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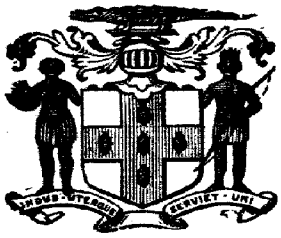

KINGSTON, JAMAICA.

TABLES OF RAINFALL RECORDS

FROM THE

YEAR 1870 TO YEAR 1929.

JAMAICA
GOVERNMENT PRINTING OFFICE KINGSTON
1932.

National Oceanic and Atmospheric Administration

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STATISTICS OF THE RAINFALL RECORDS FOR KINGSTON FROM THE YEAR 1870 TO 1929, WITH THE OMISSION OF THE YEAR 1871, BEING INACCESSIBLE—COVERING 59 YEARS.

Table K1 gives the monthly rainfall for each year with totals, with averages for each decade. October gives the highest average of 7.11 inches, and February the least with only 0.61 inch. The following shews the years which recorded over 40 inches—The mean annual fall being 31.57 inches.

Year.	Total.	Year.	Total.
	Inches.		Inches.
1874	42.07	1899	44.18
1876	40.81	1901	47.85
1877	41.38	1904	44.78
1878	63.19	1905	44.34
1879	69.34	1906	42.25
1886	61.88	1909	68.11
1888	46.94	1915	59.46
1897	42.93	1916	48.18

The year 1879 gives the greatest total of 69.34 inches owing to great flood rains in October recording 30.67 inches alone for that month. Then followed by year 1909 with 68.11 inches, due to exceptional flood rain in November of 30.45 inches.

The individual months from January to December, giving the greatest record are as follows:—

Each month's greatest rainfall and the year of occurrence, 1870 *to* 1929.

	Inches.	Year.
January	5.47	1878
February	3.93	1879
March	5.05	1889
April	5.08	1915
May	28.66	1888
June	29.20	1886
July	7.10	1887
August	13.83	1879
September	12.41	1873
October	30.67	1879
November	30.45	1909
December	10.08	1885

There were 13 months during period 1870-1929 when no rain fell, particularly from January to June (May excepted) and five times in December. July to November on no occasion had 0.00 inch.

The mean rainfall per rainy day gives 0.40 inch, approximately.

The following are the heaviest 10 monthly rainfalls for 59 years, in consecutive order of years.

		Inches.
October	1870	17.82
October	1879	30.67
June	1886	29.20
May	1888	28.66
October	1897	23.45
October	1899	18.54
June	1901	18.06
October	1904	21.65
October	1905	16.92
November	1909	30.45

Then, another Table K 2, has been compiled giving the total number of rainy days for each month from year 1881 to 1929. Prior to year 1881 records are apparently not available.

October, as may be expected, shews the greatest mean of 11.8 days, and February the least mean of 4.0 days, corresponding with the extremes of mean rainfall. See Tables K1 and K 2.

The following table gives the greatest number of rainy days for the months of the year, from 1881 to 1929—49 years, August, 1886, October, 1892 and October, 1904 record the highest maximum of 21 days. Then, February, 1894 and 1898, the lowest Maximum of 8.

Months.	Greatest number of Rainy Days.	Years.
January	11	1909 and 1921
February	8	1894 and 1898
March	12	1884
April	15	1913
May	13	1921
June	16	1886 and 1901
July	14	1881 and 1893
August	21	1886
September	19	1909
October	21	1892 and 1904
November	16	1916
December	11	1911

It may be here noted that a rain-gauge from about year 1870 was installed at the Public Works Building (North Parade) about half a mile from the Kingston Harbour and 60 feet above M.S.L. The gauge stood about 20 feet above the ground and rested upon the parapet of the stair landing. Then, upon the occasion of the removal of the P.W.D. Offices to Port Royal Street, West, in February 1911—the gauge was placed on the tower above the roofs, at an elevation above M.S.L. of 57 feet—The original gauge was 8-inch diameter and the new gauge supplied by the U.S. Weather Bureau, since 1907, was 12 inches in diameter.

In a few instances it will be found that the rainfalls for the months (for example year 1915, October and November) do not correspond with the figures given in the Weather Reports—owing to adopting the gauging of rainfall from midnight to midnight. But for the most part the figures given in this article refer to measures taken at 7 a.m. to represent the rainfall for the previous 24 hours.

Frequency of Rainy Days.

In the issue of the Meteorological Magazine (London) of September, 1929, No. 764, Vol. 64, page 185, there appeared an interesting article by Captain C. J. P. Cave, M.A. (a Past President of the Royal Meteorological Society), upon the subject of the "Frequency of Rainy Days". An example was given of the results derived from the rain-gauge figures for Ditcham, Petersfield, South Downs, and it was the opinion expressed that the figures derived deserved a closer analysis. Now, as a matter of comparison, based upon the same method, a Table has been prepared for the city of Kingston, Jamaica, (Lat. 18 degrees N. and Long. 76 degs. 48 mins. West). The gauge was installed at an elevation of about 60 feet above the sea level. Although the gauge has been maintained from the year 1870, only the more recent years' figures, derived from the year 1908 to year 1931—embracing 24 years, inclusive, have been extracted. The respective gaugings of 0.01—0.03 inch and upward, have been tabulated, in order to correspond with those adopted by Captain Cave, and so facilitate comparisons. In studying the mean number of rain days it should not be overlooked that the gauge figures do not progress uniformly, for example, 0.04 to 0.49, shews nearly half an inch, whereas the figures following progress by steps of a quarter of an inch interval. It is clear, however, that there is a preponderance of the number of rainy days in the range of falls lying between 0.01—0.03 inch, decreasing in number as the amount of daily rain increases.

The Kingston results are as follows:—

Rainfall, inch.	Mean No. of Rain Days.
0.01—0.03	21.9
0.04—0.09	41.7
0.50—0.74	5.0
0.75—0.99	2.9
1.00—1.24	1.5
1.25—1.49	1.0
1.50—1.74	0.7
1.75—1.99	0.5
2.00 and over	1.8
Total Rainy Days for Year	77.0

Although Ditcham and Kingston are, geographically, very widely apart, there is some marked resemblance between the two results, in the incidence of the amount of rainfall with the number of days of rain. The Table for Ditcham is not here re-produced.

It should be noted that the mean total number of rainy days for the 24 years period, 1908—1931, is 77, whereas with the 49-year period, 1881—1929, we have 79 days—a slight difference. Being a separate set of years, comprising about one-half the number.

Then, Kingston is a very dry station, shewing only 77 rain days as compared with Ditcham with 190.

By studying the incidence of the Kingston rainfall days it will be observable that the number of falls ranging between 0.01 and 0.03 inch, also vary somewhat; the maximum shews 34 days in the year 1917, and a minimum of 9 days in the year 1915. The total annual number of rainy days in the year 1917 was 92, and the number in the year 1915 was 81.

Then, by extracting all cases of 0.01—0.03 inches from say 9 to 17 days, an annual mean of 70 days is derived, and taking, on the other hand, cases of from 18 to 34 days we obtain an annual mean of 88 days. It would appear, therefore, that the greater the number of annual rainy days the greater may be expected the number of cases of daily rainfall gauged between 0.01 and 0.03 inch.

A Table giving the greatest rainfall in 24 hours for the respective months, during the period from the year 1881 to 1929, is as follows:

Month and Year.	Greatest Rainfall in 24 hours. Inches.
January 24th, 1886	1.78
February 18th, 1896	1.82
March 14th, 1889	3.53
April 25th, 1919	1.78
May 12th, 1888	9.34
June 7th, 1886	9.43
July 5th, 1901	4.40
August 14th, 1928	4.55
September 4th, 1915	6.45
October 1st, 1905	11.00
November 8th, 1909	8.93
December 23rd, 1885	4.77

For particulars concerning the Diurnal Variation of Rainfall for Kingston, for the period of years 1908 to 1919, greatest fall in one hour and other data, reference should be made to Weather Report No. 521, published in August, 1921.

J. F. BRENNAN,
Government Meteorologist.

Kingston, August 18th, 1932.

KINGSTON, JAMAICA.

Monthly Rainfall from 1870 to 1929.

Year.	Jan.	Feb.	Mar.	April	May.	June.	July.	Aug.	Sep.	Oct.	Nov.	Dec.	Total.
	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
1870	1.62	0.82	0.75	0.32	9.90	0.73	2.86	5.77	1.02	17.82	7.14	3.06	51.81
1871	..	..	..	..	..	..	..	..	..	..	..	..	..
1872	0.89	2.18	2.13	1.95	0.79	0.73	0.64	2.07	1.79	0.39	1.20	2.88	17.64
1873	2.21	0.23	2.04	0.00	1.05	0.15	0.19	8.34	12.41	9.71	0.20	1.36	37.89
1874	1.92	0.31	0.29	1.12	1.25	4.65	0.77	5.63	4.88	8.62	11.70	0.93	42.07
1875	1.13	0.39	1.73	0.69	4.71	0.19	1.15	2.12	7.23	4.65	0.49	0.00	24.48
1876	2.10	0.26	0.07	0.93	4.91	1.55	5.24	2.35	3.63	11.95	3.51	4.29	40.81
1877	0.56	0.33	3.64	0.25	16.05	7.51	2.06	0.33	2.96	0.32	5.51	1.86	41.38
1878	5.47	0.75	1.81	0.86	0.24	7.19	4.96	13.61	8.60	8.40	4.96	6.34	63.19
1879	0.10	3.93	0.79	4.59	4.52	7.16	0.37	13.83	2.77	30.67	0.36	0.25	69.34
Means (9 years) ..	1.78	1.02	1.47	1.19	4.82	3.32	2.03	6.01	5.03	10.28	3.90	2.33	43.18
1880	1.96	0.01	0.33	0.11	4.59	0.12	1.68	7.58	0.73	0.52	0.22	1.60	19.45
1881	0.30	0.55	0.95	0.90	12.23	1.08	4.24	3.95	2.09	6.41	1.93	0.33	34.96
1882	0.29	0.13	1.42	0.46	1.95	0.44	1.79	1.22	4.30	6.08	1.13	0.38	19.59
1883	2.45	0.15	3.15	0.33	1.34	2.32	0.99	6.45	3.57	3.58	4.57	0.40	29.30
1884	0.52	0.16	0.78	0.10	2.05	1.78	0.72	3.70	3.46	8.01	1.76	0.07	23.11
1885	0.09	0.39	0.36	0.57	2.67	0.69	1.07	1.04	5.15	1.94	0.48	10.08	24.53
1886	3.49	0.73	0.16	3.68	3.94	29.20	1.55	10.23	3.31	4.84	0.27	0.48	61.88
1887	0.46	0.11	0.43	1.84	4.33	4.82	7.10	2.89	2.15	10.06	1.80	0.43	36.42
1888	0.14	0.71	0.24	0.92	28.66	2.67	1.71	2.27	6.56	1.79	0.03	1.24	46.94
1889	1.56	0.08	5.05	0.94	1.63	12.03	0.72	1.59	4.57	3.69	0.07	0.01	31.94
Means	1.13	0.30	1.29	0.98	6.34	5.52	2.16	4.09	3.59	4.69	1.23	1.50	32.82
1890	0.32	0.27	3.44	0.50	1.19	0.41	0.23	5.36	2.50	2.57	4.15	0.14	21.08
1891	0.57	0.31	0.04	1.25	2.03	5.84	0.51	3.03	1.23	8.52	3.97	0.31	27.61
1892	0.14	0.29	0.23	0.81	1.07	3.23	0.20	1.09	3.15	7.36	2.99	0.72	21.28
1893	0.38	0.88	0.00	1.29	2.67	1.80	5.94	2.21	2.72	9.54	3.57	3.29	34.29
1894	0.19	0.67	0.74	0.61	10.65	0.70	1.21	1.31	1.55	12.78	2.07	2.43	34.91
1895	0.05	2.20	0.43	0.98	1.98	0.32	0.51	2.39	1.78	7.21	1.17	1.87	20.89
1896	1.51	2.40	0.18	0.86	4.34	0.90	0.99	0.40	2.92	0.97	1.40	2.14	19.01
1897	0.02	0.00	0.13	2.00	3.47	0.58	1.74	2.13	8.84	23.45	0.48	0.09	42.93
1898	0.03	2.66	1.31	0.17	9.66	3.39	1.63	1.86	2.95	9.77	1.03	0.14	34.60
1899	0.78	0.49	1.52	1.53	1.39	0.66	1.30	0.68	5.13	18.54	7.89	4.27	44.18
Means	0.40	1.02	0.80	1.00	3.84	1.78	1.43	2.05	3.28	10.07	2.87	1.54	30.08
1900	0.53	0.07	0.37	1.27	4.11	1.05	3.20	2.81	9.55	0.39	1.66	1.50	26.51
1901	2.21	0.00	0.00	0.11	0.14	18.06	6.52	4.25	7.68	6.09	0.70	2.09	47.85
1902	0.96	0.20	0.73	1.24	1.20	7.10	0.20	3.45	1.75	4.49	1.72	1.13	24.17
1903	0.64	0.03	0.55	0.22	6.35	0.66	0.31	4.23	2.84	2.43	0.54	0.44	19.24
1904	0.17	0.55	0.64	0.50	1.56	9.98	0.23	0.63	5.96	21.65	0.30	2.61	44.78
1905	0.22	0.23	1.25	1.38	5.00	7.33	0.35	4.56	1.64	16.92	1.41	4.05	44.34
1906	0.74	0.44	0.72	2.25	10.04	11.29	0.83	4.10	5.57	4.99	1.28	0.00	42.25
1907	0.00	0.70	0.15	0.02	3.72	2.62	2.14	4.08	2.36	2.24	0.46	1.04	19.53
1908	0.92	1.29	1.27	0.30	1.61	6.93	0.95	1.41	0.64	4.72	1.54	4.83	26.41
1909	1.24	0.03	0.82	1.61	1.50	4.74	1.60	4.11	10.27	11.74	30.45	0.00	68.11
Means	0.76	0.35	0.65	0.89	3.52	6.98	1.63	3.36	4.83	7.57	4.01	1.77	36.32
1910	2.10	0.02	1.45	1.53	1.32	5.09	1.49	3.39	5.12	11.30	1.43	3.09	37.33
1911	0.13	0.03	2.05	1.36	1.92	0.37	0.35	1.48	0.86	1.63	1.78	1.11	13.07
1912	1.40	0.74	0.56	0.51	0.27	0.08	0.02	1.13	1.58	1.87	10.68	0.08	18.92
1913	0.09	0.06	0.47	2.57	3.05	0.48	1.82	1.08	3.57	1.41	1.68	0.17	16.45
1914	0.14	0.28	0.56	0.95	0.80	0.60	0.18	0.80	0.82	1.58	1.56	0.23	8.50
1915	1.11	0.83	0.58	5.08	3.08	14.51	0.42	6.24	11.90	12.78	2.37	0.56	59.46
1916	0.09	0.57	0.79	2.99	11.92	1.53	3.94	5.92	0.97	8.17	11.27	0.02	48.18
1917	0.26	0.16	0.07	0.97	1.99	3.24	0.66	1.15	8.00	2.05	0.66	1.04	20.25
1918	0.58	0.52	1.02	3.16	3.44	0.84	0.24	2.87	0.30	2.17	0.71	0.57	16.42
1919	2.17	0.34	1.95	2.40	7.04	0.45	0.60	0.89	1.95	7.63	0.41	1.89	27.72
Means	0.81	0.36	0.95	2.15	3.48	2.72	0.97	2.50	3.51	5.06	3.26	0.88	26.65
1920	0.07	1.26	0.34	0.00	3.46	0.00	0.53	0.99	0.84	1.23	0.37	0.02	9.11
1921	1.40	0.56	1.42	1.71	5.11	2.70	1.21	1.22	5.11	4.15	0.14	1.17	25.91
1922	0.35	0.45	0.82	0.10	0.28	0.94	0.39	2.15	0.71	4.15	0.50	0.07	10.91
1923	0.33	0.21	0.64	0.89	4.88	0.18	0.46	0.77	0.11	7.91	1.18	0.29	17.85
1924	0.50	0.37	0.18	0.84	0.00	0.79	1.31	3.53	10.31	10.41	10.40	0.55	39.19
1925	0.35	0.92	0.97	2.72	3.16	0.57	0.55	1.71	3.44	1.74	1.78	0.83	18.74
1926	0.45	0.99	0.10	0.10	0.96	0.27	0.86	6.59	2.93	2.62	2.02	0.84	19.73
1927	0.07	1.02	0.42	0.90	1.47	0.38	3.41	2.83	1.82	10.56	2.85	0.00	25.73
1928	0.16	0.20	0.11	0.88	1.77	1.29	0.31	12.57	3.12	5.57	2.83	0.08	28.89
1929	0.55	0.50	0.39	0.14	0.63	0.44	0.65	6.27	2.42	4.96	1.74	1.27	19.96
Means	0.42	0.65	0.54	0.83	2.17	0.76	1.07	3.86	3.08	5.33	2.38	0.51	21.60
Means for 59 years ..	0.87	0.61	0.94	1.17	4.02	3.51	1.54	3.60	3.87	7.11	2.92	1.41	31.57

TABLE K. 2—GIVING THE TOTAL NUMBER OF RAINY DAYS FOR EACH MONTH.

Years 1881—1929.

Year.	Jan.	Feb.	Mar.	April	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Years Totals.
1881 ..	4	7	3	10	11	7	14	11	15	15	10	5	112
82 ..	4	5	4	3	5	2	6	13	13	10	4	4	73
83 ..	7	6	8	4	12	9	5	12	9	18	13	2	105
84 ..	4	4	12	1	9	8	3	10	8	17	13	0	89
85 ..	3	1	3	6	5	4	2	9	10	6	7	9	65
86 ..	5	4	6	8	10	16	13	21	12	14	3	7	119
87 ..	6	6	3	8	8	14	7	14	8	15	8	2	99
88 ..	2		2	4	12	5	4	11	14	13	3	10	82
89 ..	7	5	5	4	7	13	6	7	12	10	5	1	82
1890 ..	4	4	7	5	9	5	6	8	4	8	6	5	71
91 ..	6	5	2	5	8	6	4	4	8	15	13	4	80
92 ..	6	4	3	5	6	10	3	8	11	21	7	4	88
93 ..	2	6	0	6	10	9	14	9	6	15	12	8	97
94 ..	4	8	4	7	12	6	6	5	6	14	6	5	83
95 ..	1	3	6	8	8	3	5	9	6	15	11	3	78
96 ..	7	5	6	5	9	5	6	5	12	5	9	9	83
97 ..	1	0	1	7	11	5	10	8	11	16	5	3	78
98 ..	1	8	2	4	8	5	7	12	12	17	5	3	84
99 ..	8	4	8	6	6	4	5	4	11	11	12	7	86
1900 ..	7	1	3	4	7	5	8	5	10	4	4	3	61
01 ..	4	0	0	3	1	16	6	6	12	11	5	4	68
02 ..	5	2	4	3	6	7	2	8	6	9	4	6	62
03 ..	5	2	2	3	11	8	3	8	8	4	6	5	65
04 ..	4	5	7	2	7	10	3	5	5	21	3	8	80
05 ..	4	3	6	5	7	8	2	8	10	12	3	9	77
06 ..	10	4	5	3	6	10	5	7	10	12	4	0	76
07 ..	0	5	1	1	5	8	4	6	7	7	3	5	52
08 ..	8	5	9	4	4	4	7	9	9	15	9	6	89
09 ..	11	1	4	5	5	8	3	14	19	14	9	0	93
1910 ..	7	2	7	2	3	7	5	11	12	15	7	10	88
11 ..	6	2	6	5	8	3	1	7	3	7	8	11	67
12 ..	4	4	4	5	3	1	1	8	6	15	14	1	66
13 ..	3	2	3	15	9	4	4	11	11	7	6	5	80
14 ..	2	2	7	6	4	6	5	10	3	5	8	5	63
15 ..	6	3	5	9	5	9	3	8	9	11	11	2	81
16 ..	2	6	2	12	11	7	12	13	12	18	16	2	113
17 ..	3	4	4	13	9	7	8	5	16	6	9	8	92
18 ..	3	7	5	7	7	8	4	4	3	11	4	10	73
19 ..	8	3	3	5	10	3	5	5	10	12	5	6	75
1920 ..	1	4	7	0	8	0	1	10	10	7	5	1	54
21 ..	11	6	8	9	13	6	7	9	13	10	6	5	103
22 ..	3	5	6	2	5	4	1	12	7	9	3	2	59
23 ..	2	4	5	8	11	4	2	7	5	10	2	2	62
24 ..	3	4	4	2	0	4	8	8	16	16	14	3	82
25 ..	3	5	5	9	4	4	2	7	12	8	10	5	74
26 ..	3	7	2	2	6	3	6	13	8	8	7	2	67
27 ..	3	5	1	5	9	5	4	6	7	17	5	0	67
28 ..	1	1	2	4	6	5	2	13	10	9	14	2	69
29 ..	8	3	5	3	7	4	3	10	9	11	10	7	80
Means ..	4.5	4.0	4.4	5.3	7.4	6.4	5.2	8.8	9.5	11.8	7.5	4.6	79.4
In round numbers	4	4	4	5	7	6	5	9	10	12	8	5	79