GOVERNMENT NOTIFICATION.—No. 161.

The following Report of the Director of the Observatory, for the year 1901, is published.

By Command,

J. H. STEWART LOCKHART,
Colonial Secretary.

Colonial Secretary's Office, Hongkong, 15th March, 1902.

HONGKONG OBSERVATORY,
31*st January*, 1902.

SIR,—I have the honour to submit my annual report for 1901 to His Excellency the Officer Administering the Government. My seventeenth volume of observations was published last autumn, and the eighteenth volume is now being printed. It contains the usual astronomical, meteorological and magnetic observations.

2. The comparison of Mr. FIGG's weather forecasts, issued daily about 11 a.m., with the weather subsequently experienced has been conducted on the same system as heretofore (compare Annual Report for 1896 § 5). We have:—

Success 59 °/₀, partial success 34 °/₀, partial failure 6 °/₀, failure 1 °/₀.

Following the method used in meteorological offices and taking the sum of total and partial success as a measure of success, and the sum of total and partial failure as a measure of failure, we find, finally, that 93 °/₀ of the weather forecasts were a success.

3. The China Coast Meteorological Register was printed every morning at the Observatory, and information regarding storms was telegraphed by Mr. FIGG and exhibited on notice-boards as often and as fully as such information could be justified by the weather telegrams received. This happened on 93 days in 1901. The Red Drum was hoisted once, the Red South Cone once, and the Black South Cone once. The Typhoon Gun was not fired during the year.

4. Telegraphic connection with Victoria was interrupted as follows:—January 18th, 7 a. to 10.30 a.; February 11th, 7 a. to 9.30 a.; February 16th, 4 p. to 17th, 10.20 a.; 17th, 1 p. to 18th, 8.30 a.; 28th, 7.45 a. to 1.16 p.; March 3rd, 2.30 p. to 4th, 7 a.; 4th, 8.30 a. to 10.20 a.; April 6th, 6.3 p. to 8th, 12.35 p.; May 8th, 1 p. to 4.36 p.; 20th, 3.18 p. to 5.15 p.; June 8th, 5.50 p. to 9th, 8.50 a.; 20th, 12.5 p. to 3.17 p.; August 4th, 8.10 a. to 12.35 p.; 5th, 7 a. to 9.40 a.; September 30th, 5 p. to 10 p.; October 1st, 7.54 a. to 10.54 a.; November 12th, 7.25 p. to 10 p.; 17th, 9 a. to 12.38 p.; December 3rd, 8 a. to 1 p.; 3rd, 4.20 p. to 5.55 p.; 5th, 9.10 a. to 7th, 3.30 p.; 11th, 4.35 p. to 7.10 p.; 20th, 8.12 a. to 9.20 a.; 29th, 8 a. to 30th, 10.30 a. Interruptions occurred, therefore, on 30 days, and of course, also, during thunderstorms.

5. During 1901 in addition to meteorological registers kept at about 40 stations on shore, 2,007 ship-logs have been copied on board or forwarded by the captains. The total number of vessels, whose log-books have been made use of by Miss DOBERCK, was 245. The total number of days' observations (counting separately those made on board different ships on the same day) was 15,731.

6. The following is a list of ships, from which logs have been obtained in 1901. The majority are steamships, and the others are distinguished as follows:—bk., barque; sh., ship; bqt., barquentine:—Adria, Airlie, Albion (H.M.S.), Alcinous, Alexander (U.S.S.), Alexandria, Amara, Amiral Charner (French man-of-war), Andalusia, Anna, Anping Maru, Antenor, Antonio Macleod, Ariake Maru, Argonaut (H.M.S.), Arratoon Apcar, Australian, Awa Maru, Ballaarat, Banca, Bengal, Benlarig, Bingo Maru, Bisagno, Bombay, Bormida, Braemar, Brand, Brandenburg (S.M.S.), Brooklyn (U.S.S.), Burnside (U.S. Cable ship), Calchas, Canning, Canton, Catherine Apcar, Carinthia. Carlisle City, Cebu, Ceylon, Changsha, Chelydra, Chihli, Chingkiang, Ching Wo, Chi Yuen, Choysang, Chunsang, Cimbria, City of Bombay, Commerce (sch.), Coptic, Coromandel, Daijin Maru, Decima, Diamante, Dido (H.M.S.), Doric, Eastern, Elcano, Empress of China, Empress of India, Empress of Japan, Esang, Fausang, Flandria, Formosa, François Arago, Freiburg, Fushun, Gaelic, Geier (S.M.S.), Glenfalloch, Glenfarg, Glengarry, Goliath (H.M.S.), Guichen (French man-of-war), Guthrie, Hailan, Hailoong, Hainan, Haitan, Hamburg, Hansa (S.M.S.), Hertha (S.M.S.), H. H. Meier, Hikosan Maru, Hinsang, Hiroshima Maru, Hongkong, Hongkong Maru, Hopsang, Hsieh Ho, Hunan, Idzumi Maru, India, Indrapura, Indravelli, Indus, Irene (S.M.S.), Iris (bqt.), Jaguar (S.M.S.), Japan, Java, Kachidate Maru, Kagoshima Maru, Kaifong, Kaiserin Augusta (S.M.S.), Kamakura Maru, Kanagawa Maru, Kashing, Kasuga Maru, Kawachi, Keongwai, Kentucky (U.S.S.), Kintuck, Kiukiang, Kinshiu Maru, Knight Companion, Kumano Maru, Kumsang, Kutsang, Kurfürst Friederich Wilhelm (S.M.S.), Kwanglee, Kyoto Maru, König Albert, Laisang, Leopard (S.M.S.), Loksang, Loongsang, Loosok, Loyal, L. Schepp (sh.), Lucia, Lyeemoon, Macedonia, Machew, Madagascar (bk.), Maréchal de Villars (bk.), Maria Teresa, Maria Valeria, Marquis Bacquehem, Massilia, Mausang, Mazagon, Miike Maru, Monterey (U.S.S.), Moyune, München, Nanchang, Nankin, Natal, Neptune, Ness, Nereus (sh.), Nippon Maru, Nivelle (sh.), Nuentung, Nurani, Obi, Olympia, Onsang, Orlando (H.M.S.), Oro, Pakhoi, Pakshan, Palawan, Parramatta, Patroclus, Pax, Pekin, Penarth, Peninsular, Pennsylvania (U.S.T.), Perla, Peru, Petrarch, Phra Chom Klao, Phœnix (H.M.S.), Pompey (U.S.S.), Prima, Princeton (U.S.S.), Prinzess Irene, Prinz Heinrich, Progress, Prudentia, Quarta, Radnorshire, Raja-

buri, Rambler (H.M.S.), Ranya, Reynolds, Riojun Maru, Rosario (H.M.S.), Rosetta Maru, Sachsen, Saint Irene, Salahadji, Sambia, Sandakan, Sanuki Maru, Saxonia, Segovia, Sevastopol (Russian man-of-war), Shantung, Shinano Maru, Shirley, Siam, Siberia, Silesia, Singapore, Sishan, Stentor, Strathard, Suevia, Suisang, Sultan van Langkat, Sumatra, Sunda, Sungkiang, Süllberg, Taichiow, Tailee, Taisang, Taishan, Taiton Maru, Taiwan, Taksang, Tantalus, Tetartos, Tientsin, Tingsang, Tsinan, Tsurugisan Maru, Vale of Doon (bk.), Ville d'Alger (French man-of-war), Ville de la Ciotat, Vimeira (bk.), Wakasa Maru, Waterwitch (H.M.S.), Wilmington (U.S.S.), Woerth (S.M.S.), Wongkoi, Yamaguchi Maru, Yangtze, Yawata Maru, Yorktown (U.S.S.), Yuensang.

7. The entry of observations made at sea in degree squares for the area between 9° South and 45° North latitude, and between the longitude of Singapore and 180° East of Greenwich for the construction of trustworthy pilot charts, has been continued by Miss DOBERCK and 253593 in all have now been entered.

Table I.

Meteorological Observations entered in 10° Squares from 1893-1901 inclusive.

Square number.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
19	1	9	...	...	...	...	5	1	...	...	1	...
20	50	44	12	57	22	10	12	8	7	40	29	24
21	44	42	48	40	40	...	12	15	7	31	37	49
22	8	17	15	31	40	25	31	17	2	27	1	2
23	239	305	104	68	26	1	103	86	34	155	85	218
24	508	379	454	419	345	302	592	529	381	482	605	444
25	284	209	188	176	203	177	236	211	187	363	388	322
26	3104	2728	3304	3363	3614	3647	3784	3972	3700	3665	3241	3132
27	...	...	3	5	3	13	6	6	6	2	...	3
55	20	37	26	20	27	45	29	30	20	10	11	22
56	19	59	30	15	34	40	48	52	16	33	26	20
57	56	89	48	76	52	34	62	39	12	54	29	45
58	75	94	108	66	75	74	51	69	18	33	86	76
59	147	164	157	60	82	107	111	101	19	113	157	131
60	325	367	339	216	304	273	411	336	188	251	247	250
61	3411	3026	3624	3370	4022	4164	4325	4341	4206	4239	3915	3527
62	1953	1924	2176	2107	2268	2333	2166	2187	2191	2097	2009	1974
63	27	34	39	42	49	61	40	35	30	39	25	24
91	72	89	52	105	24	35	36	46	38	58	122	93
92	83	105	58	101	35	16	27	23	37	33	116	82
93	66	83	40	53	7	26	4	27	37	40	81	64
94	71	63	77	101	70	96	74	38	34	21	160	66
95	93	127	70	110	100	65	87	65	55	105	83	141
96	2144	1959	2026	1978	2355	2307	2379	2245	2022	2222	2041	2022
97	933	920	1084	967	987	1108	1048	1048	1064	1092	1130	1036
98	306	291	291	316	371	385	417	419	401	395	387	347
127	180	89	141	118	96	114	151	122	130	144	126	124
128	194	105	152	137	122	160	178	178	149	197	155	158
129	225	127	207	208	152	217	199	212	190	209	210	204
130	562	430	547	483	621	618	699	635	495	541	611	512
131	549	501	524	565	607	646	744	842	522	547	567	498
132	1740	1614	2149	2477	2858	2891	3195	2936	2534	2596	2512	1795
133	...	...	118	103	153	174	176	117	103	143	117	19
163	165	157	176	244	233	272	274	281	222	224	207	144
164	271	194	271	338	305	423	388	391	375	301	284	196
165	315	220	263	296	394	417	429	410	412	269	321	235
166	114	69	87	110	135	134	152	118	169	118	103	87
167	19	13	21	60	76	121	148	165	96	73	43	4
168	1	7	4	14	12	12	12	7	7	14	12	...
169	...	...	...	...	...	...	...	...	...	...	...	...
170	...	...	...	...	...	...	...	...	...	...	...	...
199	53	36	51	73	59	69	65	52	73	64	61	49
200	12	5	2	5	1	4	8	...	23	6	13	1
201	...	...	...	...	...	...	...	...	2	...	...	...
202	...	...	...	...	...	4	2	1	5	1	...	...
203	...	...	...	...	...	2	2	1	2	...	...	...
318	...	21	...	15	...	...	19	...	...	...	3	7
319	51	42	55	24	1	9	2	...	1	27	11	30
320	4	7	16	26	23	51	21	10	7	30	2	10
321	...	1	...	14	19	15	2	15	20	22	11	14
322	53	31	41	50	72	68	70	48	61	82	62	40
323	454	261	357	231	230	186	274	226	213	235	300	319
324	393	300	209	133	95	104	148	152	250	304	346	375
325	325	294	326	430	448	492	559	567	599	372	361	344
326	...	...	...	...	...	1	...	...	...	...	...	...
	19719	17688	20090	20016	21867	22548	24013	23432	21372	22119	21450	19279

8. As stated in the "Instructions for making Meteorological Observations," meteorological instruments forwarded by observers who regularly send their registers to the Observatory are verified here free of cost. During the past year, 1 thermometer was verified and several hundred barometers and aneroids on board ship were compared with our standard.

9. The mean values of the spectroscopic rainband (1-5) in 1901 were as follows:—January 2.0, February 1.0, March 1.8, April 2.2, May 2.6, June 2.1, July 2.1, August 2.2, September 1.8, October 1.7, November 1.0, December 1.3. Year 1.82.

10. In 1901, the number of transits observed was 3,349. The axis of the transit instrument was levelled 231 times and the azimuth and collimation errors, which are less liable to variation, were determined 28 times by aid of the meridian mark erected in 1884. Stellar observations were discontinued between June 3 and August 2, and again between September 19 and November 20. About one half of the observations have been made and the whole have been reduced by Mr. J. I. PLUMMER, the remainder of the observations have been made by Mr. F. G. FIGG and myself.

11. The standard sidereal clock by Dent has gone uninterruptedly thoughout the year in a perfectly satisfactory manner. The platinum points of the contact springs were cleaned once only, viz., on August 29, an operation which does not appreciably interfere with the rate, but usually alters the arc of vibration to some extent. The standard mean time clock by Brock continued to go in the unsatisfactory manner mentioned in previous reports until June 4, when, the cord of the driving weight, having been found broken, the clock was thoroughly overhauled, and the pendulum taken to pieces and cleaned. As the compensation of this clock was much in excess, the zinc tubing was shortened three millimetres, and there is reason to believe that the going of the clock since these alterations has been materially improved. The time-ball clock continues to give satisfaction.

12. The errors of the time-ball are given in Table II. There were six failures in 1901. The ball is not dropped on Government holidays, nor, since December 1st, on Sundays, and on 50 days this year it has been under repair. The cause of the failures on February 17, June 6 and June 10, was that the piston jammed at the top of the shaft most probably in consequence of hardened oil in the shaft on the first occasion, and from rust on the mast upon the later dates. On July 20 the current failed to discharge the lock, and on November 21 and November 25, the back spring having become loose, the piston would not rest upon the tooth. The ball was dropped successfully 286 times in the year, and on five days was not dropped, there being no assistant available. In consequence of the repeated repairs necessary to the old ball, the zinc having become crystallized and very much cracked, a new one was ordered from the Hongkong and Whampoa Dock Company which has been erected and which was dropped for the first time on August 23. The new ball has been constructed of brass with spring steel ribs, and to obviate any accumulation of rain-water in the interior of the ball, a small hole has been drilled at the lowest part of its circumference. The probable error was in January ± 0ˢ.22, in February ± 0ˢ.09, in March ± 0ˢ.12, in April ± 0ˢ.28, in May ± 0ˢ.11, in June ± 0ˢ.11, in July ± 0ˢ.10, in August ± 0 .09, in September ± 0ˢ.10, in October ± 0ˢ.09, in November ± 0ˢ.10, and in December ± 0ˢ.20.

Table II.

Errors of Time-Ball in 1901.

− means too late. + means too early.

Date.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	...	0ˢ.1	...	0ˢ.1	0ˢ.1	0ˢ.1	0ˢ.1	...	0ˢ.1	0ˢ.1	0ˢ.1	...
2	...	...	+0ˢ.2	+0.3	0.1	+0.2	0.1	...	+0.2	0.1	0.1	+0ˢ.6
3	+0ˢ.4	0.1	+0.2	+0.4	0.1	0.1	0.1	...	0.1	0.1	...	+0.6
4	+0.2	0.1	0.1	+0.3	0.1	+0.2	0.1	...	0.1	0.1	0.1	0.1
5	0.1	0.1	0.1	...	0.1	+0.3	0.1	...	0.1	0.1	0.1	0.1
6	0.1	0.1	0.1	+0.3	0.1	...	0.1	...	0.1	0.1	0.1	0.1
7	+0.2	0.1	0.1	...	0.1	0.1	−0.2	...	0.1	0.1	0.1	0.1
8	+0.4	0.1	0.1	...	+0.2	0.1	−0.2	...	0.1	0.1	0.1	...
9	+0.6	0.1	0.1	+0.7	+0.2	...	0.1	...	0.1	0.1	0.1	0.1
10	+0.7	0.1	0.1	+0.9	0.1	...	...	...	0.1	0.1	...	0.1
11	+0.9	0.1	0.1	+1.1	0.1	...	...	...	0.1	0.1	...	+0.2
12	+0.6	0.1	0.1	+1.3	0.1	...	...	...	+0.3	0.1	0.1	0.1
13	+0.5	0.1	0.1	+1.4	0.1	−0.2	...	...	+0.2	0.1	−0.2	0.1
14	0.1	0.1	0.1	0.1	0.1	0.1	...	...	0.1	0.1	0.1	+0.2
15	−0.2	0.1	0.1	0.1	0.1	0.1	...	...	0.1	0.1	0.1	...
16	0.1	0.1	0.1	0.1	0.1	...	...	...	0.1	0.1	0.1	0.1
17	0.1	...	+0.2	0.1	0.1	0.1	...	...	0.1	0.1	0.1	0.1
18	0.1	...	0.1	0.1	+0.2	0.1	0.1	...	0.1	0.1	0.1	0.1

Errors of Time-Ball,—Continued.

Date.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
19	0.1	...	−0.4	0.1	0.1	0.1	0.1	...	0.1	0.1	0.1	+0.2
20	0.1	...	0.1	0.1	0.1	0.1	...	...	0.1	0.1	0.1	+0.5
21	0.1	...	0.1	0.1	0.1	0.1	0.1	...	0.1	0.1	...	+0.7
22	0.1	...	0.1	0.1	0.1	0.1	0.1	...	0.1	0.1	0.1	...
23	0.1	...	0.1	0.1	−0.2	0.1	0.1	0.1	0.1	0.1	0.1	+0.9
24	+0.2	...	−0.2	0.1	...	−0.2	...	0.1	0.1	0.1	0.1	0.1
25	+0.3	...	0.1	0.1	0.1	−0.2	...	...	0.1	0.1	...	...
26	+0.2	...	0.1	−0.2	−0.2	0.1	...	0.1	0.1	0.1	0.1	...
27	+0.4	...	+0.2	−0.2	...	0.1	...	0.1	0.1	0.1	0.1	0.1
28	+0.3	...	+0.2	−0.2	−0.2	0.1	...	0.1	0.1	0.1	0.1	0.1
29	0.1	...	+0.2	0.1	−0.3	0.1	...	0.1	0.1	0.1	0.1	...
30	0.1	...	+0.2	0.1	0.1	0.1	...	0.1	0.1	0.1	+0.4	0.1
31	0.1	...	0.1	...	0.1	...	...	0.1	...	0.1	...	−0.2

13. The cisterns of the barograph and standard barometers are placed 109 feet above M.S.L. The bulbs of the thermometers are rotated 108 feet above M.S.L., and 4 feet above the grass. The solar radiation thermometer is placed at the same height. The rim of the rain-gauge is 105 feet above M.S.L , and 21 inches above the ground.

14. The monthly Weather Reports are arranged as follows:—

Table I. exhibits the hourly readings of the barometer reduced to freezing point of water, but not to sea level nor for gravity as measured (at two minutes to the hour named) from the barograms.

Table II. and III. exhibit the temperature of the air and of evaporation as determined by aid of rotating thermometers. Table II. exhibits also the extreme temperatures reduced to rotating thermometer by comparisons of thermometers hung beside them. Table III. exhibits also the solar radiation (black bulb in vacuo) maximum temperatures reduced to Kew arbitrary standard.

Table IV. exhibits the mean relative humidity in percentage of saturation and mean tension of water vapour present in the air in inches of mercury, for every hour of the day and for every day of the month, calculated by aid of Blanford's tables from the data in Tables II. and III.

Table V. exhibits the duration of sunshine expressed in hours, from half an hour before to half an hour after the hour (true time) named.

Table VI. exhibits the amount of rain (or dew) in inches registered from half an hour before to half an hour after the hour named. It exhibits also the observed duration of rain.

Table VII. exhibits the velocity of the wind in miles and its direction in points (1—32). The velocity is measured from half an hour before to half an hour after the hour named, but the direction is read off at the hour.

Table VIII. exhibits the amount (0—10), name (Howard's classification) 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. With regard to the names of clouds; nimbus (nim) is entered only when the rain is seen to fall; when no rain is seen to fall cumulo-nimbus (cum-nim) is entered. This name indicates clouds intermediate between cum and nim. Cumulo-stratus (cum-str) is the well-known thunder cloud, while strato-cumulus (str-cum) signifies a cloud intermediate between stratus and cum. Sm-cum means alto-cumulus.

Table IX. exhibits for every hour in the day, the mean velocity of the wind reduced to 4 as well as 2 directions, according to strictly accurate formulæ, and also the mean direction of the wind.

Below this is printed a list of the phenomena observed.

15. The following annual Weather Report for 1901 is arranged as follows:—

Table III. exhibits the mean values for the year (or hourly excess above this) obtained from the monthly reports. The total duration of rain was 751 hours. There fell at least 0.01 inch of rain on 137 days.

Table IV. exhibits the number of hours during a portion of which at least 0.005 inch of rain (or dew) was registered.

Table V. exhibits the number of days with wind from eight different points of the compass. The figures are obtained from the mean daily directions in Table VII. of the monthly reports. Days with wind from a point equidistant from two directions given, are counted half to one of these and half to the other, *e.g.*, half of the days when the wind was NNE are counted as N, and the other half as NE.

Table VI. exhibits the number of days on which certain meteorological phenomena were registered, and also the total number of thunderstorms noted in the neighbourhood during the past year.

Table VII. shows the frequency of clouds of different classes.

Table VIII. is arranged as last year.

Table IX. exhibits the monthly and annual extremes.

Table X. contains five-day means.

16. The observations of magnetic declination and horizontal force published in tables XI. and XII. were made with magnet No. 55 on Kew pattern unifilar magnetometer Elliot Brothers No. 55. The dips were observed with dip-circle Dover No. 71.

The methods adopted in making observations and in determining and applying the corrections are explained in *Appendix G of Observations and Researches made in 1885*—"On the verification of the Unifilar magnetometer Elliott Brothers No. 55." The value of log $\pi^2 K$ was 3.44907 at 25°. The value of P was 7.28. The mean value of the magnetic moment of the vibrating needle was 579.33.

The times of vibration exhibited in Table XII. are each derived from 12 observations of the time occupied by the magnet in making 100 vibrations, corrections having been applied for rate of chronometer and arc of vibration.

The observations of horizontal force given in Table XIII., are expressed in C.G.S. units. The vertical and total forces have been computed by aid of the observed dips.

I have the honour to be,

Sir,

Your most obedient Servant,

W. DOBERCK,
Director.

The Honourable

The COLONIAL SECRETARY,

&c., *&c.,* *&c*

Table III.

Mean Values and Hourly Excess above the Mean of Meteorological Elements in 1901.

	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.	Mean or Total.
Pressure,	+.004	—.007	—.015	—.018	—.013	.000	+.016	+.031	+.043	+.045	+.037	+.019	—.005	—.026	—.040	—.045	—.041	—.032	—.017	.000	+.013	+.021	+.020	+.014	29.854
Temperature,	— 1.4	— 1.6	— 1.8	— 2.0	— 2.2	— 2.1	— 1.6	— 0.5	+ 0.4	+ 1.4	+ 2.0	+ 2.4	+ 2.7	+ 2.6	+ 2.4	+ 1.8	+ 1.2	+ 0.4	— 0.2	— 0.4	— 0.6	— 0.7	— 1.1	— 1.2	72.1
Diurnal Range,	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8.4
Humidity,	+ 5	+ 5	+ 5	+ 5	+ 5	+ 4	+ 2	0	— 3	— 6	— 7	— 7	— 8	— 7	— 7	— 5	— 3	0	+ 1	+ 2	+ 3	+ 4	+ 5	+ 5	75
Vapour Tension,	+.011	+.007	+.004	.000	—.004	—.005	—.006	—.007	—.010	—.015	—.014	—.011	—.010	—.008	—.009	—.005	+.001	+.004	+.008	+.011	+.013	+.017	+.015	+.014	0.630
Sunshine (Total),	...	...	...	...	...	10.6	94.0	160.5	181.3	193.8	201.9	203.5	212.3	214.5	202.3	189.2	135.0	16.9	...	...	...	...	...	...	2015.8
Rainfall (Total),	1.880	4.330	3.560	2.740	3.870	4.240	2.745	2.205	2.555	1.600	3.790	2.370	1.400	1.500	1.860	1.160	1.905	1.730	2.015	1.710	1.655	1.650	1.575	1.740	55.785
Hours of Rain (Total),	36	32	41	45	42	52	41	45	42	34	36	31	27	23	28	26	25	26	30	35	28	26	32	39	822
Intensity of Rain,	0.052	0.135	0.087	0.061	0.092	0.082	0.067	0.049	0.061	0.047	0.105	0.076	0.052	0.065	0.066	0.045	0.076	0.067	0.067	0.049	0.059	0.063	0.049	0.045	0.068
Wind-Velocity,	— 0.8	— 1.1	— 1.1	— 1.3	— 1.6	— 1.6	— 1.1	— 0.1	+ 1.0	+ 1.5	+ 2.6	+ 1.9	+ 2.1	+ 2.2	+ 1.9	+ 1.6	+ 1.0	— 0.3	— 0.8	— 1.1	— 1.0	— 1.0	— 1.3	— 1.1	12.3
Wind-Direction,	— 6°	— 5°	— 6°	— 7°	— 7°	— 8°	— 8°	— 9°	— 5°	0°	+ 2°	+ 6°	+12°	+11°	+11°	+11°	+ 9°	+ 3°	+ 2°	— 1°	— 4°	— 5°	— 6°	— 4°	E 3° S
Cloudiness,	— 5	...	...	— 3	...	...	+ 8	...	...	+ 7	...	...	+ 3	...	...	+ 1	...	...	— 3	...	...	— 8	...	...	66
Solar Radiation,	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	125.2
Excess of do.,	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	48.3

Table IV.

Number of Hours during a portion of which it rained for each Month in the Year 1901.

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,	2	1	2	2	3	3	1	1	1	0	2	1	0	0	0	0	1	0	1	1	2	1	2	1	28
February,	2	2	3	3	2	1	1	1	1	1	2	2	3	1	2	2	1	3	1	1	1	1	1	4	42
March,	2	0	2	1	0	2	1	1	2	2	1	0	1	2	2	0	1	2	3	3	1	1	3	4	37
April,	7	7	8	5	6	5	4	3	3	3	5	3	3	3	4	5	3	3	4	6	3	2	2	4	101
May,	3	4	6	7	8	8	6	6	5	8	7	10	5	4	4	6	5	3	5	6	6	4	4	5	135
June,	5	5	4	7	4	4	4	9	5	3	4	2	0	3	2	2	2	1	1	2	1	2	3	4	79
July,	6	3	4	7	8	10	9	7	11	6	6	7	4	2	3	3	2	1	3	3	3	3	3	3	117
August,	4	6	9	9	5	10	7	8	9	6	6	4	10	6	7	4	3	6	4	5	4	4	9	8	153
September,	0	1	1	2	3	3	1	2	1	1	1	1	1	2	1	1	2	3	3	2	1	1	1	1	36
October,	2	1	1	1	1	3	3	3	2	2	1	0	0	0	1	1	1	1	2	3	3	3	1	2	38
November,	1	1	1	0	1	2	2	2	2	1	0	0	0	0	1	1	2	2	1	1	1	1	1	1	25
December,	2	1	0	1	1	1	2	2	0	1	1	1	0	0	1	1	2	1	2	2	2	3	2	2	31
Total,	36	32	41	45	42	52	41	45	42	34	36	31	27	23	28	26	25	26	30	35	28	26	32	39	822

Table V.

Number of Days with Wind from eight different points of the Compass during each Month of the Year 1901.

Month.	N.	NE.	E.	SE.	S.	SW.	W.	NW.
January,	...	5	25	...	...	...	...	1
February,	13	8	7	...	...	...	...	...
March,	...	2	27	...	...	...	1	1
April,	1	...	21	2	5	1	...	...
May,	1	1	16	3	3	4	3	...
June,	...	1	9	2	11	6	...	1
July,	...	...	8	10	8	4	1	...
August,	...	1	17	4	1	4	4	...
September,	2	2	14	3	2	3	3	1
October,	3	5	15	1	...	4	1	2
November,	2	5	23	...	...	...	...	...
December,	4	6	19	1	...	...	...	1
Sums,	26	36	201	26	30	26	13	7

Table VI.

Total Number of Days on which different Meteorological Phenomena were noted and Total Number of Thunderstorms during each Month of the Year 1901.

Month.	Fog.	Electric Phenomena.	Lightning.	Thunder.	Thunderstorms.	Unusual Visibility.	Dew.	Rainbows.	Lunar Halo.	Lunar Corona.	Solar Halo.	Solar Corona.
January,	5	...	...	...	...	1	10	...	...	...	1	...
February,	...	2	2	...	...	...	2	...	...	5	...	...
March,	6	1	1	1	...	1	8	...	...	5	1	...
April,	8	13	13	7	7	1	6	...	...	6	2	...
May,	2	18	18	7	5	1	9	1	4	6	10	...
June,	...	18	18	5	1	1	5	2	5	5	8	1
July,	2	13	8	7	1	...	8	8	4	5	11	1
August,	9	17	14	9	2	4	19	5	3	3	7	1
September,	12	10	10	4	2	...	24	...	...	2	...	...
October,	1	3	3	2	...	...	13	2	4	1	4	...
November,	...	...	...	...	...	...	10	...	2	2	1	...
December,	5	...	...	...	...	3	9	1	...	2	...	...
Sums,	50	95	87	42	18	12	123	19	22	42	45	3

Table VII.

Total Number of Times that Clouds of different forms were observed in each Month of the Year 1901.

Month.	c.	c-str.	c-cum.	sm-cum.	cum.	cum-str.	str.	R-cum.	cum-nim.	nim.
January,	...	2	12	51	144	...	36	...	15	21
February,	...	2	2	44	47	...	55	...	12	18
March,	...	2	5	53	115	...	36	1	12	14
April,	...	3	6	29	130	...	21	...	28	39
May,	1	22	24	43	146	...	16	1	9	51
June,	...	20	67	19	183	...	10	...	8	22
July,	...	21	113	7	201	...	5	...	6	22
August,	...	8	104	24	165	...	4	...	6	36
September,	...	...	40	45	148	...	3	...	...	12
October,	...	12	43	34	133	...	7	5	4	17
November,	...	16	18	55	65	...	7	...	4	8
December,	...	21	6	32	83	...	17	...	10	19
Sums,	1	129	440	436	1560	...	217	7	114	279

Table VIII.

Month. 1901.	Barometric Tide.	Mean Diurnal Variability of Temperature.	Weight of Aqueous Vapour.	Rainfall. Mean.	Rainfall. 1901.	Hourly Intensity of Rain.	Mean Direction of Clouds whence coming. Lower.	Mean Direction of Clouds whence coming. Upper.	Number of Days with Clouds below 2,000 ft.	Number of Days with Clouds below 1,000 ft.
January,	0.105	1.63	5.61	1.545	0.685	0.010	E 6° S	W 5° S	20	9
February,	0.111	3.01	2.40	2.091	0.765	0.014	E 15° N	W 13° N	1	1
March,	0.101	2.30	5.05	2.991	1.275	0.036	E 12° S	W 8° S	8	5
April,	0.093	1.68	7.42	5.980	9.035	0.073	E 53° S	W 15° S	23	14
May,	0.088	2.22	8.49	13.159	14.105	0.101	E 54° S	W 6° S	17	6
June,	0.072	0.92	9.10	16.496	2.335	0.042	S 1° W	W 75° N	11	2
July,	0.067	0.71	9.41	14.210	5.585	0.103	S 14° E	N 16° E	7	0
August,	0.074	1.25	9.34	13.482	14.000	0.135	E 20° S	E 27° N	18	5
September,	0.081	1.04	8.32	8.833	3.890	0.139	E 15° N	N 13° W	4	0
October,	0.100	1.41	6.88	5.794	2.505	0.074	E 5° N	W 5° S	4	2
November,	0.108	1.77	5.01	1.302	0.770	0.033	E 3° N	W 15° S	1	0
December,	0.104	2.13	4.06	0.985	0.835	0.027	E 8° N	W 15° S	6	1
Mean or Total,	0.092	1.67	6.76	86.867	55.785	0.066	E 22° S	W 30° N	10	4

Table IX.

Monthly Extremes of the Principal Meteorological Elements registered during the Year 1901.

Month.	Barometer. Max.	Barometer. Min.	Temperature. Max.	Temperature. Min.	Humidity. Min.	Vapour Tension. Max.	Vapour Tension. Min.	Rain. Daily Max.	Rain. Hourly Max.	Wind Velocity. Max.	Radiation. Sun Max.
January,	30.209	29.814	75.8	56.7	65	0.667	0.369	0.180	0.180	35	133.9
February,	.377	.828	68.3	38.4	6	0.472	0.026	0.215	0.085	45	125.3
March,	.228	.783	78.7	54.5	48	0.692	0.248	0.350	0.195	40	132.4
April,	.105	.584	84.8	61.9	54	0.890	0.383	4.230	1.105	39	136.1
May,	29.966	.590	88.7	64.2	58	0.949	0.485	4.045	1.300	37	145.3
June,	.841	.440	90.6	74.2	44	0.991	0.480	0.490	0.290	35	151.5
July,	.789	.474	89.7	76.2	55	0.981	0.703	1.055	0.530	33	148.6
August,	.790	.250	92.7	73.0	52	1.041	0.669	3.110	1.900	48	146.6
September,	.932	.612	90.8	73.5	30	0.936	0.373	1.895	0.600	25	144.4
October,	30.073	.590	91.4	65.3	27	0.962	0.273	1.645	0.295	42	145.7
November,	.161	.828	82.2	59.6	23	0.623	0.153	0.355	0.115	33	139.3
December,	.360	.812	74.7	48.4	12	0.670	0.049	0.460	0.190	35	127.5
Year,	30.377	29.250	92.7	38.4	6	1.041	0.026	4.230	1.900	48	151.5

Table X.

Five-Day Means of the Principal Meteorological Elements observed at Hongkong in 1901.

Five-Day Periods.	Barometer.	Temperature.	Humidity.	Vapour Tension.	Wind Velocity.	Nebulosity.	Sunshine.	Rain.
January 1– 5	29.944	67.2	82	0.549	14.5	8.8	2.1	0.016
" 6–10	.956	63.1	83	.482	18.1	9.9	1.0	0.066
" 11–15	30.024	63.7	85	.502	17.7	8.9	1.4	0.038
" 16–20	.041	64.5	84	.519	16.7	7.3	3.5	0.015
" 21–25	.018	66.3	85	.549	12.3	5.8	5.0	0.001
" 26–30	.039	64.8	79	.484	13.8	7.6	3.8	0.001
" 31– 4	.173	52.5	57	.253	14.5	8.2	2.1	0.000
February 5– 9	.126	54.2	34	.160	12.4	4.8	6.2	0.000
" 10–14	.132	52.4	36	.146	10.8	6.8	4.3	0.048
" 15–19	.159	56.6	56	.259	8.4	9.8	0.1	0.027
" 20–24	.090	56.7	56	.259	11.7	7.7	2.9	0.040
" 25– 1	.082	58.9	59	.294	15.9	8.4	7.7	0.038
March 2– 6	.105	59.5	72	.368	18.7	4.8	6.5	0.000
" 7–11	29.968	65.3	76	.475	13 0	5.0	7.9	0.000
" 12–16	30.045	61.7	74	.412	20.9	10.0	1.2	0.011
" 17–21	.059	63.4	79	.463	17.9	7.4	3.0	0.114
" 22–26	29.964	66.0	78	.504	11.8	4.7	6.2	0.054
" 27–31	.962	67.7	84	.573	9.6	8.5	4.3	00.76
April 1– 5	.967	67.1	74	.494	16.4	7.8	3.7	0.001
" 6–10	.800	66.7	95	.627	19.3	9.9	0.1	1.232
" 11–15	.828	69.2	89	.643	14.9	8.8	2.4	0.310
" 16–20	.740	73.8	89	.745	12.8	9.2	2.9	0.007
" 21–25	.699	79.6	83	.841	11.5	9.3	3.0	0.005
" 26–30	.849	74.8	90	.778	12.6	7.6	4.2	0.252
May 1– 5	.758	77.7	85	.808	7.7	9.1	4.2	0.258
" 6–10	.701	77.1	89	.827	9.8	9.6	2.7	1.072
" 11–15	.833	71.2	84	.646	15.1	9.7	0.6	0.400
" 16–20	.736	76.3	85	.777	15.8	5.8	6.4	0.002
" 21–25	.722	81.4	82	.878	7.3	4.2	9.3	0.013
" 26–30	.803	79.0	83	.826	13.6	8.5	5.1	0.412
" 31– 4	.672	77.7	83	.785	16.1	7.4	5.4	0.707
June 5– 9	.615	78.7	83	.818	15.3	7.7	5.3	0.056
" 10–14	.559	81.5	75	.811	9.3	6.6	9.1	0.000
" 15–19	.607	83.1	82	.932	17.6	8.9	2.5	0.178
" 20–24	.691	83.6	80	.931	12.6	8.9	5.5	0.085
" 25–29	.676	83.0	78	.875	10.4	8.8	5.1	0.103
" 30– 4	.595	82.3	81	.892	10.9	8.5	5.8	0.262
July 5– 9	.625	81.1	84	.893	9.8	7.9	7.3	0.093
" 10–14	.625	82.3	81	.896	10.9	7.6	6.8	0.315
" 15–19	.722	82.1	80	.874	10.8	6.5	8.5	0.206
" 20–24	.678	83.2	77	.877	11.0	3 4	11.2	0.003
" 25–29	.639	82.1	82	.897	9.2	7.7	8.2	0.206
" 30– 3	.529	83.8	80	.923	9.2	7.2	9.2	0.038
August 4– 8	.470	79.9	85	.870	11.3	7.3	4.5	1.046
" 9–13	.559	79.0	89	.875	11.3	7.9	3.9	0.352
" 14–18	.636	78.9	87	.858	22.4	9.2	4.0	1.030
" 19–23	.619	79.8	87	.880	6.9	6.0	5.1	0.361
" 24–28	.641	82.9	83	.931	4.8	6.4	7.8	0.002
" 29– 2	.703	80.0	81	.826	7.5	8.5	4.4	0.105
September 3– 7	.724	80.7	81	.846	5.3	4.1	7.5	0.000
" 8–12	.741	80.2	79	.812	7.0	5.7	5.1	0.047
" 13–17	.760	79.8	71	.721	5.4	2.1	8.3	0.000
" 18–22	.788	81.7	67	.724	7.9	2.9	8.5	0.393
" 23–27	.812	80.5	78	.815	7.0	4.1	8.5	0.216
" 28– 2	.834	79.4	71	.716	13.0	7.7	6.4	0.022
October..... 3– 7	.721	81.2	55	.580	8.7	2.4	10.0	0.036
" 8–12	.819	81.3	78	.828	7.7	4.1	8.5	0.062
" 13–17	.807	78.0	77	.749	13.7	7.9	3.6	0.403
" 18–22	.880	74.4	67	.569	17.4	5.2	8.1	0.000
" 23–27	.860	75.3	66	.585	14.6	6.3	6.8	0.000
" 28– 1	.961	72.3	62	.493	14.0	2.6	9.7	0.000
November 2– 6	30.059	71.0	63	.486	13.6	3.9	8.2	0.000
" 7–11	29.931	72.7	63	.511	8.4	1.6	9.2	0.000
" 12–16	30.023	69.7	69	.504	13.9	6.2	6.5	0.049
" 17–21	.012	68.0	60	.417	12.0	4.1	7.2	0.000
" 22–26	.053	68.3	57	.394	10.9	2.4	8.7	0.000
" 27– 1	29.964	66.6	75	.493	15.4	6.8	4.7	0.118
December..... 2– 6	30.185	57.3	31	.145	13.4	2.7	8.3	0.001
" 7–11	.011	63.9	58	.348	7.8	2.4	7.7	0.025
" 12–16	29.997	64.7	74	.452	11.4	5.3	5.9	0.010
" 17–21	30.039	61.2	78	.420	12.4	8.8	1.6	0.118
" 22–26	29.962	62.6	78	.445	11.4	5.2	7.0	0.000
" 27–31	30.088	58.4	74	.366	13.6	7.6	3.8	0.000

Table XI.

Observations of Magnetic Declination and Dip.

1901.	H.K.M.T.	Declination East.	Observer.	H.K.M.T.	Dip North.	Needle No.	Observer.
February,	$13^{d}.3^{h}.19^{m}$ p.	0°18′20″	F.G.F.	$15^{d}.3^{h}.44^{m}$ p.	31°19′.44	3	F.G.F.
					21 .44	4	
April,	16 3 20 p.	16 38	„	17 3 58 p.	22 .28	3	„
					23 .01	4	
July,	16 3 25 p.	16 1	„	18 4 9 p.	21 .56	3	„
					21 .73	4	
October,	14 3 23 p.	15 22	„	17 3 35 p.	21 .50	3	„
					21 .25	4	
December,	17 3 11 p.	15 38	„	13 3 45 p.	17 .56	3	„
					18 .21	4	

Table XII.

Observations of Horizontal Magnetic Force.

1901.	H.K.M.T.	Time of one Vibration.	Temperature. Cent.	Log m X.	Value of m.	H.K.M.T.	Distance in Centimetres.	Temperature. Cent.	Deflection.	Log $\frac{m}{X}$	Value of X.	Observer.
Feb.,	$14^{d}.3^{h}.50^{m}$ p.	3^{s}.6354	17°.9	2.32875	579.87	$14^{d}.3^{h}.14^{m}$ p.	30	17°.3	6°43′15″.0	3.19792	0.36764	F.G.F.
							40		2 49 12 .5			
						14 4 27 p.	30	16 .9	6 43 20 .0			
							40		2 49 13 .7			
April,	15 3 33 p.	3.6428	27 .6	2.32867	579.63	15 2 57 p.	30	27 .5	6 40 58 .7	3.19763	0.36772	„
							40		2 48 21 .9			
						15 4 8 p.	30	27 .3	6 41 21 .3			
							40		2 48 23 .7			
July,	15 3 51 p.	3.6461	30 .7	2.32847	579.15	15 3 17 p.	30	30 .3	6 40 8 .7	3.19710	0.36786	„
							40		2 47 55 .0			
						15 4 27 p.	30	29 .7	6 40 17 .5			
							40		2 48 6 .2			
Oct.,	18 3 43 p.	3.6430	25 .0	2.32815	578.63	18 3 6 p.	30	24 .6	6 40 46 .2	3.19666	0.36791	„
							40		2 48 13 .7			
						18 4 24 p.	30	24 .6	6 40 52 .5			
							40		2 48 13 .8			
Dec.,	16 3 41 p.	3.6399	22 .15	2.32838	579.39	16 3 5 p.	30	22 .1	6 41 10 .0	3.19657	0.36804	„
							40		2 48 18 .8			
						16 4 17 p.	30	20 .5	6 41 32 .5			
							40		2 48 29 .4			

Table XIII.

Results of Magnetic Observations made in 1901.

Month.	Declination East.	Dip North.	Magnetic Force.		
			X.	Y.	Total.
February,	0°18′ 20″	31°20′ 26″	0.36764	0.22388	0.43045
April,	16 38	22 38	0.36772	0.22426	0.43071
July,	16 1	21 38	0.36786	0.22419	0.43079
October,	15 22	21 22	0.36791	0.22419	0.43083
December,	15 38	17 53	0.36804	0.22376	0.43072
Mean,	0 16 24	31 20 47	0.36783	0.22406	0.43070