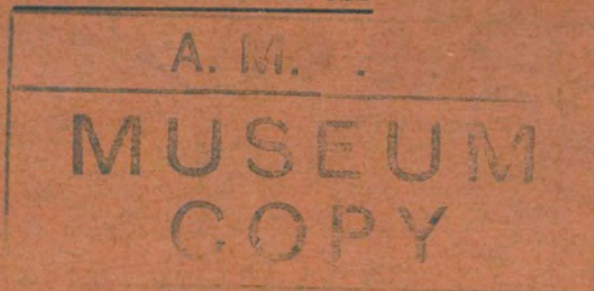


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AIR MINISTRY

METEOROLOGICAL OFFICE

NOTES ON THE
METEOROLOGICAL OBSERVATIONS

MADE IN

BRITISH COLONIES AND PROTECTORATES, ETC.

IN

1933

AND

Summarised in the Annual Reports of Colonial Governments

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NOTES ON THE METEOROLOGICAL OBSERVATIONS MADE IN BRITISH COLONIES AND PROTECTORATES, ETC., IN 1933

And Summarised in the Annual Reports of Colonial Governments

Regular meteorological observations have been made for many years past in the British Colonies and Protectorates at the request of the Home Government and since 1907 summaries of these observations, on a form drawn up in the Meteorological Office, have been included in the annual reports of the Colonial Governments. In order to render the valuable material thus accumulated more readily available, the Secretary of State for the Colonies has requested the Colonial Governments to forward reprints of these tables to the Meteorological Office, London, for distribution among the meteorological institutions in the Empire and in foreign countries with which it maintains an exchange of publications. This scheme has now been in operation since 1910 and through it valuable meteorological information has been rendered accessible.

The observations are in most cases taken under the supervision of officers who are engaged in scientific work but who have not all received special training in meteorological work. The procedure adopted in the different Colonies has varied and the tables do not always contain all the information required for full use of the material. A questionnaire requesting further information as to the observations was therefore prepared in the Meteorological Office and circulated through the Colonial Office to the Governors of the Colonies and Protectorates concerned. From the replies received and from a scrutiny of the printed summaries, and also of the daily observations when available, a compilation of "Notes" was made and issued with the summaries for 1923. Supplementary notes were issued with the summaries for 1924 and 1925; beginning with 1926 the "Notes" have been published annually as an introduction to the collection of reprints. Changes which have been introduced since 1923 are marked by the date of the change in square brackets. For ready reference it is suggested that this introduction may be bound or filed with the meteorological observations for the year 1933.

The "Notes" include a statement as to the hours of observations, the standard of time in use, and a brief reference to the exposure of the instruments. The exposure for thermometers recommended in the "Meteorological Observer's Handbook" of the Meteorological Office, is in a Stevenson screen, freely exposed to sun and wind and not shaded by trees or buildings. The site prescribed for the exposure of the rain-gauge is a level grass plot, the rim of the gauge being one foot above the ground. The sheltering effect of trees, bushes, buildings, &c., must be avoided and the regulations adopted by the Meteorological Office specify that the distance between the gauge and any object should be at least twice the height of that object. When the site and exposure of the instrument appear to satisfy these conditions they are described as "conventional." Formerly the thermometers at stations of the meteorological services of the Governments of India and Ceylon were exposed in wire cages, placed in huts with open sides, freely exposed to wind and sun. That form of exposure was regarded as generally appropriate for tropical conditions and was described in "Hints to Observers in Tropical Africa" issued by the Meteorological Office in 1907. It has been adopted at many tropical stations outside the Indian system. Instances are given in these notes. Experiments in India* and Ceylon† have shown that Stevenson screens, if freely exposed, afford as much protection against solarisation as the other form of exposure, even under tropical conditions; and it is understood that Stevenson screens are being introduced at the Indian stations; they are now in use at all the stations in Ceylon. In many tropical countries it is not possible to place the rain-gauge over grass and there is risk of in-splashing of rain-drops during heavy showers. The gauges are therefore placed at greater heights than one foot above the ground. Particulars are given in each instance. The latitudes, longitudes and heights of the stations are stated when this information is not given in the reprints.

* *Indian Meteorological Memoirs*, 24, Part III, 1922.

† *Colombo, Ceylon J. Sci.* (Sec. E.), 1, 1928, pt. 2, p. 153.

Then follows information as to the corrections applied to the readings of the barometer, the method of deducing the mean pressure for the day from the observations at the specified hours,† the hours of setting and reading the self-registering thermometers, the definitions adopted by the observer of "a day with rain," &c., any point being included which throws light on the meaning of the tables and the reliability of the data. Unless otherwise stated the heights of stations are the heights of the barometer cisterns above M.S.L., or if no barometer is in use, the heights above M.S.L. of the sites of the rain-gauges. For some stations, indicated by an asterisk against the name of the station, the daily observations are available in print or in manuscript and it has been possible to examine the published summaries in detail; in this way a number of errata have been discovered which are set out on pp. 19-22. For purposes of reference the years for which observations were first published have been noted for the majority of the stations.

The order in which the various Colonies are arranged is the same as that given in the geographical section of the "International Catalogue of Scientific Literature" formerly published by the Royal Society. This order has been adopted in the lists of contents of previous sets of summaries.

NOTES ON THE TABLES, 1933

*Gibraltar

[Observations first published, 1852; interrupted, 1862-3].

Hours of observation—7h., 13h., 18h., 21h., G.M.T.

The Observatory is situated in the public gardens near the sea front, on the south-west side of the Rock and 102 feet above M.S.L. [1929.]

The exposure of the instruments is "conventional."

The height of the barometer above M.S.L. is 90 feet. [1929.]

Pressure— $\frac{1}{3}$ (7 + 13 + 21h.); readings are reduced to 32°F., lat. 45° and M.S.L.

Temperature—Mean $\frac{1}{3}$ (7 + 13 + 21h.).

Maximum set at 7h. and read at 18h.

Minimum set at 18h. and read at 7h.

The absolute extremes refer, however, to the whole period of 24 hours.

Vapour Pressure and Relative Humidity—Computed from "Hygrometric Tables" published by the Meteorological Office, London, 1924 (M.O. 265). [1926.]

Rainfall—Rim of rain-gauge is 2 feet above a flat roof. [1929.]

Totals refer to the 24 hours beginning at 7h.

Definition of—Day with rain .. 0.1 mm. or more. [1927.]

Day with clear sky .. mean cloud amount (from observations taken 4 times a day) less than 2 tenths.

Day with overcast sky .. mean cloud amount (from observations taken 4 times a day) more than 8 tenths.

Day with gale wind force 8 or more (Beaufort scale).

Wind—An anemometer was erected at Four Corners in August, 1930, the orientation being to true north. Previously wind directions were referred to "magnetic" north.

Cyprus

There are three stations, under the control of the Public Works Dept.

[Nicosia observations first published, 1907].

[Acheritou " " " " 1912].

[Limassol " " " " 1913].

Hours of observation, 8h. and 14h., zone time, 2 hours fast on G.M.T.

The site and the exposure of the instruments are "conventional"; the instruments were tested in 1922 by an official of the Physical Department, Cairo.

Pressure— $\frac{1}{2}$ (8 + 14h.); readings are reduced to 32°F., lat. 45° and M.S.L.

† E.g., the mean of observations at 7h., 13h. and 21h., is represented by the formula $\frac{1}{3}$ (7 + 13 + 21h.).

Temperature—Mean $\frac{1}{2}$ (max. + min.)

Maximum read and set at 8h., and entered to previous day.

Minimum read and set at 8h., and entered to day of reading.

Vapour Pressure and Relative Humidity—Computed from Glaisher's "Hygrometric Tables."

Rainfall—

Totals refer to the 24 hours beginning at 8h.

Definition of—Day with rain .. 0.01 in. or more.

Day with clear sky cloudless sky.

Day with overcast sky .. mean cloud amount more than 5 tenths.

Wind—The wind direction refers to "magnetic" north.

Robinson cup anemometers are in use, but no data of wind force are published. It is stated that no gales are experienced.

Malta

[Observations first published, 1852; interrupted, 1855-1857].

Hours of observation—8h., zone time, one hour fast on G.M.T.

The site and the exposure of the instruments are "conventional."

There has been no change of site.

The observations were taken at the University throughout the year, and not at the station established at the Meteorological Office on April 20, 1928, which supplies data for the British *Monthly Weather Report*.

Pressure—8h. Readings are reduced to 32°F., lat. 45° and M.S.L. [1924].

Temperature—Mean $\frac{1}{2}$ [8h. + $\frac{1}{2}$ (max. + min.)]

Maximum read and set at 8h. [1930.]

Minimum read and set at 8h. [1930.]

Vapour Pressure and Relative Humidity—Computed from "Hygrometric Tables" published by the Meteorological Office, London, 1924. (M.O. 265). [1926.]

Rainfall—Rim of rain-gauge is 59 feet above the ground.

Totals refer to the 24 hours beginning at 8h.

Definition of—Day with rain 0.01 in. or more.

Day with clear sky mean cloud amount less than 2 tenths.

Day with overcast sky mean cloud amount more than 8 tenths.

Day with gale day on which the autographic record shows that a force of 8 on Beaufort scale was reached at any time between 0h. and 24h.

Wind—A Robinson cup anemometer and an anemobiograph are in use. The cups are 79 feet above the ground and 8 feet above the roof. The head of the anemobiograph is 15 feet above the roof. The direction is observed to 32 points; the number of entries under N. includes only the winds from N by W., N., and N by E.; similarly the entries under E. include only the winds from E by N., E., and E by S. But under NE. are entered all observations between NNE. and ENE. inclusive (i.e., NNE., NE by N., NE., NE by E. and ENE.); under SE. all observations between ESE. and SSE., &c. The entries under the headings N., E., S. and W. are therefore relatively low and those under NE., SE., SW. and NW. relatively high.

Hong Kong—*Royal Observatory

[Observations first published, 1884].

First order station of the International Classification.

Some elements published for hours of 7h., 13h., 21h., zone time, 8 hours fast on G.M.T.

Pressure—Mean of 24 hourly observations; readings are reduced to 32°F., and lat. 45° at M.S.L.

Temperature—The mean temperature at fixed hours is taken by whirling thermometers.

The daily extremes are taken from the records of a thermograph, and refer to the civil day.

Vapour Pressure and Relative Humidity—Computations based on a formula of the type used for artificially ventilated psychrometers.† This formula has been in use since the beginning of 1928, and the "Notes" for 1928 and 1929 should be amended accordingly.

Rainfall—Rim of rain-gauge is 18 in. above the ground.

Totals refer to the civil day.

Definition of—Day with rain 0.01 in. or more
Day with clear sky mean cloud amount less than 20 per cent.
Day with overcast sky mean cloud amount more than 80 per cent.

Wind—A Beckley anemometer is in use, with the cups 45 feet above the ground and 13 feet above the roof.

Sunshine—A Campbell-Stokes universal recorder is in use.

Ceylon

Station.	Rain-gauge Ht. of rim.	Years of observation.	Station.	Rain-gauge Ht. of rim.	Years of observation.
† Colombo	.. 1 ft. 10 in.	26	Ratnapura	.. 2 ft. 2 in.	65
Puttalam	.. 2 ft. 2 in.	65	Anuradhapura	3 ft. 3 in.	64
Mannar	.. 1 ft. 0½ in.	64	Kurunegala	.. 1 ft. 1 in.	47
Jaffna	.. 1 ft. 9 in.	63	Kandy	.. 1 ft. 6 in.	64
Trincomalee	.. 3 ft. 7 in.	64	Badulla	.. 2 ft. 0 in.	61
Batticaloa	.. 1 ft. 0½ in.	64	Diyatalawa	.. 1 ft. 7 in.	33
Hambantota	.. 1 ft. 9 in.	65	Hakgala	.. 1 ft. 5 in.	50
Galle	.. 2 ft. 2 in.	65	Nuwara Eliya	1 ft. 1 in.	65

Hours of observation 9½h. and 15½h., time of meridian 82½°E., 5½ hours fast on G.M.T.

Pressure—½ (9½ + 15½h.); readings are reduced to 32°F., lat. 45°, and M.S.L. Only figures from low country stations are included.

Temperature—Large type Stevenson screens are now in use at all the above stations.

Temperature—Mean ½ (max. + min.).

The average monthly maximum and average monthly minimum temperatures (both dry bulb and wet bulb) are not given separately as such, but the "Average Daily Range" is given (*i.e.*, the difference between the average monthly maximum and minimum), and from this table and the average ½ (max. + min.) values, the average monthly maxima and minima for a number of years can be computed. Offsets from the average monthly mean temperature enable the mean monthly temperatures for the year to be computed. Minimum thermometers are read and set at 9½h. Maximum thermometers are read and set at 15½h., and again at 9½h. The maximum temperature actually booked is the maximum over the six hours 9½h. to 15½h.

Relative Humidity—Computed from tables based on "Tables for the Reduction of Meteorological Observations," published by the Government of India Meteorological Department, 1910. Two sets of relative humidity values are published:—

- (1) Monthly averages of mean of 9½h. and 15½h., together with offsets from these averages during the year. These are considered to give a fair indication of humidity conditions during the day-time.

† The formula in use is apparently that known as Pernter's "strong wind" formula, adapted for use with Fahrenheit temperatures and pressures in millibars. See "Hygrometric Tables" published by the London Meteorological Office, M.O.265, 1931, p. 10.

‡ Data from 1869 for neighbouring station are also published. There is in addition a pluviograph with its rim at 5 ft. 3 in., the catch of which differs very little from that of the standard gauge.

- (2) Monthly averages of humidity computed from daily minimum dry and wet temperatures, together with offsets from these averages during the year. These give only approximate humidities, owing to possible lack of synchronisation between dry and wet minima, though the evidence of dry and wet thermographs suggests that temperature and humidity variations are very slight at night.

Rainfall—For heights of rims of rain-gauges above ground see above.

Daily totals refer to the 24 hours beginning with the morning observation.

Self-recording rain-gauges are in use at two of these stations, and at six others.

Definition of—Day with rain 0.01 in. or more.

Wind—Robinson cup anemometers are in use. The heights of the cups above the ground are as follows:—

Colombo	.. 18½ ft.	Batticaloa	.. 35 ft.
Puttalam	.. 14 ft.	Hambantota	11½ ft.
Mannar	.. 13½ ft.	Galle	.. 85 ft.
Jaffna	.. 14 ft.	Diyatalawa	12 ft. 10 in.
Trincomalee	14 ft. 9 in.		

The heights given are above adjacent ground level. The anemometer at Trincomalee is on the summit of a cliff 100 ft. high. At Batticaloa the instrument is 35 ft. above the ground outside the fort, and 20 ft. above the ramparts; that at Galle is about 85 ft. above the ground outside the fort, and 12½ ft. above the ramparts. There is also an anemometer at Little Basses lighthouse, which is read twice daily.

A Dines tube anemometer and an anemobiograph are in use at Colombo.

The data appearing in the annual report of the Ceylon Government include only a part of the data available at Colombo Observatory.

Malaya

Observations at the main stations of the Malayan Meteorological Service were first published in the following years:—Cameron's Highlands (Tanah Rata and Rhododendron Hill), Fraser's Hill, 1925; Kuala Lumpur (Railway Hill), 1928; Mersing, Kluang, Singapore (Mount Faber), Kuala Pahang, Temerloh, Bukit Jeram, 1929; Alor Star, Kota Bharu, Kuala Trengganu, Kuala Lipis, Malacca Town, 1930; Kroh, Butterworth, Sitiawan, 1931.

Hours of observation 9h., 15h., 21h., 105th meridian (E.) time, seven hours fast on G.M.T., except at Cameron's Highlands (Rhododendron Hill) where 9h. and 15h. only. Hourly means of temperature, humidity, sunshine and rainfall, and analyses of the pressure-tube anemograms are also given for the main stations. At all stations large type Stevenson screens are in use. Full details of the observations are given in the Summary.

Data for a number of auxiliary stations are also included.

Palestine

Station.	Rain-gauge Ht. of rim.	First year of observations.	Station.	Rain-gauge Ht. of rim.	First year of observations.
Jericho	.. 1 metre.	1925	Gaza	.. 1 metre.	1900
Jenin	.. 1 metre.	1925	Beersheba	.. 1 metre.	1925
Haifa	.. 1.3 metres.	1897†	Acre	.. 1 metre.	1930
Tel-Aviv	.. 1.2 metres.	1911‡	Beisan	.. 1 metre.	1931
Jerusalem	1 metre.	1846§	Beit Jemal	.. 1 metre.	1920

Hours of observation 8h., 14h., 20h. at Jericho, Jenin, Acre and Beit Jemal; 7h., 14h., 21h. at Tel-Aviv; 8h. and 14h. at Haifa and Beisan; 8h. at Jerusalem, Gaza and Beersheba. Egyptian standard time, 2 hours fast on G.M.T.

The instruments are exposed in single-louvred screens of the standard Egyptian pattern.

† Interrupted 1905–24.

‡ Interrupted 1917–22.

§ Interrupted 1849–50 and 1914–24.

|| Interrupted 1905–24.

Pressure—readings are reduced to 0°C. and lat. 45° at station level.

Temperature—

Jericho, Jenin, Acre and Beit Jemal

Mean $\frac{1}{2}$ (8 + 14 + 20h. + min.).

Maximum read and set at 20h. and entered to day of reading.

Minimum read and set at 8h. and entered to day of reading.

Tel-Aviv

Mean $\frac{1}{4}$ (7 + 14 + 2 × 21h.).

Maximum read and set at 21h. and entered to day of reading.

Minimum read and set at 7h. and entered to day of reading.

Haifa, Jerusalem, Gaza, Beersheba and Beisan

Mean $\frac{1}{2}$ (max. + min.).

Maximum read and set at 8h. and entered to previous day.

Minimum read and set at 8h. and entered to day of reading.

Relative Humidity and Vapour Pressure—Computed from "Jelinek's Psychrometer-Tafeln. Anhang: Hygrometer-Tafeln" by J. M. Pernter. 6th edition. Leipzig, 1911. At Beit Jemal, computed from "Tavole ad uso degli osservatorii Meteorologici Italiani" by F. Eredia, Rome [1933].

Rainfall—For heights of rims of rain-gauges above ground see above. Totals refer to the 24 hours beginning at 8h.

Gambia—Cape St. Mary

[Observations first published, 1926.]

Hour of observation, 9h., time of meridian 16° 40' W., 1 hr. 6 min. 40 sec. slow on G.M.T.

The site and exposure of the instruments are "conventional."

Temperature—

Maximum read and set at 9h. and entered to previous day.

Minimum read and set at 9h. and entered to day of reading.

Relative Humidity—Computed from Glaisher's "Hygrometric Tables."

Rainfall—Rim of rain-gauge is 1 ft. above the ground.

Totals refer to the 24 hours beginning at 9h.

The column headed "Mean rainfall in one day" should read "Maximum rainfall in one day."

Definition of—Day with rain 0.01 in. or more.

Gold Coast

[Observations first published, *Accra, 1888; Axim, Tamale and Kumasi, 1914.]

At Accra and Axim the site and exposure of the instruments are "conventional." At Tamale and Kumasi the thermometers are exposed in a wire cage under a thatched roof.

Pressure—the values are as read, no corrections having been applied. For corrected (M.S.L.) values at Accra, see p. 20. The barometer at Accra was transferred to a new site in May, 1929.

The heights of the barometer cisterns above M.S.L. are :—Accra, 57. Kumasi, 980 ft.

Temperature—Mean, $\frac{1}{2}$ (max. + min.).

Maximum is read and set at 9h. and entered to the previous day; the minimum is read and set at 9h. and entered to the day of reading at Accra and Tamale, to the previous day at Axim and Kumasi.

Relative Humidity—at 9h., computed from Glaisher's and Department of Agriculture's Hygrometrical Tables. [1933].

Rainfall—The heights of rims of rain-gauges (*hr*) above ground are :—Accra, 12 in.; Axim, 11 in.; Kumasi, 12 in.; Tamale, 9 in.

Totals refer to the 24 hours beginning at 9h.

Definition of—Day with rain—0.01 in. or more.

Day with clear sky—criteria not stated.

Day with overcast sky—criteria not stated.

Wind—At Axim the winds are usually observed to 4 points only.

Nigeria

Hour of observation 9h. local mean time, changed to 9h. Nigerian zone time, one hour fast on G.M.T., from July 1, 1933. The following notes give the exposure of the thermometers (A, double louvred Stevenson screen with double top; B, single-louvred Stevenson screen and tropical shelter; C, wooden screen and tropical shelter; D, wire cage under thatched shelter; E, modified Stevenson screen), the heights of the rims of the rain-gauges above the ground and the year for which observations were first published.

Station.	Exposure of thermometer.	Rain-gauge height of rim.	First year of observations.	Station.	Exposure of thermometer.	Rain-gauge height of rim.	First year of observations.
Aba ..	B	in. 12	1931	Lafia Beri Beri	D	in. 10	1928
Abeokuta ..	A	8 $\frac{1}{2}$	1905	*Lagos Observ- vatory ..	B	10	1886
Afikpo ..	C	10	1905	Lokoja ..	A	12	1901
Bamenda ..	E	27	1923	*Maiduguri ..	D	11	1909
Bauchi ..	D	11 $\frac{1}{2}$	1906	Makurdi ..	D	14	1926
Benin City ..	A	44	1903	Minna ..	D	12	1914
Birnin Kebbi ..	D	14	1909	Ondo ..	B	10	1901
Calabar ..	E	—	1895	Owerri ..	B	14	1907
Enugu ..	E	22	1916	Port Harcourt	A	8 $\frac{1}{2}$	1915
Hadejia ..	D	10	1918	*Sokoto ..	D	10	1905
*Ibadan ..	A	12	1901	*Victoria ..	A	21 $\frac{1}{4}$	1922
Ilorin ..	A	20	1905	Warri ..	B	11 $\frac{3}{4}$	1907
*Jos ..	D	22 $\frac{1}{2}$	1921	*Yola ..	D	—	1904
*Kaduna ..	B	13 $\frac{3}{4}$	1913				
*Kano ..	C	13	1905				
Katsina ..	D	12	1923				

Pressure—Mean pressure is computed from daily readings at 9h. All values are reduced to 32°F., lat. 45°, and M.S.L. Corrections for index error, where known, are applied.

Temperature—Mean $\frac{1}{2}$ (max. + min.).

Maximum read and set at 9h., and entered to the previous day.

Minimum read and set at 9h., and entered to day of reading.

Relative Humidity—Computed from "Hygrometric Tables" published by the Meteorological Office, London (M.O. 265). For temperatures outside the range of these tables the humidity is computed from the formula given in the introduction.

Rainfall—For heights of rims of rain-gauges above ground see above. Totals refer to the 24 hours beginning at 9h.

Definition of—Day with rain 0.01 in. or more.

Sierra Leone

Station.	Rain-gauge Ht. of rim.	First year of observations.	Station.	Rain-gauge Ht. of rim.	First year of observations.
*Freetown ..	1 ft. 3 in.	1874	Kissy ..	1 ft.	1913
Batkanu ..	0 ft. 9½ in.	1913	Koyeima ..	2 ft.	1931
Bonthe ..	1 ft. 4 in.	1913	Makump ..	1 ft. 2 in.	1931
Bunumbu ..	1 ft. 9 in.	1931	(Closed December, 1933).		
(Closed February, 1933.)			Marampa ..	No informa- tion.	
Hill Station..	2 ft. 6 in.	1916	Moyamba ..	0 ft. 11 in.	1913
Jaiama ..	1 ft. 7½ in.	1931	Newton ..	0 ft. 10 in.	1930
Kabala ..	1 ft. 10 in.	1913	Njala ..	1 ft. 2 in.	1912
Kailahun ..	1 ft. 7 in.	1931	Pepel ..	No informa- tion.	
Kambia ..	No informa- tion.	1932	Segbwema ..	1 ft. 9½ in.	1931
Kenema ..	1 ft. 9 in.	1932			

Hours of observation at Freetown, 9h., 17h., zone time, 1 hour slow on G.M.T. [1931]. At other stations the observations are at 9h. and 14h.

The heights of the stations where known, and not given in the report, are as follows:—Bunumbu, 599 ft.; Jaiama, 1,315 ft.; Kailahun, 960 ft.; Kenema, 467 ft.; Makump, 250 ft.; Newtown, 100 ft.; Njala, 150 ft.; Segbwema, 575 ft.

The thermometers are exposed in Stevenson screens.

Pressure—½ (9 + 17h.); readings are reduced to M.S.L. [1924].

Temperature—Mean .. ½ (9 + 17h.) [1925].

The temperatures given for Freetown under columns headed "9 a.m.", "5 p.m." and "Means" are from the "attached thermometer."

Maximum read and set at 9h., and entered to previous day.

Minimum read and set at 9h., and entered to day of reading.

Vapour Pressure and Relative Humidity—Computed from "Hygrometric Tables" published by the Meteorological Office, London, 1924 (M.O. 265).

Rainfall—For heights of rims of rain-gauges above ground see above.

Totals refer to the 24 hours beginning at 9h.

Definition of—Day with rain 0.01 in. or more [1929], Freetown [1928].

Nyasaland—*Zomba

[Observations first published, 1892].

Hours of observation 9h. and 15h. South African mean time, 2 hours fast on G.M.T.

The thermometers are exposed in a Stevenson screen.

Pressure—½ (9 + 15h.); readings are reduced to 32°F., lat. 45° and station level.

Temperature—Mean ½ (9 + 15h.).

Maximum read and set at 9h., and entered to previous day.

Minimum read and set at 9h., and entered to day of reading.

Vapour Pressure and Relative Humidity—Computed from "Hygrometric Tables" published by the Meteorological Office, London, 1924 (M.O. 265).

Rainfall—Rim of rain-gauge is 15 in. above the ground.

Totals refer to the 24 hours beginning at 9h.

Definition of—Day with rain—Jan.-March, a day with some precipitation, whether measurable or not; April-Dec., a day with 0.01 in. or more.

Day with clear sky mean cloud amount less than 20 per cent.

Day with overcast sky mean cloud amount more than 80 per cent.

Day of gale, day of strong wind—The numbers in these columns are derived from estimates of the wind force commuted on the Beaufort scale.

British East African Meteorological Service. [1933]

The following details concerning the general routine apply to all stations:—

Observations are made at 0600 and 1200 G.M.T.

A day of rain is 0.01 inch (for Tanganyika 0.2 mm.).

A clear day is one on which cloud was 3 tenths or less than 3 tenths.

A cloudy day is one on which cloud was 7 tenths or less than 7 tenths.

Frequencies of wind refer to eight points based on the following table:

N	338° through 360°	to 22°
NE	23°	to 67°
E	68°	to 112°
SE	113°	to 157°
S	158°	to 202°
SW	203°	to 247°
W	248°	to 292°
NW	293°	to 337°

Relative humidity is computed from Jelinek's Tables for sea-level stations and from altitudes of 600, 1,200 and 1,800 metres for other stations to which these heights apply.

Maximum and minimum thermometers are set and read at 0600 G.M.T.

Rain-gauges are of the Meteorological Office standard pattern mounted with their rims 18 inches above the ground.

Tanganyika

Station. Observations first published.

*Dar-es-Salaam ..	1893†
Dodoma ..	1929
Iringa ..	1929
Kondoa Irangi ..	1921
Mbeya ..	1921
Moshi ..	1928
Mwanza ..	1921
Tabora, Kazeh Hill ..	1930

Hours of observation 9h., 15h., local time, 3 hours fast on G.M.T. [1932.]

The site and exposure of the instruments are "conventional."

Uganda

Station.	Height ft.	Station.	Height ft.
Kololo Hill Observatory	4,290	Mubende ..	5,120
Butiaba ..	2,020	Ngetta, Lira ..	3,710
Entebbe ..	3,846	Soroti ..	3,700
Fort Portal ..	5,300	Simsa ..	3,600
Gulu ..	3,700	Tororo ..	3,861
Jinja ..	3,880	Kampala ..	3,900
Kabale ..	6,200	Hoima ..	3,800
Kirwa Island ..	3,736	**Serere ..	3,600
Masaka ..	4,200	**Arua ..	4,200
Masindi ..	3,760	**Bukalasa ..	3,700
Mbala ..	4,000	**Budini ..	3,500
Mbarara ..	4,800		

The site and exposure of the instruments are "conventional," except at stations marked **.

Standard of time adopted is that of longitude 37½° E., 2½ hours fast on G.M.T.

† Interrupted 1913–22.

Zanzibar and Pemba Island**Zanzibar**

[Observations first published, 1891.]

Latitude 6° 10' S. Longitude 39° 14' E. Height of barometer above M.S.L. 50 ft.

Hour of observation 8h., local time, 2hr. 36 min. fast on G.M.T.

The thermometers are exposed in a wire cage with a wooden top under a specially erected shelter with a board and tile roof.

Pressure—8h. It is not stated what corrections, if any, have been applied.*Temperature*—Maximum .. read and set at 8h., and entered to previous day.
Minimum .. read and set at 8h., and entered to day of reading.*Dew Point and Relative Humidity*—Probably computed from the "Tables for the Reduction of Meteorological Observations," published by the Government of India Meteorological Department, 1910.*Rainfall*—Rim of rain-gauge is 50 ft. above the ground.

Totals refer to the 24 hours beginning at 8h.

Definition of—Day with rain .. not stated.**Pemba Island**

[Observations first published, 1910.]

Latitude 5° 15' S. Longitude 39° 44' E. Height of rain-gauge above M.S.L. 55 ft.

Hour of observation 7h., local time, 2hr. 39min. fast on G.M.T.

The thermometers are exposed in the shade under a verandah.

Temperature—Maximum .. read and set at 7h., and entered to previous day.

Minimum .. read and set at 7h., and entered to day of reading.

Rainfall—Rim of rain-gauge is 3 ft. 8 in. above the ground.

Totals refer to the 24 hours beginning at 7h.

Definition of—Day with rain .. not stated.**Basutoland**

[Observations first published, 1922.]

Hour of observation 8½h., South African mean time, two hours fast on G.M.T.

The site and the exposure of the thermometers are "conventional."

Temperature—In °F. Mean .. ½ (max. + min.).

Maximum .. read and set at 8½h., and entered to previous day.

Minimum .. read and set at 8½h., and entered to day of reading.

Relative Humidity—Computed from tables by R. de C. Ward.†

The values given in the column headed "Tension of Vapour" are the computed temperatures of the dew point in degrees Fahrenheit.

Rainfall—In inches.—Rim of rain-gauge is 4 ft. above the ground.

Totals refer to the 24 hours beginning at 8½h.

Definition of—Day with rain .. 0.005 inch or more. [1933].**Bechuanaland Protectorate (April 1933 to March 1934).**

[Observations first published, 1922.]

Hour of observation 8½h., South African mean time, 2 hours fast on G.M.T. The site and exposure of the instruments are stated to be conventional.

Temperature—In °F. Mean .. ½ (max. + min.). [1933].

Maximum .. read and reset at 8½h. and entered to previous day.

Minimum .. read and reset at 8½h. and entered to day of reading.

Rainfall—In inches. Rim of rain-gauge 4 ft. above ground.

Totals refer to the 24 hours beginning at 8½h. [1933].

Definition of—Day with rain .. 0.005 inch or more. [1933].

† "Practical Exercises in Elementary Meteorology," Boston, 1899.

Swaziland

[Observations first published, 1922.]

Hour of observation 8½h., time of longitude 30°E., 2 hours fast on G.M.T.

The site and the exposure of the instruments are "conventional" as far as is stated.

Temperature—Mean .. ½ (max. + min.).

Maximum .. read and set at 8½h., and entered to previous day.

Minimum .. read and set at 8½h., and entered to day of reading.

Vapour Pressure and Relative Humidity—Computed from the "Smithsonian Physical Tables," 1897.*Rainfall*—Rims of rain-gauges are 4 ft. above the ground.

Totals refer to the 24 hours beginning at 8½h.

Definition of—Day with rain .. 0.005 in. or more.

Day with clear sky .. a day when cloud amount at 8½h. was 0.

Day with overcast sky .. a day when cloud amount at 8½h. was 10.

Day with gale .. a day when wind at 8½h. is force 7 or more on Beaufort scale.

British Honduras—*Belize

Hours of observation, 6h. and 18h., June to November; 6h., January to May, and December. Standard of time, 90th meridian, 6 hours slow on G.M.T.

Pressure—In addition to the monthly means, the extreme readings at the hours of observation are given. All values are reduced to 32°F., lat. 45° and M.S.L.*Temperature*—Mean .. ½ (max. + min.).

Maximum .. read and set at 6h. and entered to day of reading (all months).

From June to November the maximum appears to be read and set also at 18h., and entered to day of reading, the highest of the two readings (6h. and 18h.) being taken as the maximum.

Minimum .. read and set at 6h. and entered to day of reading.

Relative Humidity—Computed from "Psychrometric Tables" by C. F. Marvin, published by the U.S. Weather Bureau, 1915.*Rainfall*—The height of the rim of the rain-gauge above the ground is 3 feet.

For June to November the totals refer to the 24 hours ending 18h., for December to May, to the 24 hours beginning 6h.

Definition of—Day with rain .. 0.04 in or more. [1932].**Bermuda**

[Observations first published, 1890.]

The meteorological station was moved to a new site at St. Georges on March 30, 1932.

Hours of observation, 8h., 15h., 20h., zone time, 4 hours slow on G.M.T.

[1932]. The site and exposure of the instruments are "conventional."

The height of the barometer above M.S.L. is 158 feet. [1932].

Pressure—½ (8 + 15 + 20h.); readings are reduced to 32° F., lat. 45° and M.S.L. [1932].*Temperature*—Mean .. ½ (max. + min.).

Maximum .. read and set at 8h., 20h., and entered to day of reading.

Minimum .. read and set at 8h., 20h., and entered to day of reading.

Relative Humidity—½ (8 + 15 + 20h.), computed from tables supplied by the Meteorological Service of Canada.*Rainfall*—Rim of rain-gauge is 1 ft. 3 in. above the ground.

Totals refer to the 24 hours beginning at 8h.

Definition of—Day with rain .. 0.01 in. or more.

Day of clear sky .. mean cloudiness less than 2 tenths.

Day of overcast sky .. mean cloudiness greater than 8 tenths.

Day of gale .. wind force 8 or more on Beaufort scale at any time.

Wind—A Dines anemometer is in use, the head of which is 40 feet above the parapet of a fort which is surrounded by a wide moat. The anemometer head is 222 ft. above M.S.L. The direction of the wind is observed to 32 points; the number of entries under "North" includes winds from NNW to NNE; similarly the entries under "East" include winds from ENE to ESE, etc.

Sunshine—A Campbell-Stokes recorder is in use.

Bahamas—Nassau

[Observations first published, 1855.]

Hours of observation, 8h. and 15h., 75th meridian time, 5 hours slow on G.M.T.

The site and exposure of the instruments are "conventional."

Pressure—Readings are reduced to 32° F., lat. 45° and M.S.L.

Temperature—Maximum .. read and set at 8h. and entered to day of reading.

Minimum .. read and set at 8h. and entered to day of reading.

The values given under the headings "Temperature—Max., Min." refer to daily maximum and minimum.

Relative Humidity—Computed from "Psychrometric Tables" by C. F. Marvin, published by the U.S. Weather Bureau, 1915.

Rainfall—Rim of rain-gauge is 1 ft. above the roof of a building which is 54 ft. 2 in. high. [1933]. Totals refer to the 24 hours beginning at 8h.

Wind—The values given as "Wind Force" are velocities in miles per hour. A Belfort anemometer of the standard U.S. Weather Bureau pattern is in use. The cups are 20 ft. above the roof of a building which is 54 ft. 2 in. high. [1933].

Jamaica

	* Kingston	Negril Point	Morant Point
Observations first published ..	1881	1895	1881
Standard of time	75th meridian	75th meridian	75th meridian
Slow on G.M.T.	5 hours	5 hours	5 hours
Pressure —			
Readings are reduced to ..	32° F., lat. 45°, M.S.L., and corrected for diurnal range.		
Temperature —Mean	†	†	†
Maximum	read and set at 7h., entered to previous day.	set at 7h. and read at 15 h.	set at 7 h. and read at 15 h.
Minimum	read and set at 15 h.	set at 15h. and read at 7h.	set at 15h. and read at 7h.
(entered to day of reading)			
Vapour Pressure and Relative Humidity †—"Hygrometric Tables," Meteorological Office, London, 1924. (M.O. 265) [1928].			
Rainfall —			
Rim above ground	51 ft.	6½ ft.	3 ft.
For 24 hours beginning ..	7h.	7h.	7h.
Definition of —			
Day with rain	0.01 in. or more		
Day with gale	40 mi./hr. or more		
Day with clear sky	mean cloud amount 0— $\frac{3}{10}$		
Day with overcast sky ..	mean cloud amount $\frac{8}{10}$ — $\frac{10}{10}$		
Wind —			
Anemometer in use	U.S. Weather Bureau pattern.		
Cups above ground	69 ft.	94 ft.	18 ft.

† The mean temperature is obtained by the following formula devised by the late Maxwell Hall: $\frac{1}{4}(7 + 15h. + \text{max.} + \text{min.}) - 0.5^\circ \text{F.}$

† The mean relative humidity is obtained from the readings at 7h. and 15h., corrected to mean of 24 hours by a table of corrections based on an investigation by the late Maxwell Hall.

Leeward Islands

	*Antigua	St. Kitts	Dominica	*Montserrat	Tortola
Years of observation	58	64	35	19	32
Latitude	17° 5' N.	17° 18' N.	15° 30' N.	16° 43' N.	18° 25' N.
Longitude	61° 45' W.	62° 48' W.	61° 20' W.	62° 13' W.	64° 36' W.
Height of barometer above M.S.L.	120.6 ft.	157 ft.	50 ft.	130 ft.	20 ft.
Hours of observation	9h., 15h.	9h., 15h.	9h., 15h.	9h., 15h.	9h.
Standard of time ..	local	local	probably local	local	60th meridian
Slow on G.M.T. ..	4hr. 7min.	4hr. 11min.	4hr. 5min.	4hr. 8min.	4hr.
Pressure —	$\frac{1}{2}(9 + 15h.)$ reduced to 32° F., lat. 45° M.S.L.	$\frac{1}{2}(9 + 15h.)$ reduced to 32° F., lat. 45° M.S.L.	$\frac{1}{2}(9 + 15h.)$ reduced to 32° F., station level and lat.	$\frac{1}{2}(9 + 15h.)$ reduced to 32° F., lat. 45° M.S.L.	9h. reduced to 32° F., lat. 45° M.S.L.
Temperature —					
Mean	$\frac{1}{2}(9 + 15h.)$	$\frac{1}{2}(9 + 15h.)$	$\frac{1}{2}(9 + 15h.)$	$\frac{1}{2}(9 + 15h.)$ [1927]	—
Maximum	read and set at 9h. entered to previous day.	read and set at 9 h. entered to previous day.	set at 9 h. and read at 15h.	read and set at 9h. and entered to previous day.	read and set at 9h. entered to previous day.
Minimum	read and set at 9h.	read and set at 9h.	set at 15h. and read at 9h.	read and set at 9h.	read and set at 9h.
(entered to day of reading)					
Rainfall —					
Rim above ground.	4 ft.	1 ft.	3 ft. 6 in.	1 ft.	1 ft. 7 in.
Day with rain ..	0.01 in. or more.	0.01 in. or more.	Not stated.	0.01 in. or more.	Not stated.
Day with clear sky.	criterion indefinite.	criterion indefinite.	—	criterion indefinite.	—
Day with over-cast sky.	criterion indefinite [1927].	criterion indefinite.	—	criterion indefinite [1924].	—

Totals of rainfall refer to the 24 hours beginning at 9h., except for Antigua, where the totals refer to the 24 hours ending at 9h.

Relative Humidity—Computed from "Hygrometric Tables" published by the Meteorological Office, London (M.O. 265). [October, 1931.]

Special Notes—

St. Kitts—The site and exposure of the thermometers are "conventional." The site of the rain-gauge is not stated.

Antigua and Montserrat—The means are based on about 25 observations each month.

Dominica—The thermometers are exposed in a wire cage suspended in a shed with open sides. The rain-gauge is on Morne Bruce, 400 ft. above M.S.L.

Grenada—†*Richmond Hill

[Observations first published, 1891.]

Hours of observation 9h. and 18h., local time, 4hr. 7min. slow on G.M.T.

Site and exposure of the barometer and thermometers "conventional."

The rain-gauge is 2 ft. 3 in. distant from a wall 1 ft. 2 in. high, which is surmounted by an iron fence 6 ft. high composed of one-inch bars set 8 in. apart.

Pressure—Mean $\frac{1}{2}(9 + 18h.)$; values as read, no corrections have been applied. (See below for attached thermometer.) For corrected M.S.L. values see p. 21.

The height of the barometer cistern above M.S.L. is 509 ft.

Temperature—The figures under "9 a.m., 6 p.m., and mean" refer to readings of the attached thermometer.

Maximum .. read and set at 9h., and entered to previous day.

Minimum .. read and set at 9h., and entered to day of reading.

† Monthly returns available January to June, only.

Vapour Pressure and Relative Humidity—Computed from "Hygrometric Tables" published by the Meteorological Office, London, 1924 (M.O. 265).

Rainfall—Rim of rain-gauge is 1 ft. above the ground. [1927].
Totals refer to the 24 hours beginning at 9h.

Definition of—Day with rain—apparently day with some precipitation, whether measurable or not.

Day with clear sky .. }
Day with overcast sky } criteria not "conventional."
Day with gale }

Wind—The wind direction refers to "magnetic" north.

St. Lucia—Castries

[Station moved from Reunion at end of 1927.]

Hours of observation 7h., 12h., 17h., 60th meridian time, 4 hours slow on G.M.T.

Relative Humidity—Computed from Hygrometric Tables—Air Ministry, (M.O. 265—3rd edit.—1931.) [1933].

Thermometers are in a narrow double-louvred screen, under a light thatched roof.

Temperature—Mean $\frac{1}{2}$ (7 + 12 + 17h.).
Maximum read and set at 17h., and entered to day of reading. [1933].
Minimum read and set at 7h., and entered to day of reading.

Rainfall—Rim of rain-gauge is 1 ft. above the ground.

Totals refer to the 24 hours beginning at 7h., and entered to previous day. [1933].

Definition of—Day with rain 0.01 in. or more.

St. Vincent—Agricultural Experiment Station

[Observations first published, 1830; interrupted, 1842-1893.]

Hours of observation 9h. and 15h., local civil time, 4hr. 3min. slow on G.M.T.

Thermometers are exposed in a single-louvred screen; the rain-gauge is of "Snowdon" pattern.

Pressure— $\frac{1}{2}$ (9 + 15h.); readings are reduced to 32°F., lat. 45°, and M.S.L.

Temperature—In °F. Mean .. $\frac{1}{2}$ (9 + 15h.).
Maximum read and set at 9h. and entered to previous day.
Minimum read and set at 9h. and entered to same day.

Vapour Pressure (in inches) and Relative Humidity—Computed from Glaisher's "Hygrometric Tables."

Rainfall—In inches. Rim of rain-gauge is 9 in. above the ground.

Totals refer to the 24 hours beginning at 9h.

Definition of—Day with rain 0.01 in. or more.
Day with clear sky mean cloud amount less than 2 tenths.
Day with overcast sky mean cloud amount more than 8 tenths.

Barbados

[Observations first published, 1853; interrupted, 1863-1864.]

Hours of observation: 8h. and 17h., 60th meridian time, 4 hours slow on G.M.T.; pressure and attached thermometer readings at 9h. and 15h.; other observations at 8h. and 17h.; rainfall observations at 6h. and 18h.

The site and the exposure of the instruments are "conventional."

Pressure— $\frac{1}{2}$ (9 + 15h.); readings are reduced to 32°F., lat 45° and M.S.L. The height of the barometer cistern is 181 ft. above M.S.L.

Temperature—Mean $\frac{1}{2}$ (max. + min.).
Maximum read and set at 17h., and entered to day of reading.
Minimum read and set at 8h. and entered to day of reading. [1932].

Vapour Pressure (in inches) and Relative Humidity—Computed from "Hints to Meteorological Observers" by W. Marriott, 7th edition, 1911.

Rainfall—Rim of rain-gauge is 1 ft. above the ground.

Totals refer to the 24 hours ending at 6h. and are entered to previous day.

Definition of—Day with rain 0.01 in. or more.

Wind—A cup anemometer is in use, with cups 17 ft. above the ground. [July, 1929].

Trinidad—St. Clair, Port of Spain

[Observations first published, 1862.]

Hours of observation 7h. and 15h., 60th meridian time, 4 hours slow on G.M.T.

Site and exposure "conventional."

Pressure—Mean— $\frac{1}{2}$ (7 + 15h.); readings are reduced to M.S.L.

Temperature—Mean $\frac{1}{2}$ (7 + 15h.).
Maximum read and set at 15h.
Minimum read and set at 15h.

Vapour Pressure and Relative Humidity—Computed from "Hygrometric Tables" published by the Meteorological Office, London, 1927 (M.O. 265), 2nd edition. [August, 1929.]

Rainfall—Rim of rain-gauge is 1 ft. 2 in. above the ground. [1927].

Totals refer to the 24 hours beginning at 7h.

Definition of—Day with rain 0.01 in. or more.

British Guiana

[Observations first published, 1887.]

The following notes refer to Georgetown and Mazaruni only.

Hours of observation, 7h., 13h., 18h., local official time, 3hr. 45min. slow on G.M.T.

At Georgetown, the standard thermometer screen is protected from direct sunshine by a shelter. At Mazaruni the site and exposure of the instruments are "conventional." During 1932 the thermometer screen and sunshine recorder at Mazaruni were moved to a new site.

Pressure—Readings are reduced to 32°F., lat. 45° and M.S.L.

Temperature—Maximum .. read and set at 18h.
Minimum .. set at 18h., and read at 7h.

Vapour Pressure and Relative Humidity—Computed from "Hygrometric Tables" published by the Meteorological Office, London, 1924 (M.O. 265). [1928].

Rainfall—Rims of rain-gauges are 1 ft. above the ground.

Totals refer to the 24 hours beginning at 7h.

Definition of—Day with rain 0.01 in. or more.
Day with clear sky cloud amount less than 2.
Day with overcast sky cloud amount greater than 8.

Evaporation—The amount of evaporation is obtained from the readings of a specially constructed reinforced concrete tank, 6 ft. square.

Wind—Four anemometers are in use at Georgetown, a Lowne's electrical recording and a Robinson cup, with vane or cups 60 ft. above the ground, a Robinson cup with cups 5 ft. above the ground, and a Dines pressure tube anemometer with vane 74 ft. above the ground. At Mazaruni a Robinson cup anemometer is in use, with cups 50 ft. above the ground.

Sunshine—Campbell-Stokes recorders are in use at both stations.

Falkland Islands—*Stanley

[Observations first published, 1904.]

Hour of observation, 9h. local time, 4 hours slow on G.M.T.

The site and the exposure of the instruments are "conventional."

Pressure—Readings are reduced to 32°F., lat 45° and M.S.L. [1932].

Height of the barometer above M.S.L., 6 ft.

Temperature—Mean $\frac{1}{2}$ (max. + min.).

Maximum read and set at 9h. and entered to day of reading.

Minimum read and set at 9h., and entered to day of reading.

Rainfall—Rim of rain-gauge is 1 ft. above the ground.

Totals refer to the 24 hours ending at 9h.

Definition of—Day with rain 0.01 in. or more. [1932].

Day with clear sky cloud amount 1 tenth or less.

Day with overcast sky cloud amount 9 tenths or more.

Wind—A Robinson cup anemometer is in use, with cups 31 ft. above the ground.

Mauritius—*Royal Alfred Observatory

[Observations first published, 1861.]

The site and the exposure of the instruments are "conventional."

Pressure—Mean of 24 hours; readings are reduced to 32°F., lat. 45°, at station level. Height of barometer cistern above M.S.L., 181 ft.

Temperature—"Mean" is mean of 24 hours.

Maximum and minimum values refer to the civil day 0h. to 24h.

Dew Point, Vapour Pressure and Relative Humidity—The mean temperature of the dew-point, the degree of humidity and the "elastic force of vapour" are derived from the mean daily temperature of the air and of evaporation, by means of tables based on Glaisher's "Hygrometric Tables," and are not the means of 24-hourly values.

Rainfall—Totals refer to the civil day, 0h. to 24h.

Definition of—Day with rain—0.1 mm. or more.

Evaporation—The amount of evaporation is obtained from the readings of a Negretti and Zambra evaporimeter which consists of a cylindrical brass vessel 8 in. in diameter and 4 in. deep. The amount of water in the vessel is measured at midnight.

Wind—A Robinson cup anemometer is in use.

Sunshine—A Campbell-Stokes recorder is in use.

Seychelles

[Observations first published, 1891.]

Hours of observation 10h. and 16h., zone time (60°E., 4 hours fast on G.M.T.).

The thermometers are exposed in a Stevenson screen.

The rain-gauge is of an obsolete pattern.

The site is "conventional."

Pressure— $\frac{1}{2}$ (10 + 16h.); readings are reduced to 32°F., lat. 45° and M.S.L. [1928].

Temperature—Mean $\frac{1}{2}$ (10 + 16h.).

Maximum—read and set at 10h. and 16h. and the highest value entered to the day of reading.

Minimum—read and set at 10h. and 16h. and the lowest value entered to the day of reading.

Rainfall—Rim of rain-gauge is 1 ft. 4 in. above the ground.

Totals refer to the 24 hours beginning 10h.

Definition of—Day with rain .. } criteria not conventional.
Day with clear sky .. }
Day with overcast sky .. }

Wind—Direction N. includes winds from N. only; NE., from NNE. to ENE. inclusive. Winds from other directions are summarised in an analogous way.

Fiji—*Suva

[Observations first published, 1886.]

Hours of observation 8½h. and 15½h., zone time, 12 hours fast on G.M.T.

The site and the exposure of the instruments are "conventional."

Pressure—Readings are reduced to 32°F., lat. 45° and M.S.L. The height of the barometer cistern above M.S.L. is 12 ft. [Jan. 1932].

Temperature—

Maximum read and set at 8½h. and entered to previous day.

Minimum read and set at 8½h. and entered to day of reading.

Vapour Pressure and Relative Humidity—Computed from "Hygrometric Tables" published by the Meteorological Office, London, 1924 (M.O. 265).

Rainfall—Rim of rain-gauge is 1 ft. above the ground.

Totals refer to the 24 hours beginning at 8½h.

An autographic rain-gauge is also in use.

Definition of—Day with rain 0.01 in. or more.

Day with clear sky cloud amount less than 2 tenths.

Day with overcast sky cloud amount greater than 8 tenths. [1926].

Wind—A Dines pressure-tube anemometer is in use.

Sunshine—A Campbell-Stokes sunshine recorder is in use.

South Georgia—*Cumberland Bay

[Observations first published, 1905.]

Hours of observation 8h., 14h., 20h., local time, 2hr. 26 min. slow on G.M.T.

Pressure—values in millimetres, reduced to 0°C., at station latitude and level. They appear to be a good approximation to 24-hr. means. For corrected M.S.L. values, see p. 22. The height of the barometer above M.S.L. is 4 metres.

Temperature—Mean not stated. For values of $\frac{1}{3}$ (8 + 14 + 20h.) see p. 22.

Maximum read and set at 20h.

Minimum read at 8h., set at 20h.

Both values are entered to the day of reading.

Rainfall—in millimetres.

From February, 1931, totals refer to the 24 hours ending at 8h., and are entered to day of reading. For corrected totals and greatest falls see p. 22.

Wind—A Robinson cup anemometer is in use, with cups 7.2 metres (23.6 ft.) above ground.

Sunshine—A Campbell-Stokes sunshine recorder is in use.

ERRATA, 1933**Gibraltar—**

Pressure—January, 30.086; May, 30.003; Year, 30.021.

Temperature—1 p.m., April, 68.5; 9 p.m., February, 52.2; May, 65.1; Mean, May, 67.1; Mean Minimum, February, 49.3; December, 45.8; Year, 57.5; Mean maximum, November, 62.6; Absolute maximum, February, 71 on 9th.

Rainfall—Total, February, 4.37; November, 8.55; Year, 49.29; maximum, May, 1.5 on 1st.

Weather—Number of days—Rain—May, 15; November, 18; Hail—January, 2; October, 1; November, 1; Year, 5; Thunderstorms—January, 1; March, 1; October, 2; December, 1; Year, 6; Gales—March, 0; July, 0; December, 0; Year, 1.

Wind—Number of Observations—N—January, 2; February, 2; March, 2; November, 1; December, 1; Year, 8.

NE—January, 5; February, 7; March, 4; April, 4; May, 5; Year, 30.

E—January, 25; February, 21; March, 27; April, 28; May, 25; Year, 298.

SE—January, 11; February, 4; March, 6; May, 5; Year, 41.

S—January, 2; February, 2; May, 1; August, 23; November, 3; Year, 71.

SW—January, 16; February, 9; March, 13; April, 15; May, 21; July, 21; August, 2; November, 17; December, 6; Year, 171.

W—January, 16; February, 20; March, 27; April, 18; May, 16; June, 23; July, 12; September, 26; October, 15; November, 37; December, 41; Year, 256.

NW—January, 10; February, 11; March, 4; April, 5; May, 5; June, 6; September, 3; October, 6; November, 15; December, 27; Year, 27.

Calm—March, 10; Year, 125.

Gold Coast—Accra

Pressure—The corrected means at M.S.L. are as follows:—January, 1010.1; February, 1010.6; March, 1009.9; April, 1010.1; May, 1010.9; June, 1012.2; July, 1013.8; August, 1014.3; September, 1013.7; October, 1011.9; November, 1010.8; December, 1010.7; Year, 1011.6.

Temperature—Absolute maximum, March, 94 on 2nd. Absolute minimum, April, 72.0 on 3rd, 28th.

Rainfall—Total, February, 4.82, March, 3.21.

Wind—Number of Observations—March, SW. 5, W. 19; April, SW. 5, W. 10; May, S. 15, SW. 3; June, Calm, 4; December, E. 2, SE. 1. Year, E. 5, SE. 2, S. 36, SW. 65, W. 199.

Nigeria—

Jos—Rainfall—Maximum, May, 1.12.

Number of Rain days—July, 28.

Kano—Temperature—Mean maximum, August, 85.9.

Maiduguri—Temperature—July, 9 a.m., 80.8; Mean, 81.2.

Rainfall—Total—April, 0.10; May, 4.62; June, 4.83; July, 8.74; August, 11.21; September, 7.27; Year, 36.77.

Maximum—April, 0.06 on 29th; May, 2.06; June, 1.62; July, 1.60; August, 2.49; September, 2.43; Year, 2.49 on 3rd August.

Yola—Relative humidity—delete °.

Sierra Leone—Freetown

Temperature—9 a.m., July, 77.4; 5 p.m., February, 83.4; August, 78.9; mean, February, 81.1; August, 77.9; mean of minimum—June 72.0.

Tension of Vapour—December, 9 a.m., 24.9; Mean, 25.1.

Relative Humidity—February, 9 a.m., 89.8; mean, 89.5; March, 5 p.m., 82.3; mean, 82.5; June, 5 p.m., 84.6; mean, 85.7; July, 9 a.m., 90.0; mean, 86.7.

Nyasaland—Zomba

Temperature—Absolute maximum, year, 93 on October 31st, November 2nd. Earth, 9h. and 15h., delete %, insert °F.

Amount of Cloud—Heading 9 p.m. should be 3 p.m.

Tanganyika—Dar-es-Salaam

Temperature—Absolute maximum, December, 32.5 on 25th, 28th. Absolute minimum, December, 22.5 on 30th, 31st.

Rainfall—Total, October, 35.1; December, 54.7; year, 704.4.

Number of Days—Rain—October, 6; Year, 100.

British Honduras—Belize

Pressure—Delete heading "Fahrenheit degrees."

Temperature—January, absolute minimum, 59.0 on 22nd.

Number of days—Rain—December, 20, Total 156.

Bahamas—Nassau

No returns have been received from Nassau for 1933, but some of the figures (e.g., those for relative humidity) are unreliable.

Jamaica—Kingston

Wind Direction and Velocity—October, 3 p.m., velocity, 9.9.

Amount of Cloud (p. 15)—January, 7 a.m., 3.8, 3 p.m., 5.2; February, 3 p.m., 6.0, mean, 4.3; August, 7 a.m., 5.3, mean, 7.4; December, 7 a.m., 6.0, 3 p.m., 6.0; year, 7 a.m., 4.6, 3 p.m., 6.9.

Leeward Islands—Antigua

Temperature—Mean minimum, August, 75.3; Year, 73.1.

Wind—Number of Observations—NE—March, 39; Year, 304.

Montserrat

Temperature—9 a.m., May, 82.4; Year, 80.2, mean, May, 83.5; Year, 81.1. Mean maximum, May, 87.7; December, 82.9; Year, 85.1.

Cloud—9 a.m., July, 5.5; September, 5.3. 3 p.m., July, 5.3; September, 5.8. Mean, July, 5.4; September, 5.5.

Rainfall—May, 2.21; July, 4.08; Year, 61.59. Maximum, April, 0.71 on 10th; December, 1.64 on 18th.

Number of Days—Rain—January, 9; Year, 118.

Wind—Number of Observations—N—March, 3; December, 7; Year, 20. NE—March, 11; June, 13; July, 7; Year, 102. E—January, 15; February, 19; March, 26; April, 25; May, 29; June, 17; July, 26; August, 17; October, 16; November, 9; December, 19; Year, 236. SE—February, 7; June, 6; July, 5; September, 6; November, 13; December, 10; Year, 84. S—July, 2; August, 1; October, 1; December, 1; Year, 17. Calm—January, 14; March, 7; August, 15; September, 19; October, 21; Year, 137.

Grenada—Richmond Hill

Pressure—The values in millibars at M.S.L., reduced to 32°F. and lat. 45°, are:—January, 1014.3; February, 1014.4; March, 1014.3; April, 1014.1; May, 1014.1; June, 1013.3.

Temperature—January—9 a.m., 80.5, 6 p.m., 81.7, mean, 81.1, mean minimum, 74.5, absolute maximum, 90 on 11th; February—9 a.m., 80.6, 6 p.m., 81.7, mean, 81.1, mean minimum, 73.7; March—9 a.m., 80.1, 6 p.m., 81.7, mean, 80.9, mean minimum, 73.9, mean maximum, 86.7, absolute minimum, 71.0 on 28th, absolute maximum 91.0 on 20th; April—9 a.m., 79.3, 6 p.m., 80.7, mean, 80.0; mean minimum, 72.8, mean maximum, 86.9; absolute minimum, 70.0 on 13th, absolute maximum, 89.0 on 6th and 8th; May—9 a.m., 79.5, 6 p.m., 80.8, mean, 80.1, mean minimum, 72.8; mean maximum, 87.0, absolute maximum, 89.0 on S.D.; June—9 a.m., 79.0, 6 p.m., 79.9, mean, 79.5; mean minimum, 72.3, mean maximum, 86.2; absolute minimum, 70.0 on S.D., absolute maximum, 89.0 on 12th.

Relative Humidity—January—9 a.m., 77, 6 p.m., 77, mean, 77; February—6 p.m., 78, mean, 77; March—9 a.m., 78, 6 p.m., 76, mean, 77; April—9 a.m., 76, mean, 76; May—9 a.m., 76, June—9 a.m., 75, 6 p.m., 76, mean, 75.

Amount of Cloud—January—9 a.m., 5.2, 6 p.m., 6.1, mean, 5.6; February—9 a.m., 4.7, 6 p.m., 4.5, mean, 4.6; March—9 a.m., 6.3, 6 p.m., 5.0, mean, 5.6; April—9 a.m., 4.7, 6 p.m., 4.5, mean, 4.6; May—9 a.m., 6.1, 6 p.m., 6.4, mean, 6.3; June—9 a.m., 7.4, 6 p.m., 7.4, mean, 7.4.

Rainfall—January—total 12.61, maximum, 1.62 on 20th, March—total 7.86, June—total 14.67.

Rain—Number of days—May, 19; June, 22.

Falkland Islands—Stanley

Temperature—Mean minimum, September, 35; Year, 36. Absolute maximum, February, 66 on 15th. Absolute minimum, December, 30 on 10th, 14th.

Sunshine—Mean, December, 4.6; Year, 4.1.

Number of Days—Rain—March, 12; June, 24; September, 12; Year, 202.

Snow or Sleet—August, 0; Year, 28.

Wind—Number of Observations—S—February, 1; Year 18. SW—February, 2; Year, 54.

Mauritius, Royal Alfred Observatory

Temperature of the Air—Mean—May, 22.4; June, 20.9; Year, 22.8.

Sunshine, Daily Duration—June, 6.46; November, 9.81 hrs.

Sunshine, Percentage of Possible—August, 58.2.

South Georgia—Cumberland Bay

Pressure—Values of $\frac{1}{3}$ (8 + 14 + 20h.) in millibars reduced to 32°F., lat. 45° and M.S.L.:—January, 995.6; February, 993.5; March, 1000.4; April, 994.1; May, 998.0; June, 995.5; July, 1003.2; August, 996.8; September, 1000.7; October, 996.1; November, 988.3; December, 989.1; Year, 995.9.

Temperature—Mean—Values of $\frac{1}{3}$ (8 + 14 + 20h.) in °C:—January, 4.21; February, 5.45; March, 5.69; April, 3.17; May, 1.56; June, 0.93; July, -0.17; August, -1.08; September, 1.21; October, 1.18; November, 3.21; December, 3.27; Year, 2.23.

Vapour Pressure—January, 4.96; February, 4.94; March, 4.82; April, 4.15; May, 3.84; June, 3.63; July, 3.51; August, 3.31; September, 3.89; October, 3.93; November, 4.44; December, 4.45; Year, 4.15.

Relative Humidity—January, 80.4; February, 73.8; March, 70.7; April, 71.5; May, 72.1; June, 82.1; July, 75.4; August, 76.3; September, 75.1; October, 76.5; November, 76.6; December, 76.6; Year, 75.6.

Rainfall—Total—March, 191.5; April, 195.8; May, 175.5; June, 232.1; July, 187.8; November, 73.9; December, 64.5; Year, 1773.7.

Greatest fall in mm.—January, 39 on 28th, February, 43 on 25th, March, 46 on 4th, April, 25 on 14th, May, 22 on 12th, June, 41 on 3rd, July, 48 on 27th, August, 65 on 25th, September, 18 on 16th, October, 57 on 17th, November, 20 on 20th, December, 28 on 29th.

