were issued at 1.10 p. yesterday.’

This typhoon appears to have moved NWestward in the interior of China.

1887, July 27th.—‘The barometer has fallen between Shanghai and Amoy (owing to the approach of a typhoon travelling apparently NWestward) and has risen elsewhere. The temperature and humidity are rather high and cloudy weather prevails.’

This typhoon entered the mainland S of Ningpo during the previous night.

1887, July 28th.—‘The barometer has fallen at all stations except Shanghai, where it has risen. The lowest reading of the barometer is reported from Amoy. The temperature and humidity are high and the weather is cloudy.’

1887, July 30th.—‘The barometer has fallen in the north. There is a storm in the Sea of Japan,—probably one of the typhoons that lately were indicated by observations in northern China. The temperature and the humidity are rather high and cloudy weather prevails.’

This depression had possibly a different origin.

1887, August 2nd.—‘The barometer has risen in the South and is very low in Japan and gradients are steep for SW winds. The temperature is high, the humidity moderate and the weather cloudy but fine.’

Typhoon in about 30° N, 129° E.

1887, August 3rd.—‘The barometer has fallen and gradients remain steep for SW winds owing to a typhoon in Corea, which is moving northwards. The temperature is high, the humidity high in the North and low in the South and the weather is cloudy and squally.’

Centre between Nagasaki and Fusan.

1887, August 4th.—‘The barometer has risen except in Wladivostock. Gradients continue steep for SW winds owing to the typhoon now disappearing in the North. The temperature is high, the humidity moderate and overcast and squally weather prevails.’

Centre near Eastern Corea.

1887, August 15th.—‘The barometer has fallen in Hongkong owing to a typhoon, which appears to be travelling Westward in the China Sea.’

Typhoon in about 21° N, 114° E.

1887, August 16th.—‘Directions to hoist the South Cone were issued yesterday at 1.17 p. and to remove this and hoist the Ball at 4.30 p. The Ball was directed to be taken down at 10.25 a. to-day. At 4 p. yesterday the following notice was issued:—“Typhoon SW of Hongkong moving Westward,” Fresh SE winds prevail over the northern part of the China Sea and the weather is overcast and wet.’

Centre in about 21° N, 109½° E. The typhoon was dying out at this time.

1887, August 17th.—‘The barometer has fallen in Tonquin and risen in Hongkong. Gradients are moderate for SE winds over the China Sea and for SW winds in Northern China. The temperature is low, the humidity high and the weather cloudy.’

1887, August 24th.—‘The barometer has fallen in the neighbourhood of Amoy and risen elsewhere. Gradients are moderate for SW winds over the China Sea and moderate for NE winds to the North of Amoy. The temperature is high and the weather fine and dry.’

Centre of small typhoon in 23° N, 120° E.

1887, August 25th.—‘At 6.10 p. yesterday the following notice was issued:—“Small typhoon in southern part of Formosa Channel.” At 7 a. this day directions were issued to hoist the Drum and at 10.20 a. to hoist the North Cone. The wind increased last evening in Amoy and heavy squalls with violent gusts and a heavy swell in the sea were reported during the night. The typhoon appears to have entered the mainland and to be moving northwards. The barometer has risen and gradients are gentle over the China Sea.’

Typhoon entered the mainland close to and north of Amoy and it then ceased to blow.

1887, August 26th.—‘The barometer is steady in Tonquin and has fallen elsewhere. Gradients are slight. The temperature and humidity are rather high and cloudy weather prevails with thunderstorms in Southern China. Directions to take down the North Cone were issued at 1.10 p. yesterday.’

1887, August 27th.—‘The barometer has fallen especially in Tonquin. Gradients are slight for S winds. The temperature and humidity are high and cloudy weather prevails.’

1887, September 5th.—‘The barometer has fallen in the south and gradients are moderate for N winds. The temperature is high and the weather cloudy but dry.’

1887, September 6th.—‘The fall in the barometer has continued along the SE coast of China and in Luzon and gradients continue moderate for N winds. There appears to be a typhoon SW of Formosa. The temperature is high and the weather fine and dry.’

Typhoon in about 18° N, 119° E.

1887, September 7th.—‘The barometer has fallen along the southern coast of China owing to the typhoon, referred to yesterday, passing westward in the China Sea. Directions to hoist the Drum wer

issued at 4.15 p. yesterday, and to hoist the South Cone at 11.15 a. this morning. The following telegram was issued at 9.30 a.:—"Typhoon SE of Hongkong moving westward." The temperature is high and the weather cloudy but rather dry.'

Typhoon in about 18° N, 116° E.

1887, September 8th.—The barometer has fallen in Tonquin. The typhoon appears to have entered Annam. The temperature is high, the weather cloudy but fine and dry and moderate SE winds prevail. At 4 p. yesterday the following telegram was issued:—"Typhoon SW of Hongkong moving westward," and also *directions to hoist the Ball.*'

Typhoon is about 17° N, 110° E about to enter Annam.

1887, September 9th.—The barometer has fallen in the E, particularly in the SE, and risen in the W. There is a typhoon north of Luzon. The temperature is high and the weather is cloudy but dry except in Luzon, where it is squally and wet.'

Typhoon in about 17° N, 126° E.

1887, September 10th.—The barometer has fallen everywhere. The temperature is high and the weather cloudy but dry. The typhoon raged along the NW coast of Luzon during the night accompanied by heavy rain and a tremendous sea. *Directions to take down the Ball were issued at 12.30 p. on the 8th and to hoist the Drum at 12.15 p. on the 9th.* The following telegrams were addressed to the treaty ports: at 4 p. yesterday:—"Typhoon NW of Luzon," and at 11.45 a. this day: "Violent typhoon approaching Formosa Channel."

Typhoon in about 19° N, 121° E.

1887, September 11th.—The barometer has fallen along the China Coast particularly in Hongkong. The centre of the typhoon is situated between Hongkong and South Cape and appears to be moving very slowly NWestward. It is blowing very hard in the northern semi-circle but the wind is more moderate S of the centre. At 7 p. the following telegram was issued:—"It is blowing hard in the Formosa Channel," and at 10.25 a. the following was sent to the Treaty Ports:—"The typhoon in southern part of Formosa Channel is moving NWestward. At 10.05 p. *directions were given to replace the Drum by the North Cone.*'

Typhoon in 22° N, 117° E.

1887, September 12th.—The barometer has fallen slightly in Tonquin and risen elsewhere. The temperature and humidity are rather high and the weather is overcast, wet and squally round the China Sea. *Directions to fire the gun one round were given at 7.05 p. [on the 11th] and at 10.35 a. to take down the North Cone.* At 10.35 a. the following telegram was addressed to the Treaty Ports (and the other stations):—"At midnight the typhoon entered China a little to the East of Hongkong." It blew hard in Amoy last evening during the first part of the night, and there was a high sea and wet weather. This morning the weather is squally with fresh SE wind, which indicates that the remainder of the typhoon is still moving NWestward on the mainland.'

Typhoon in 24° N, 112° E.

1887, September 13th.—The barometer has risen and gradients are moderate for S winds. The temperature and humidity are rather high and cloudy weather prevails.'

1887, September 14th.—The barometer has risen and gradients are slight for E winds. The late typhoon appears to have passed northwards through China, and then NEastward to the north of Japan. The weather is hot, damp and cloudy.'

The depression north of Japan was probably of a distinct origin.

1887, September 15th.—The barometer is beginning to fall in Luzon and has risen along the Southern coast of China and also in Japan. Gradients are moderate for N winds. The temperature and humidity are moderate and the weather cloudy.'

Typhoon apparently NE of Luzon not far from the coast.

1887, September 16th.—The barometer has fallen along the SE coast of China and still more in Luzon. It has risen in Tonquin and in Japan. There is a typhoon North of Luzon. The weather is hot and cloudy but dry along the SE coast of China. Telegraphic communication is interrupted. *Directions to hoist the Red Drum were issued at 11.20 a.*

Typhoon in about 19° N, 119° E.

1887, September 18th.—The existence of the typhoon was first indicated in the China Coast Meteorological Register on the morning of the 15th according to the last paragraph of Chapter II of the "Law of Storms" (page 9). *On the morning of the 16th* it was stated that it was N of Luzon. *Directions to hoist the Drum were issued at 11.20 a.* At 7 p. the following notice was issued:—"Ty-

phoon approaching Formosa Channel. Strong NE winds reported from stations there." At 8.50 a. on the 17th directions to fire the gun one round were given. The following notices were issued on the 17th: (at 10.20 a.) "Typhoon SSE of Hongkong apparently moving NWestward," (at 11.05 a.) "Only a strong gale is expected or a storm at any rate it is not likely to blow so hard as in 1884," (at 4 p.) "Typhoon SW of Hongkong apparently moving NWestward." At 12.20 p. directions were given to hoist the South Cone and at 1.03 p. to hoist the Ball. Owing to the absence of direct telegraphic connection with Hongkong and the other stations earlier or more complete information was not available.'

Typhoon at 9 a. on the 17th in about 20° N, 115½° E and at 9 a. on the 18th in about 22° N, 111° E.

1887, September 19th.—'The barometer has risen along the coast and fallen in Luzon. The temperature is high and the weather cloudy but calm. At 4 p. yesterday the following notice was issued:—"There appears to be another typhoon in the Pacific. Telegraphic communication is interrupted." At 10 p. directions were issued to hoist the Drum. The typhoon was approaching Bolinao from the East this morning. An increasing NW gale is felt in Luzon.'

Typhoon in 15½° N, 122° E.

1887, September 20th.—'The typhoon passed across Bolinao in the evening and is now moving Westward in the China Sea. Its full force was felt in Manila in the afternoon. The following notices were issued: (at 1 p. on the 19th) "Typhoon approaching Bolinao from the E this morning." (At 4 p. on the 19th) "Violent typhoon appears to have crossed northern Luzon and entered the China Sea." (At 10 a. on the 20th), "The typhoon appears to be moving NWestward in the China Sea between Bolinao and Hongkong."

Typhoon in about 17° N, 116° E.

1887, September 21st.—'At 12.20 p. [on the 20th] orders were issued to hoist the South Cone, at 12.27 p. notice to Cape St. James that typhoon was approaching Annam, at 12.45 p. to Harbour Office that ships bound for northern or eastern ports might expect fine weather, at 8.25 p. notice for distribution: "A fresh East gale is expected here but no typhoon," at 10.05 p. orders to fire gun one round, at 10.22 a. to the stations: "The typhoon appears to move towards northern Hainan" and at 11.24 a. directions to hoist the ball.'

Typhoon in about 18° N, 113° E.

1887, September 22nd.—'The typhoon appears to have passed over southern Hainan and to the south of Haiphong. It has probably entered northern Annam by this time.'

Typhoon in about 20° N, 107° E.

1887, September 23rd.—'The barometer has risen along the coast and gradients are gentle for NE winds. The weather is hot but rather dry and cloudy. At 12.35 p. [on the 22nd] directions were issued to take down the Ball.'

1887, September 24th.—'At 4 p. yesterday the following notice was issued: "There appears to be another typhoon in the Pacific." This typhoon is now raging in northern Luzon. It appears to be moving Westward.'

Typhoon entering northern Luzon.

1887, September 25th.—'At 12.15 p. yesterday (six hours late in the absence of direct telegraphic connection) the following notice was issued:—"The typhoon was approaching Bolinao from the E this morning," and also directions to hoist the Drum, at 2.30 p.: "The typhoon is raging furiously at Bolinao. The wind and rain are much worse than during the last typhoon," at 6.30 a. direction to fire the gun one round, at 10.20 a.: "The typhoon is moving Westward in the China Sea," and at 10.35 a. directions to hoist the South Cone.'

Typhoon in about 18½° N, 116° E.

1887, September 26th.—'At 10.35 a. to-day directions to hoist the Ball were issued. The typhoon appears to be approaching Hainan.'

Typhoon in about 19° N, 111° E.

1887, September 27th.—'The barometer has risen and gradients are gentle for NE winds. The weather is fine and dry and the temperature high. At 4 p. [on the 26th] the following notice was issued: "The typhoon has entered the mainland to the West of Hongkong," and at 10.05 p. directions to take down the Red Ball.'

Typhoon appears to have entered southern Tonquin in the afternoon of the 26th and disappeared.

1887, September 28th.—'The barometer has fallen in the E and risen in the W. Gradients are gentle for N winds. The weather is cloudy but fine and rather dry. It is hot along the SE coast of China. There is probably another typhoon in the Pacific.'

Typhoon in the Pacific to the E of Luzon.

1887, September 29th.—‘The barometer has fallen in Luzon and along the SE Coast of China. The weather is fine, hot and dry in SEastern China but overcast and wet in Luzon. The typhoon appears to be approaching northern Luzon from the East.’

Typhoon in the Pacific E of the Balintang Channel.

1887, September 30th.—‘The barometer has fallen in Luzon but is steady along the southern coast of China. The typhoon appears to have crossed southern Luzon and to be moving Westward in the southern part of the China Sea.’

One typhoon SE of S. Cape (Formosa), another [probably at this time] about crossing the southern Philippines.

1887, October 1st.—‘At 10.40 a. yesterday directions were issued to hoist the South Cone and at 10 a. to-day to remove it. The barometer has risen and the weather is fine and dry with moderate temperature.’

The new typhoon appears to have been raging near northern Palawan.

1887, October 4th.—‘The barometer is rising slowly in Luzon and falling slowly along the Coasts of China and Japan. Gradients are moderate for N winds. The weather is fine, dry and hot.’

1887, October 5th.—‘At 4.45 p. [on the 4th] the following notice was issued:—“Typhoon approaching Formosa.” The typhoon has since approached the Channel. It is probably blowing hard in southern Formosa.’

Typhoon in about 20° N, 132° E.

1887, October 6th.—‘At 3 p. directions were issued to hoist the Red Drum. The typhoon appears to have recurved.’

Typhoon E of Formosa recurving towards the North.

1887, October 7th.—‘The barometer has risen and gradients are gentle. The temperature is moderate and the weather fine and very dry. At 4.15 p. directions to take down the Drum were issued.’

The storm was moving NEastward to the S of Japan.

1887, November 26th.—‘There is not much change in the barometer and gradients continue steep for NE winds in the China Sea. The weather is fine and cool and the humidity moderate.’

1887, November 28th.—‘The barometer has fallen along the Coast of China but is beginning to rise in Luzon. At 10h. 5m. p. yesterday the following notice was sent to Singapore.—“There is a typhoon in the southern part of the China Sea moving Westward.”’

Typhoon in about 15° N, 115° E.

18. I cannot conclude this report without expressing my thanks to the heads of the Harbour, Police and Post Office Departments for their great courtesy and kind co-operation. The buildings have been kept in a good state by the Public Works Department. All the necessary repairs are being effected. The leaks in the roofs have been attended to and additional venetians put up to obviate the draughts in the main building. Benchmarks have been put on different public buildings in Kowloon, and their heights above the benchmark in the police boat-basin have been measured with the level.

I have the honour to be,

Sir,

Your most obedient Servant,

W. DOBERCK,
Director.

The Honourable

THE COLONIAL SECRETARY,

&c., &c., &c.