

Frequencies and Extremes of daily rainfall at London Weather Centre.

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Requests are frequently received at London Weather Centre after heavy rain from persons wishing to know how often such a fall can be expected. It was therefore decided to prepare tables of the frequencies of heavy daily rainfall. The period 2100 to 2100 GMT is used at the London Weather Centre as it approximates best to the civil day.

The site of the rain gauge has moved twice during the period 1945 to 1969. The gauge was at Victory House from 1945 until the end of July 1959 when it was moved across Kingsway to Princes House. On 10th January 1965 the gauge was again moved, this time to State House in High Holborn (Figure I ). For the purposes of this study however all three sites have been taken to be the same.

The daily (2100 GMT to 2100 GMT) rainfalls were extracted for the years 1945 to 1969. The groupings chosen were days with no measurable rainfall, 0.1 to 4.9 millimetres, 5.0 to 9.9 millimetres, 10.0 to 14.9 millimetres and then in one millimetre steps. Totals were then calculated for the total number of days in each month for 25 years (Table I) and the average number of days each month (Table II) with rainfall equal to or above certain values.

The help of Met.O.8 Bracknell was then solicited to calculate statistically the heaviest daily rainfall which could be expected each month once in 5 , 10 or 25 years (Table III).

September 1970

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FIGURE I

SITES OF LONDON WEATHER CENTRE

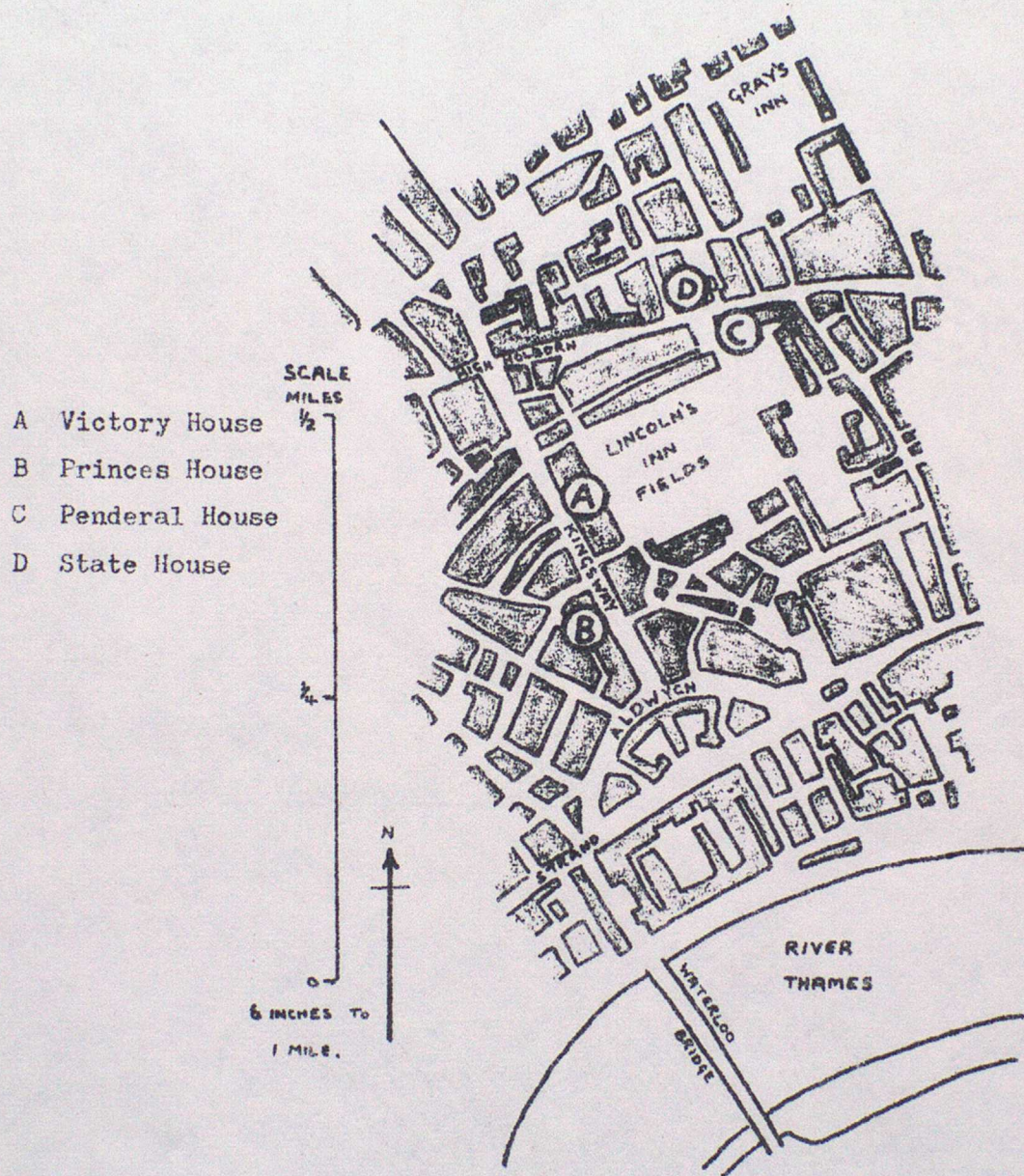




TABLE I

Frequencies of Daily Rainfall (2100GMT) equal to or above certain values at London Weather Centre during the 25 years 1945 to 1969.

<u>Rainfall</u> equal to or above millimetres	<u>TOTAL NUMBER OF DAYS IN 25 YEARS</u>												
	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC	YEAR
0.1	368	314	271	316	342	295	303	355	329	302	363	390	3968
5.0	69	68	57	62	75	81	77	100	83	88	88	86	934
10.0	19	17	19	14	27	37	38	43	32	35	35	25	341
15.0	6	4	5	5	10	12	22	22	15	17	14	9	141
16.0	2	3	4	2	9	9	20	16	12	13	10	5	105
17.0	2	1	3	2	9	8	17	12	11	11	9	4	89
18.0	1	1	3	2	7	7	17	10	9	10	8	2	77
19.0	1		2	2	6	7	17	9	9	9	7	2	71
20.0			1	2	5	7	13	8	7	8	6	1	58
21.0				1	5	7	13	5	6	8	5	1	51
22.0				1	3	7	10	5	5	6	3	1	41
23.0				1	2	6	8	5	4	5	2	1	34
24.0				1	1	5	6	5	4	4	2	1	29
25.0				1	1	5	6	3	4	4	2	1	27
26.0				1	1	5	6	2	4	3	2	1	25
27.0				1	1	5	6	2	4	3		1	23
28.0				1	1	5	6	2	4	1		1	21
29.0				1		5	5	1	3	1		1	17
30.0				1		4	4	1	3	1		1	15
31.0				1		4	3	1	3	1			13
32.0						3	3	1	3	1			11
33.0						3	2	1	2	1			9
34.0						2	2	1	2	1			8
35.0						1	2	1	2	1			7
36.0						1	2	1	2				6
37.0						1	2	1	2				6
38.0						1	2	1	2				6
39.0						1	1	1	2				5
40.0						1	1	1	1				4
41.0						1	1	1	1				4
42.0							1	1	1				3
43.0							1	1	1				3
44.0							1						1
45.0							1						1
46.0							1						1
47.0													0

No. measurable rainfall

407 392 484 434 433 455 472 420 421 473 387 385 5163



TABLE II

Average Number of Days (2100 GMT to 2100 GMT) with rainfall equal to or above certain values at London Weather Centre. (25 years 1945 to 1969)

Rainfall equal to or above millimetres	AVERAGE NUMBER OF DAYS												
	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG.	SEP	OCT	NOV	DEC	YEAR
0.1	14.72	12.50	10.84	12.64	13.68	11.80	12.12	14.20	13.16	12.08	14.52	15.60	158.72
5.0	2.76	2.72	2.28	2.48	3.00	3.24	3.08	4.00	3.32	3.52	3.52	3.44	37.36
10.0	.76	.68	.76	.56	1.08	1.48	1.52	1.72	1.28	1.40	1.40	1.00	13.64
15.0	.24	.16	.20	.20	.40	.48	.88	.88	.60	.68	.56	.36	5.64
16.0	.08	.12	.16	.08	.36	.36	.80	.64	.48	.52	.40	.20	4.20
17.0	.08	.04	.12	.08	.36	.32	.68	.48	.44	.44	.36	.16	3.56
18.0	.04	.04	.12	.08	.28	.28	.68	.40	.36	.40	.32	.08	3.08
19.0	.04		.08	.08	.24	.28	.68	.36	.36	.36	.28	.08	2.84
20.0			.04	.08	.20	.28	.52	.32	.28	.32	.24	.04	2.32
21.0				.04	.20	.28	.52	.20	.24	.32	.20	.04	2.04
22.0				.04	.12	.28	.40	.20	.20	.24	.12	.04	1.64
23.0				.04	.08	.24	.32	.20	.16	.20	.08	.04	1.36
24.0				.04	.04	.20	.24	.20	.16	.16	.08	.04	1.16
25.0				.04	.04	.20	.24	.12	.16	.16	.08	.04	1.08
26.0				.04	.04	.20	.24	.08	.16	.12	.08	.04	1.00
27.0				.04	.04	.20	.24	.08	.16	.12		.04	.92
28.0				.04	.04	.20	.24	.08	.16	.04		.04	.84
29.0				.04		.20	.20	.04	.12	.04		.04	.68
30.0				.04		.16	.16	.04	.12	.04		.04	.60
31.0				.04		.16	.12	.04	.12	.04			.52
32.0						.12	.12	.04	.12	.04			.44
33.0						.12	.08	.04	.08	.04			.36
34.0						.08	.08	.04	.08	.04			.32
35.0						.04	.08	.04	.08	.04			.28
36.0						.04	.08	.04	.08				.24
37.0						.04	.08	.04	.08				.24
38.0						.04	.08	.04	.08				.24
39.0						.04	.04	.04	.08				.20
40.0						.04	.04	.04	.04				.16
41.0						.04	.04	.04	.04				.16
42.0							.04	.04	.04				.12
43.0							.04	.04	.04				.12
44.0							.04						.04
45.0							.04						.04
46.0							.04						.04
47.0													-

No measurable rainfall

16.28 15.68 19.36 17.36 17.32 18.20 18.88 16.80 16.84 18.92 15.48 15.40 206.52



TABLE III

Frequencies of extreme rainfall at London Weather Centre.

One day rainfalls (2100 GMT to 2100 GMT) in millimetres, likely to be exceeded once in a stated number of years.

	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC	YEAR
Once in													
5 years	13.8	12.4	13.1	14.2	18.0	21.1	27.8	22.4	22.6	21.0	19.2	16.0	36.5
10 years	15.9	14.2	15.6	18.0	21.4	28.2	34.0	27.0	29.3	25.3	22.3	19.0	41.3
25 years	18.7	16.5	18.8	22.9	25.6	37.2	42.0	32.8	37.7	30.7	26.4	22.8	47.3