

## Appendix F.

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### REPORT OF THE DIRECTOR OF THE ROYAL OBSERVATORY, HONG KONG, FOR THE YEAR 1934.

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#### I.—GROUNDS, BUILDINGS AND INSTRUMENTS.

New quarters for the Director were completed during February. Various alterations to the old quarters were carried out during the execution of the periodical redecoration programme and the rooms were taken into use as offices during May.

2. The Richard thermograph was replaced by electrical resistance thermometers and a Cambridge thread recorder on June 29th. In its new position, the radio mast offers no shade to the sunshine recorder and one instrument only was in use throughout the year.

#### II.—METEOROLOGICAL OBSERVATIONS.

3. Automatic records of the temperature of the air and evaporation were obtained with a Richard dry and wet bulb thermograph until 28th June, and subsequently with the resistance thermometers and thread recorder. Direction and velocity of the wind were recorded with Beckley and Dines-Baxendell anemographs, rainfall by a Nakamura Pluviograph, sunshine by a Campbell-Stokes universal recorder and barometric pressure by a Marvin barograph. Eye observations of barometric pressure, temperature and cloud were made hourly, and of the direction of cloud motion every three hours. Observations of pilot balloons were made with a Watts 1½ inch prismatic theodolite at 9h. a.m. and 3h. p.m. when conditions were favourable.

4. The principal features of the weather in 1934 were:—

(a) An abnormally cloudy and humid summer. For five successive months, April to August, there was a deficiency of sunshine, and the total duration of sunshine for the year (1843 hours) fell short of the normal by 124 hours. In each of the months June, July and August the mean relative humidity equalled or exceeded the highest value on record, while the amount of rainfall recorded during these three months was considerably greater than the average.

(b) The absence of typhoons seriously affecting the Colony. No typhoon passed within 180 miles of Hong Kong during the year. The maximum wind velocity recorded was 67 m.p.h.; this velocity was reached on two occasions, the first being on March 21st, when a fresh onset of the NE monsoon was accompanied by a squall of unusual violence; the second was on October 1st, when a typhoon was passing about 250 miles to the south of the Colony on a westerly track.

5. The tracks of 24 typhoons which occurred in the Far East in 1934 are given in a plate which will be included with the Meteorological Results for 1934, now in the press. The following table gives a summary of the meteorological data published monthly in the Government Gazette during the year:—

Month.	Temperature.					Humidity.		Cloud- iness.	Sun- shine.	Rain.	Wind.	
	Absolute Max.	Mean Max.	Mean.	Mean Min.	Absolute Min.	Rel.	Abs.				Direction.	Velocity.
	°	°	°	°	°	%	ins.	%	hrs.	ins.		m.p.h.
January .....	69.1	61.1	55.9	52.3	42.8	70	0.32	66	144.8	0.470	NE/E	10.6
February .....	75.9	66.2	59.9	56.0	47.2	73	0.38	50	181.9	1.510	E/N	12.4
March .....	82.2	68.9	63.5	59.4	49.8	78	0.47	75	119.9	1.745	E/N	8.9
April .....	84.8	72.8	68.1	64.9	55.0	85	0.59	94	54.2	2.445	E/N	10.9
May .....	90.1	81.3	76.7	73.8	65.9	81	0.75	81	139.0	8.735	E	13.7
June .....	90.5	86.0	81.0	77.1	74.0	86	0.90	83	140.1	25.105	S/E	9.8
July .....	93.1	87.0	82.0	78.7	72.6	86	0.94	81	183.2	19.425	ESE	11.2
August .....	91.5	84.9	80.6	76.9	72.8	88	0.92	68	181.9	24.360	E	11.4
September .....	92.5	87.0	82.0	77.7	72.1	81	0.88	57	221.9	10.720	E/N	12.1
October .....	85.4	79.2	74.5	70.6	62.9	74	0.64	68	159.1	2.205	ENE	16.2
November .....	83.0	75.0	69.7	65.8	57.7	77	0.56	69	142.7	0.410	ENE	10.3
December .....	79.1	69.2	63.4	59.6	43.2	75	0.45	53	173.9	0.535	ENE	13.0
Mean, Total or Extreme .....	93.1	76.5	71.4	67.7	42.8	79	0.65	70	1,842.6	97.665	E/N	11.7

6. In the following table the monthly rainfall at the Observatory is compared with other records in the Colony.

Month.	Observatory (Kowloon)	Police Station (Taipo).	Botanical Gardens (Hong Kong).	Matilda Hospital (Mount Kellet, Hong Kong).	Fanling.
	<i>inches.</i>	<i>inches.</i>	<i>inches.</i>	<i>inches.</i>	<i>inches.</i>
January, .....	0·470	0·48	0·41	0·40	0·98
February, .....	1·510	1·80	1·70	1·40	1·58
March, .....	1·745	3·02	2·11	1·80	2·07
April, .....	2·445	2·01	3·67	3·01	1·14
May, .....	8·735	5·35	6·89	4·93	4·43
June, .....	25·105	24·60	26·99	20·01	18·16
July, .....	19·425	17·74	16·17	14·27	18·39
August, .....	24·360	20·86	23·80	19·75	15·79
September, .....	10·720	15·75	11·43	10·28	12·92
October, .....	2·205	1·60	3·53	2·80	1·75
November, .....	0·410	0·11	0·13	0·08	—
December, .....	0·535	1·03	0·56	0·44	1·03
Year .....	97·665	94·35	97·39	79·17	78·24

III.—PUBLICATIONS.

7. The following publications have been made during 1934:—

- Magnetic Results, 1933.
- Meteorological Results, 1933.
- Meteorological Records, 1884-1933.
- The Upper Winds of Hong Kong.

The following are in the press:—

- Magnetic Results, 1934.
- Meteorological Results, 1934.

A monthly abstract of meteorological observations is published in the Government Gazette and copies are supplied to any firm or individual requiring them, and a monthly seismological bulletin is issued and distributed to other observatories.

8. A weather map of the Far East for 6 a.m. of 120th meridian time is constructed daily and forecasts are issued for the following districts:—

- A. Shanghai to Turnabout.
- B. Turnabout to Hong Kong.
- C. Hong Kong and neighbourhood.
- D. Hong Kong to Hainan.
- E. Northern China Sea.

The map, weather report and forecast are exhibited at the Hong Kong and Kowloon ferry piers, the Harbour Office, Telegraph offices and the General Post Office. The weather map may be purchased by the public at a subscription rate of \$15 per annum. There were 39 subscribers in 1933. A weather map for 2 p.m. is also prepared, but is not published. Morning and afternoon weather reports and forecasts, together with observations made at 10h a.m. and 4h. p.m., are published in the local press.

#### IV.—WEATHER TELEGRAMS, FORECASTS AND STORM WARNINGS.

9. The Telegraph Companies continue to transmit twice daily, free of charge, meteorological observations from Vladivostock, Japan, Shanghai, Formosa, Indo China and the Philippines. Meteorological broadcasts by radio and the direct radio services of Sicawei, Indo-China, Formosa, Amoy, Swatow, Sandakan and Pratas Island are extremely valuable. Extra observations at half cable rate are also obtainable from a number of stations by courtesy of the Telegraph Companies.

10. Weather Telegrams from ships by Radio:—The following table gives the monthly number of ships from which radio meteorological messages have been received and the number of messages received (each arrival and departure is counted separately).

Month.	<i>British (including H.M. Ships).</i>				<i>Other Nationalities.</i>		<i>Total.</i>		
	No. of ships.	No. of messages.	H.M. Ships in Port.		No. of ships.	No. of messages.	No. of ships.	No. of messages.	
			No. of ships.	No. of messages.					
January, .....	145	243	12	149	57	97	214	489	
February, .....	109	186	6	110	52	88	167	384	
March, .....	157	274	11	149	67	117	235	540	
April, .....	107	166	10	123	49	79	166	368	
May, .....	123	210	12	127	56	99	191	436	
June, .....	99	160	5	120	67	115	171	395	
July, .....	136	221	9	129	75	131	220	481	
August, .....	119	189	16	207	66	103	201	499	
September, .....	200	354	9	125	115	204	324	683	
October, .....	250	429	16	147	124	241	390	817	
November, .....	227	396	11	117	95	162	333	675	
December, .....	179	289	12	147	69	115	260	553	
Totals	1934, ...	1851	3117	129	1652	892	1551	2872	6320
	1933, ...	1341	2247	159	1826	688	1193	2188	5266
	1932, ...	1534	2692	192	2704	831	1405	2557	6801
	1931, ...	1827	4176	444	10098	829	1432	3100	15706

11. Weather forecasts, storm warnings and time signals are distributed by radio telegraphy as detailed in the "Notice to Mariners" issued by this Department. Storm warnings to Hong Kong and vicinity are also given by means of the Local and Non-Local Signal Codes. A telegraphic adaption of the Non-Local Code is used for issuing warnings by cable to places outside the Colony.

12. The following table gives the results of the weather forecasts for the past 5 years. The methods of analysis are described in the 1918 Report.

Year.	Complete Success.	Partial Success.	Partial Failure.	Total Failure.
	%	%	%	%
1930	65	31	4	0
1931	67	30	3	0
1932	71	27	2	0
1933	71	26	3	0
1934	73	26	1	0

13. Local signals, day and night, have been hoisted during the past 5 years according to the following table.

Year.	Warning Signal.		Signals 2-9		Signal No. 10 Bombs.
	Number of times.	Number of hours displayed.	Number of times.	Number of hours displayed.	Number of times fired.
1930	5	88	3	37	...
1931	7	93	4	88	1
1932	8	101	5	104	...
1933	5	62	6	75	...
1934	5	177	1	30	...

V.—METEOROLOGICAL OBSERVATIONS FROM SHIPS,  
TREATY PORTS, ETC.

14. In addition to meteorological registers kept at about 40 stations in China, meteorological logs were received from 126 ships operating in the Far East. These logs, representing 6166 days' observations, have been used for amplifying the weather maps and verifying typhoon tracks. The corresponding figures for 1933 were 119 and 5,599.

VI.—MAGNETIC OBSERVATIONS.

15. The magnetic station at Au Tau has been kept in action throughout the year, and the results of the observations are now in the press.

VII.—TIME SERVICE.

16. *Clocks* Cottingham and Mercer 507 (Sidereal) and Leroy 1350 were in use throughout the year. The necessary astronomical observations for the determination of the error of the former were obtained each evening (weather permitting) by the local staff. Observations of the radio time signals emitted by Nauen at 8h. a.m. have been made daily whenever possible during the year, and utilised for clock regulations.

17. *Time Signals* were given throughout the year by radio from 9.55 to 10 a.m. each morning and 8.55 to 9 p.m. each evening. Dots of about 0.1 sec. duration were transmitted at each second except for periods marking the minutes and half minutes. The evening programme was duplicated by 3 white lights (vertical) on the radio mast, the lights being extinguished each second in accordance with the radio programme.

Hourly signals were sent to the General Post Office, Radio Studio, Railway, the associated Telegraph Companies and the Telephone Co.

The errors of the time signals have been published monthly in the Government Gazette.

IX.—MISCELLANEOUS.

18. *Seismographs*. The seismographs have been kept in good order throughout the year. 353 earthquakes were recorded, compared with 356 in 1933. The seismograms have been forwarded to the International Seismological Committee, Oxford.

19. *Upper Air Research*. Observations of 400 pilot balloons were made during the year. Details of the flights will be included in Meteorological Results for 1934.

20. *Lithography*. Lithographic work for other departments was undertaken as follows :—

For Dept. Medical and Sanitary Services.	15,500 Charts
Colonial Secretariat ...	1,120 Maps.
Electrical Dept.....	120 Forms
Harbour Dept. ....	100 Forms
H.M.S. Eagle .....	500 Maps.



21. *Visit to Manila.* In company with the Rev. Father E. Gherzi, S.J., of the Sicawei observatory, the Director paid a brief visit to Manila in April, and was afforded every facility for inspecting all branches of the work of the Observatory by the Rev. Fr. M. Selga, S.J., the Director. The opportunity was taken to discuss alterations to the Hong Kong local Storm Signal Code and as a consequence a uniform code (containing 4 international symbols) will be adopted in the Philippines and Hong Kong early in 1935. Sicawei observatory has already adopted a more extended code which includes the Philippines-Hong Kong symbols.

22. *Expenditure.* The annual expenditure on the Observatory for the past 10 years has been as follows:—

Year.	Personal Emoluments and other Charges.		Special Expenditure.		Total Expenditure.		Total Revenue.	
	\$	c.	\$	c.	\$	c.	\$	c.
1925	41,955.51		...		41,955.51		79.20	
1926	42,566.51		12,341.74		54,908.39		34.20	
1927	47,253.17		145.24		47,398.41		30.50	
1928	47,292.33		272.70		47,565.03		506.10	
1929	48,282.63		...		48,282.63		530.50	
1930	68,696.59		1,670.07		70,366.66		506.80	
1931	76,037.81		...		76,037.81		735.00	
1932	69,518.23		...		69,518.23		598.00	
1933	63,165.42		...		63,165.42		600.00	
1934	59,327.62		1,259.57		60,587.19		529.00	

23. In the following table the expenditure and revenue for 1933 is compared with that for 1934.

COMPARATIVE STATEMENT OF EXPENDITURE, 1933 AND 1934.

	1933	1934
	\$ c.	\$ c.
Personal Emoluments .....	55,569.77	53,144.17
<i>Other Charges.</i>		
Books and Postage .....	257.72	197.92
Electric Light and Power.....	579.95	1,077.63
Gas .....	98.94	125.45
Incidental Expenses .....	77.31	39.86
Maintenance of Instruments and Plant ...	2,892.44	1,749.80
Meteorological Telegrams .....	733.79	345.83
Printing .....	2,600.00	2,274.50
Subscription towards cost of printing		
International Upper Air Observations.	154.84	134.74
Transport .....	105.05	157.30
Uniforms .....	95.61	141.02
----- Total Other Charges .....	7,595.65	6,183.45
<i>Special Expenditure.</i>		
New Instruments .....		1,259.57
----- Total Royal Observatory .....	63,165.42	60,587.19

COMPARATIVE STATEMENT OF REVENUE, 1933 AND 1934.

	1933	1934
	\$ c.	\$ c.
Fees of Court or Office; Sale of Publications	600.30	529.00

24. *Acknowledgements.* Acknowledgements are here made to the Directors of the Weather Services of the Far East, the the Chinese Maritime Customs, and the Commanders of all ships for the observations forwarded during the year, to the Telegraph Companies for continuing to forward observations free or at reduced rates, to all institutions and individuals who have contributed to the Library, and to the Observatory staff for the efficient performance of their duties.

C. W. JEFFRIES,

*Director.*

15th January, 1935.