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METEOROLOGICAL OFFICE

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DISTRIBUTION OF HOURLY VALUES OF DRY-BULB AND WET-BULB TEMPERATURES, CROYDON, 1945-54

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INTRODUCTION

Hourly observations of dry-bulb and of wet-bulb temperature made at Croydon Airport during the 10 yr. 1945-54 were tabulated on monthly sheets from the daily registers. The resulting 87,648 observations of each element were analysed to obtain frequency distributions for each month and the year within temperature ranges of 2°F. These ranges were chosen as being sufficiently small to give a reliable indication of the frequencies at the higher and lower temperature ends of the distributions, which are usually the regions of greatest interest, without making the work excessively laborious. A 10-yr. period was chosen as the shortest which could be considered to give reasonably reliable averages.

DISCUSSION OF RESULTS

Table I shows the average number of hours in each month and the year with dry-bulb temperature and with wet-bulb temperature within each 2°F. range. The original observations were given to the nearest tenth of a degree, and in the analysis the ranges used were 6·1 - 8·0°F., 8·1 - 10·0°F. and so on. Where the average frequency in any range was between zero and one hour it has been given in the table to the nearest tenth of an hour, otherwise all frequencies are given to the nearest hour. The mean monthly temperatures given in the last column were derived from the observations at the eight synoptic hours 0000, 0300, 0600, 0900, 1200, 1500, 1800 and 2100 G.M.T. to save labour. These values are not likely to differ from the means derived from the 24 hourly readings by more than a tenth of a degree. In a single month chosen at random the differences were 0·01° and 0·03°F. for dry-bulb and wet-bulb temperature respectively.

Monthly and yearly distribution

The frequencies of Table I are plotted as histograms in Figs. 1 and 2, and these permit ready comparison between the distributions in different months and between those of dry-bulb and wet-bulb temperatures in the same month. The main features are as follows. Over the year as a whole, Fig. 2, the distribution of dry-bulb temperature is approximately a normal one, although there is a tendency for temperatures between about 30° and 40°F. to be somewhat more frequent than would be given by a normal curve. The annual distribution of wet-bulb temperature, however, shows marked negative skewness, the frequencies falling off sharply at the high-temperature end and the mode lying well to the right of the mean. It is interesting to note that the most frequent wet-bulb temperature is approximately the same as the mean dry-bulb temperature. Examination of the monthly histograms reveals a more complicated state of affairs, but, in general, the distributions of dry-bulb temperature in the months September to March are either normal or show slight negative skewness, while in the months April to August they show quite marked positive skewness. In these spring and summer months the frequency of temperatures more than about 10°F. above the average is much greater than that of temperatures more than about 10°F. below the average, although the most frequent temperature is 2° or 3°F. lower than the average. The monthly distributions of wet-bulb temperature show negative skewness in most of the months from September to March. In the remaining months the main feature is the tendency to rise to a sharp peak (leptokurtosis) although there are also indications of slight positive skewness.

Comparison with outstanding months

The dotted histograms superimposed on the average distributions of Fig. 1 show the distributions in an outstanding month of the same name during the 10-yr. period. These give some indication of the way in which the distributions in a more or less exceptional month may differ from the average. The period used did in fact contain some quite outstanding months including the exceptionally cold February of 1947, the very cold months of January 1945, March 1947, November 1952 and December 1950, and the very warm months of April 1949, May 1952, June 1950, July 1949, July 1947 (for wet-bulb temperature), August 1947, September 1949 and October 1954. July 1947 was chosen for wet-bulb temperature because, although it was slightly less hot than July 1949, exceptionally high wet-bulb temperatures were recorded. Frequencies for the year 1947, which contained some very warm and some very cold months, are superimposed on Fig. 2.

Cumulative frequencies

Table II gives, for each month and the year, the average number of hours and also the percentage of the total time with dry-bulb temperature above fixed temperatures at intervals of 2°F. Table III gives similar information in respect of wet-bulb temperature. In July, for example, the dry-bulb temperature exceeded 70°F. on the average for 120 hr. or 16·1 per cent. of the time, while the wet-bulb temperature exceeded this limit for only 9 hr. or 1·2 per cent. of the time. In February the dry-bulb temperature exceeded 32°F. on the average for 569 hr. or 84·0 per cent. of the time, hence it was at or below the freezing point for 108 hr. or 16·0 per cent. of the time. In Figs. 3 and 4 the cumulative percentage frequencies are plotted in the form of ogives. From these diagrams the average percentage of the time during which dry-bulb or wet-bulb temperature may be expected to exceed any limit in any month or over the year as a whole may be read off.

Accumulated temperatures

The cumulative frequency curves of Figs. 3 and 4 may also be used to obtain the average numbers of degree-hours, or degree-days, to be expected in any month, above or below any base temperature. Thus the number of degree-hours above or below base "b" degrees is equal to the area to the right or left respectively of the ordinate "b", and between it and the appropriate curve multiplied by N/100, where N is the number of hours in the month concerned. If N is the number of days in the month then the accumulated temperature average would be given in degree-days. For example, in the ogive for January Fig. 4, the area to the left of the 60°F. ordinate up to the dry-bulb temperature curve is 2,130 units (percentage degrees), remembering that the horizontal scale is twice the vertical scale; hence the average number of degree-hours below the base 60°F. at Croydon in January is 2130 x (744/100) = 15,850 or expressed in degree-days 2130 x (31/100) = 660. Similarly, from the ogive for July Fig. 4, the average number of degree-days below 60°F. in July is 157 x (31/100) = 49 and the average number of degree-days above 60°F. in that month is 426 x (31/100) = 132.

1955

TABLE I. AVERAGE NUMBER OF HOURS WITH DRY-BULB AND WET-

The ranges of temperature actually used were 6.1° to 8.0°F., 8.1° to 10.0°F. etc.

	Temperature (°F.)																					
	6 to 8	8 to 10	10 to 12	12 to 14	14 to 16	16 to 18	18 to 20	20 to 22	22 to 24	24 to 26	26 to 28	28 to 30	30 to 32	32 to 34	34 to 36	36 to 38	38 to 40	40 to 42	42 to 44	44 to 46	46 to 48	48 to 50
	Number of hours																					
DRY-BULB TEMPERATURE																						
Jan.	0.3	0.1	0.4	0.3	0.3	2	3	4	10	12	22	31	53	64	78	72	62	70	72	48	56	39
Feb.	..	0.4	0.8	0.7	0.5	1	0.9	3	7	11	23	30	30	42	56	61	64	64	59	56	59	48
Mar.	..	..	..	..	..	..	0.1	0.3	1	3	6	11	26	45	59	55	54	61	75	69	72	66
Apr.	..	..	..	..	..	..	..	..	..	..	..	1	3	8	13	26	41	57	69	72	74	75
May	..	..	..	..	..	..	..	..	..	..	..	0.2	0.7	1	2	4	10	17	29	50	60	72
June	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0.3	2	9	18	33
July	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0.6	4	9
Aug.	..	...	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0.2	0.9	3	7
Sept.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0.3	1	2	4	7	13	23	33
Oct.	..	..	..	..	..	..	..	..	..	0.4	0.9	2	6	9	9	11	16	21	32	47	62	65
Nov.	..	..	..	..	..	..	..	..	0.5	1	2	6	13	20	26	34	45	55	68	83	97	77
Dec.	..	..	..	..	..	0.2	0.4	1	5	6	12	18	29	46	56	62	72	76	77	76	70	61
Year	0.3	0.5	1	1	0.8	3	4	8	23	34	66	99	161	235	299	326	366	425	490	525	598	585
WET-BULB TEMPERATURE																						
Jan.	0.3	0.2	0.3	0.3	0.7	2	4	4	13	17	28	46	65	81	78	68	78	66	49	52	43	27
Feb.	..	0.5	0.8	0.7	0.4	1	2	5	8	21	27	32	49	50	62	74	72	61	58	56	49	29
Mar.	..	..	..	..	..	..	0.2	0.4	1	5	10	23	42	54	61	72	71	81	76	80	76	56
Apr.	..	..	..	..	..	..	..	..	..	..	0.1	3	6	14	24	49	74	95	99	89	74	62
May	..	..	..	..	..	..	..	..	..	..	..	0.5	1	1	4	9	23	39	55	72	86	107
June	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0.1	2	7	22	38	75
July	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0.1	3	11	29
Aug.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0.4	2	7	20
Sept.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	4	5	13	26	43	55
Oct.	..	..	..	..	..	..	..	..	..	0.8	1	3	7	12	11	15	24	40	46	65	79	92
Nov.	..	..	..	..	..	..	..	..	0.7	1	3	8	20	24	34	48	55	80	91	92	76	74
Dec.	..	..	..	..	0.1	0.1	0.5	2	5	8	16	28	44	49	60	78	81	74	80	65	64	52
Year	0.3	0.7	1	1	1	1	7	11	28	53	85	143	234	285	335	414	482	543	574	624	646	678

*Means derived from observations at the eight synoptic

BULB TEMPERATURE WITHIN RANGES OF 2°F, CROYDON 1945-1954

i.e. the ranges heading this table include the upper but not the lower limits

Temperature (°F.)																						
50 to 52	52 to 54	54 to 56	56 to 58	58 to 60	60 to 62	62 to 64	64 to 66	66 to 68	68 to 70	70 to 72	72 to 74	74 to 76	76 to 78	78 to 80	80 to 82	82 to 84	84 to 86	86 to 88	88 to 90	90 to 92	Total	Mean * Temperature
Number of hours																						
DRY-BULB TEMPERATURE																						
24	13	7	0.5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	744	38.8
32	19	6	2	0.4	0.6	0.1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	677	40.0
49	37	23	12	7	5	4	2	0,7	0.8	0.4	..	..	..	..	..	..	..	..	..	..	744	43.3
65	60	45	33	21	15	12	9	7	4	5	3	1	0.8	0.4	0.3	..	..	..	..	..	720	48.6
76	77	71	59	50	43	38	24	16	13	10	6	5	3	2	2	2	0.6	0.1	..	..	744	54.2
55	64	80	76	79	69	56	48	38	26	21	15	8	7	5	4	3	2	0.5	0.6	0.1	720	59.3
21	39	57	73	87	89	80	63	57	44	33	24	19	14	12	8	6	2	1	0.8	0.3	744	62.9
21	47	62	80	94	92	82	73	52	40	28	23	15	9	7	3	2	1	0.9	0.5	..	744	62.0
44	58	82	95	95	80	62	44	27	20	13	7	5	2	0.9	0.6	0.6	0.5	..	..	..	720	58.1
87	85	85	74	53	35	16	14	7	5	1	0.3	..	..	..	..	..	..	..	..	..	744	51.6
71	57	34	17	11	2	0.3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	720	45.6
44	20	10	2	0.3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	744	41.6
589	576	562	524	498	431	350	277	205	153	112	78	53	36	27	18	14	6	3	2	0.4	8765	50.6
WET-BULB TEMPERATURE																						
14	7	0.2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	744	37.2
14	4	0.5	0.1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	677	38.0
23	9	3	0.6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	744	40.6
59	30	19	12	7	3	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	720	44.5
100	86	59	38	30	15	8	5	4	1	0.7	0.2	..	..	..	..	..	..	..	..	..	744	49.7
102	119	103	88	62	39	27	16	11	7	2	0.2	..	..	..	..	..	..	..	..	..	720	54.7
54	93	114	119	105	82	57	37	21	10	5	3	1	..	..	..	..	..	..	..	..	744	57.6
55	90	121	133	121	95	61	28	7	3	1	..	..	..	..	..	..	..	..	..	..	744	57.3
81	102	109	105	66	55	33	13	6	2	..	..	..	..	..	..	..	..	..	..	..	720	54.4
94	87	67	54	33	11	2	0.1	..	..	..	..	..	..	..	..	..	..	..	..	..	744	49.0
52	36	17	8	0.8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	720	43.7
26	8	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	744	39.9
674	671	615	558	425	300	189	99	49	23	9	3	1	..	..	..	..	..	..	..	..	8765	47.3

hours 0000, 0300, 0900, 1200, 1500, 1800, and 2100 G.M.T.

TABLE II. AVERAGE NUMBER OF HOURS AND PERCENTAGE OF TIME WITH DRY-

In this table some of the higher frequencies are italicized. This indicates that
The percentage 0.0 in italics indicates that

		Temperature (°F.)																			
		Above 6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44
		Number of hours																			
Jan.	hr.	744	*744*	743	743	743	742	740	737	733	723	711	689	658	605	541	463	391	329	259	187
	%	100	*100*	99.9	99.9	99.9	99.7	99.5	99.0	98.5	97.1	95.5	92.6	88.4	81.3	72.7	62.2	52.5	44.2	34.8	25.1
Feb.	hr.	..	677	*677*	676	676	675	674	673	670	663	652	629	599	569	527	471	410	346	282	223
	%	..	100	*100*	99.9	99.9	99.7	99.5	99.4	99.0	97.9	96.3	92.9	88.5	84.0	77.9	69.6	60.5	51.1	41.6	32.9
Mar.	hr.	..	...	..	..	..	..	744	*744*	*744*	743	740	734	723	697	652	593	538	484	423	348
	%	..	..	..	..	..	..	100	*100*	*100*	99.9	99.5	98.6	97.1	93.6	87.6	79.6	72.2	65.0	56.8	46.7
Apr.	hr.	..	..	..	..	..	..	..	..	..	..	..	720	719	716	708	695	669	628	571	502
	%	..	..	..	..	..	..	..	..	..	..	..	100	99.9	99.5	98.4	96.5	93.0	87.2	79.3	69.7
May	hr.	..	..	..	..	..	..	..	..	..	..	..	744	*744*	743	742	740	736	726	709	680
	%	..	..	..	..	..	..	..	..	..	..	..	100	*100*	99.9	99.9	99.5	98.9	97.5	95.3	91.4
June	hr.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	720	719	717
	%	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	100	99.9	99.6
July	hr.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	744
	%	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	100
Aug.	hr.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	744	743
	%	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	100	99.9
Sept.	hr.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	720	*720*	719	717	713	706
	%	..	..	..	..	..	..	..	..	..	..	..	..	..	..	100	*100*	99.9	99.6	99.0	98.0
Oct.	hr.	..	..	..	..	..	..	..	..	..	744	743	742	740	734	725	716	705	689	668	636
	%	..	..	..	...	..	..	..	..	..	100	99.9	99.7	99.5	98.6	97.4	96.2	94.7	92.6	89.7	85.5
Nov.	hr.	..	..	..	..	..	..	..	..	720	719	718	716	710	697	677	651	617	572	517	449
	%	..	..	..	..	..	..	..	..	100	99.9	99.7	99.5	98.6	96.8	94.0	90.4	85.7	79.5	71.8	62.4
Dec.	hr.	..	..	..	..	..	744	*744*	743	742	737	731	719	701	672	626	570	508	436	360	283
	%	..	..	..	..	..	100	*100*	99.9	99.7	99.0	98.2	96.5	94.2	90.3	84.1	76.6	68.2	58.5	48.4	38.0
Year	hr.	8765	*8765*	8764	8763	8763	8761	8758	8753	8745	8721	8685	8621	8522	8361	8126	7827	7501	7135	6709	6218
	%	100	*100*	*100*	*100*	*100*	*100*	99.9	99.9	99.7	99.5	99.1	98.4	97.2	95.5	92.7	89.3	85.6	81.4	76.5	71.0

BULB TEMPERATURE ABOVE FIXED LIMITS AT 20°F. INTERVALS, CROYDON 1945-54.

the true values lie somewhere between the two nearest values printed on either side.
the true value lies between zero and 0.1 per cent.

Above	Temperature (°F.)																						
46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92
Number of hours																							
139	83	44	20	7	0.5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18.7	11.2	5.9	2.7	0.9	0.1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
167	108	60	28	9	3	1	0.7	0.1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24.7	16.0	8.9	4.1	1.3	0.4	0.1	0.1	*0.0*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
279	207	141	92	55	32	20	13	8	4	2	1	0.4	..	..	..	..	..	..	..	..	..	..	..	..
37.5	27.8	19.0	12.4	7.4	4.3	2.7	1.7	1.1	0.5	0.3	0.1	0.1	..	..	..	..	..	..	..	..	..	..	..	..
430	356	281	216	156	111	78	57	42	30	21	14	10	5	2	1	0.7	0.3	..	..	..	..	..	..	..
59.7	49.4	39.0	30.0	21.7	15.4	10.8	7.9	5.8	4.2	2.9	1.9	1.4	0.7	0.3	0.1	0.1	*0.0*	..	..	..	..	..	..	..
630	570	498	422	345	274	215	165	122	84	60	44	31	21	15	10	7	5	3	0.7	0.1	..	..	..	..
84.6	76.6	66.9	56.7	46.4	36.8	28.9	22.2	16.4	11.3	8.1	5.9	4.2	2.8	2.0	1.3	0.9	0.7	0.4	0.1	*0.0*	..	..	..	..
708	690	657	602	538	458	382	303	234	178	130	92	66	45	30	22	15	10	6	3	1	0.7	0.1	..	
98.4	95.9	91.3	83.6	74.7	63.6	53.0	42.1	32.5	24.7	18.1	12.8	9.2	6.3	4.2	3.1	2.1	1.4	0.8	0.4	0.1	0.1	*0.0*	..	
743	739	730	709	670	613	540	453	364	284	221	164	120	87	63	44	30	18	10	4	2	1	0.3	..	
99.9	99.3	98.1	95.3	90.0	82.4	72.5	60.9	48.9	38.2	29.7	22.0	16.1	11.7	8.5	5.9	4.0	2.4	1.3	0.5	0.3	0.1	*0.0*	..	
742	739	732	711	664	602	522	428	336	254	181	129	89	61	38	23	14	7	4	2	1	0.5	..	..	
99.7	99.3	98.5	95.5	89.2	81.0	70.1	57.5	45.1	34.1	24.3	17.3	12.0	8.2	5.1	3.1	1.9	0.9	0.5	0.3	0.1	0.1	..	..	
693	670	637	593	535	453	358	263	183	121	77	50	30	17	10	5	3	2	1	0.5	..	..	..	..	
96.3	93.1	88.5	82.4	74.3	62.9	49.7	36.5	25.4	16.8	10.7	6.9	4.2	2.4	1.4	0.7	0.4	0.3	0.1	0.1	..	..	..	..	
589	527	462	375	290	205	131	78	43	27	13	6	1	0.3	..	..	..	..	..	..	..	..	..	..	
79.1	70.8	62.1	50.4	39.0	27.6	17.6	10.5	5.8	3.6	1.7	0.8	0.1	*0.0*	..	..	..	..	..	..	..	..	..	..	
366	269	192	121	64	30	13	2	0.3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
50.8	37.4	26.7	16.8	8.9	4.2	1.8	0.3	*0.0*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
207	137	76	32	12	2	0.3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
27.8	18.4	10.2	4.3	1.6	0.3	*0.0*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
5693	5095	4510	3921	3345	2784	2260	1763	1332	982	705	500	347	236	158	105	70	42	24	10	4	2	0.4	0	
64.9	58.1	51.5	44.7	38.2	31.8	25.8	20,1	15.2	11.2	8.0	5.7	4.0	2.7	1.8	1.2	0.8	0.5	0.3	0.1	*0.0*	*0.0*	*0.0*	*0.0*	

(63242)

TABLE III. AVERAGE NUMBER OF HOURS AND PERCENTAGE OF TIME WITH WET-

In this table some of the higher frequencies are italicized. This indicates that the
The percentage 0.0 in italics indicates that the

		Temperature (°F.)															
		Above 6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36
		Number of hours															
Jan.	hr.	744	*744*	743	743	743	742	740	736	732	719	702	674	628	563	482	404
	%	100	*100*	99.9	99.9	99.9	99.7	99.5	98.9	98.5	96.5	94.4	90.6	84.4	75.6	64.8	54.3
Feb.	hr.	..	677	*677*	676	675	675	674	672	667	659	638	611	579	530	480	418
	%	..	100	*100*	99.9	99.7	99.7	99.5	99.2	98.6	97.4	94.2	90.2	85.5	78.3	70.9	61.7
Mar.	hr.	..	..	..	..	..	..	744	*744*	*744*	743	738	728	705	663	609	548
	%	..	..	..	..	..	..	100	*100*	*100*	99.9	99.2	97.8	94.7	89.1	81.8	73.6
Apr.	hr.	..	..	..	..	..	..	..	..	..	..	720	*720*	717	711	697	673
	%	..	..	..	..	..	..	..	..	..	..	100	*100*	99.6	98.7	96.8	93.5
May	hr.	..	..	..	..	..	..	..	..	..	..	..	744	*744*	743	742	738
	%	..	..	..	..	..	..	..	..	..	..	..	100	*100*	99.9	99.7	99.2
June	hr.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	%	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
July	hr.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	%	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Aug.	hr.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	%	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Sept.	hr.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	720	719
	%	..	..	..	..	..	..	..	..	..	..	..	..	..	..	100	99.9
Oct.	hr.	..	..	..	..	..	..	..	..	..	744	743	742	739	732	720	709
	%	..	..	..	..	..	..	..	..	..	100	99.9	99.7	99.3	98.4	96.8	95.3
Nov.	hr.	..	..	..	..	..	..	..	..	720	*720*	719	716	708	688	664	630
	%	..	..	..	..	..	..	..	..	100	*100*	99.9	99.4	98.3	95.5	92.2	87.5
Dec.	hr.	..	..	..	..	744	*744*	743	743	741	736	728	712	684	640	591	531
	%	..	..	..	..	100	*100*	99.9	99.9	99.6	98.9	97.8	95.7	91.9	86.0	79.4	71.4
Year	hr.	8765	*8765*	8764	8763	8762	8761	8757	8751	8740	8713	8660	8575	8432	8198	7913	7578
	%	100	*100*	*100*	*100*	*100*	*100*	99.9	99.8	99.7	99.4	98.8	97.8	96.2	93.5	90.3	86.4

BULB TEMPERATURE ABOVE FIXED LIMITS AT 2°F. INTERVALS, CROYDON 1945-54

true values lie somewhere between the two nearest values printed in Roman type on either side.
true value lies between zero and 0.1 per cent.

Above	Temperature (°F.)																		
38	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76
Number of hours																			
336	258	192	143	91	48	21	7	0.2	..	..	..	..	..	..	..	..	..	..	..
45.1	34.7	25.8	19.2	12.2	6.5	2.8	0.9	*0.0*	..	..	..	..	..	..	..	..	..	..	..
344	272	211	153	97	48	19	5	0.6	0.1	..	..	..	..	..	..	..	..	..	..
50.8	40.2	31.2	22.6	14.3	7.1	2.8	0.7	0.1	*0.0*	...	..	..	..	..	..	..	..	..	..
476	405	324	248	168	92	36	13	4	0.6	..	..	..	..	..	..	..	..	..	..
64.0	54.4	43.5	33.3	22.6	12.4	4.8	1.7	0.5	0.1	..	..	..	..	..	..	..	..	..	..
624	550	455	356	267	193	131	72	42	23	11	4	1	..	..	..	..	..	..	..
86.7	76.4	63.1	49.4	37.1	26.8	18.2	10.0	5.8	3.2	1.5	0.6	0.1	..	..	..	..	..	..	..
729	706	667	612	540	454	347	247	161	102	64	34	19	11	6	2	0.9	0.2	..	..
98.0	94.9	89.7	82.3	72.5	61.0	46.6	33.2	21.6	13.7	8.6	4.6	2.6	1.5	0.8	0.3	0.1	*0.0*	..	..
720	*720*	718	711	689	651	576	474	355	252	164	102	63	36	20	9	2	0.2	..	..
100	*100*	99.7	98.8	95.7	90.4	80.0	65.8	49.3	35.0	22.8	14.2	8.8	5.0	2.8	1.3	0.3	*0.0*	..	..
..	..	744	*744*	741	730	701	647	554	440	321	216	134	77	40	19	9	4	1	..
..	..	100	*100*	99.6	98.1	94.2	87.0	74.5	59.1	43.1	29.0	18.0	10.5	5.4	2.6	1.2	0.5	0.1	..
..	..	744	*744*	742	735	715	660	570	449	316	195	100	39	11	4	1	..	..	..
..	..	100	*100*	99.7	98.8	96.1	88.7	76.6	60.4	42.5	26.2	13.4	5.2	1.5	0.5	0.1	..	..	..
718	714	709	696	670	627	572	491	389	280	179	109	54	21	8	2	..	..	..	..
99.7	99.2	98.5	96.7	93.1	87.1	79.5	68.2	54.0	38.9	24.3	15.1	7.5	2.9	1.1	0.3	..	..	..	..
694	670	630	584	519	440	348	254	167	100	46	13	2	0.1	..	..	..	..	..	..
93.3	90.1	84.7	78.5	69.8	59.1	46.8	34.2	22.4	13.4	6.2	1.7	0.3	*0.0*	..	..	..	..	..	..
582	527	447	356	264	188	114	62	26	9	0.8	..	..	..	..	..	..	..	..	..
80.8	73.2	62.1	49.4	36.6	26.1	15.8	8.6	3.6	1.3	0.1	..	..	..	..	..	..	..	..	..
453	372	298	218	153	89	37	11	3	..	..	..	..	..	..	..	..	..	..	..
60.9	50.0	40.1	29.3	20.6	12.0	5.0	1.5	0.4	..	..	..	..	..	..	..	..	..	..	..
7164	6682	6139	5565	4941	4295	3617	2943	2272	1656	1098	673	373	184	85	36	13	4	1	0
81.7	76.2	70.0	63.5	56.3	49.0	41.2	33.6	25.9	18.9	12.5	7.7	4.3	2.1	1.0	0.4	0.1	*0.0*	*0.0*	0.0

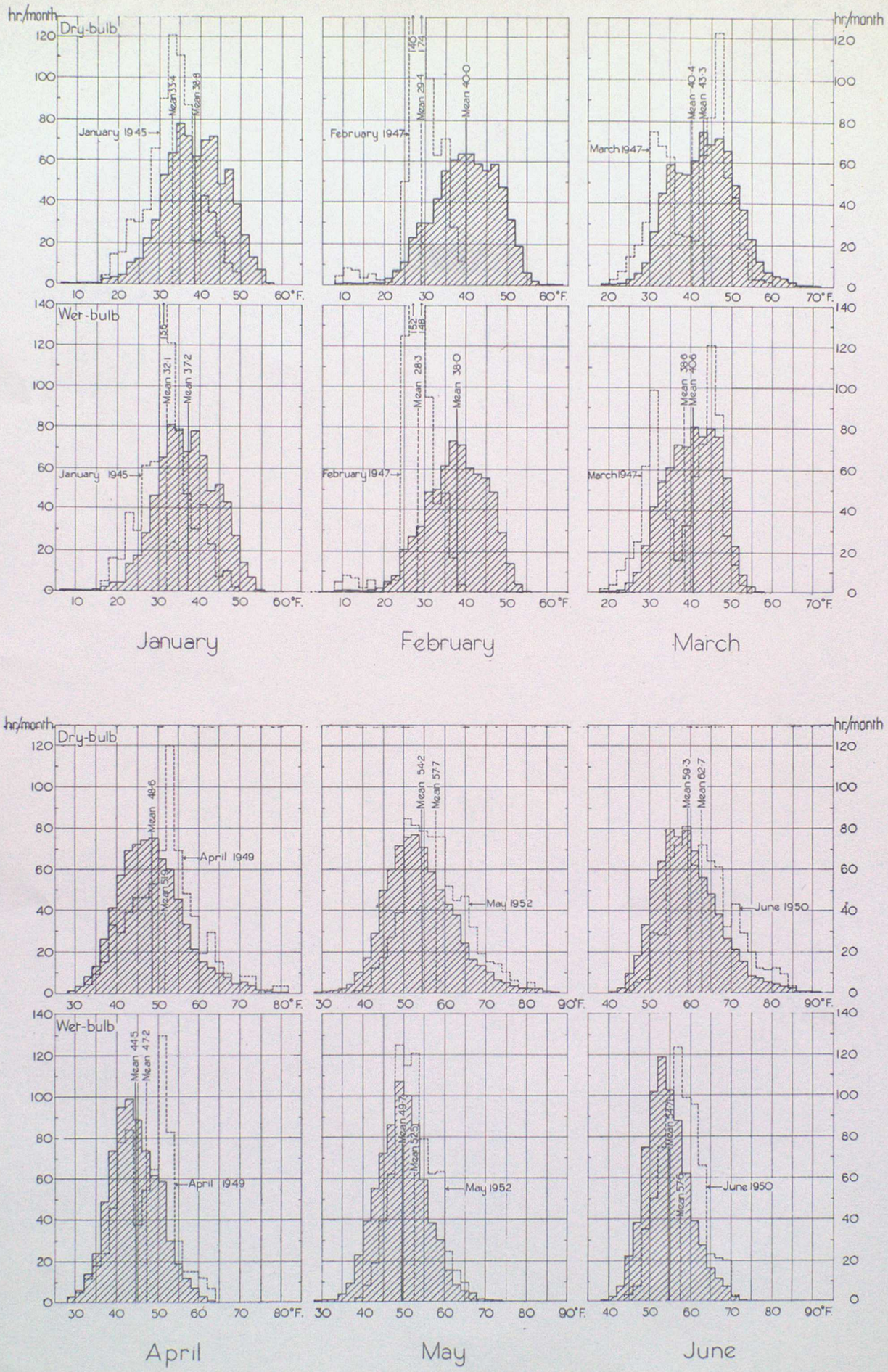
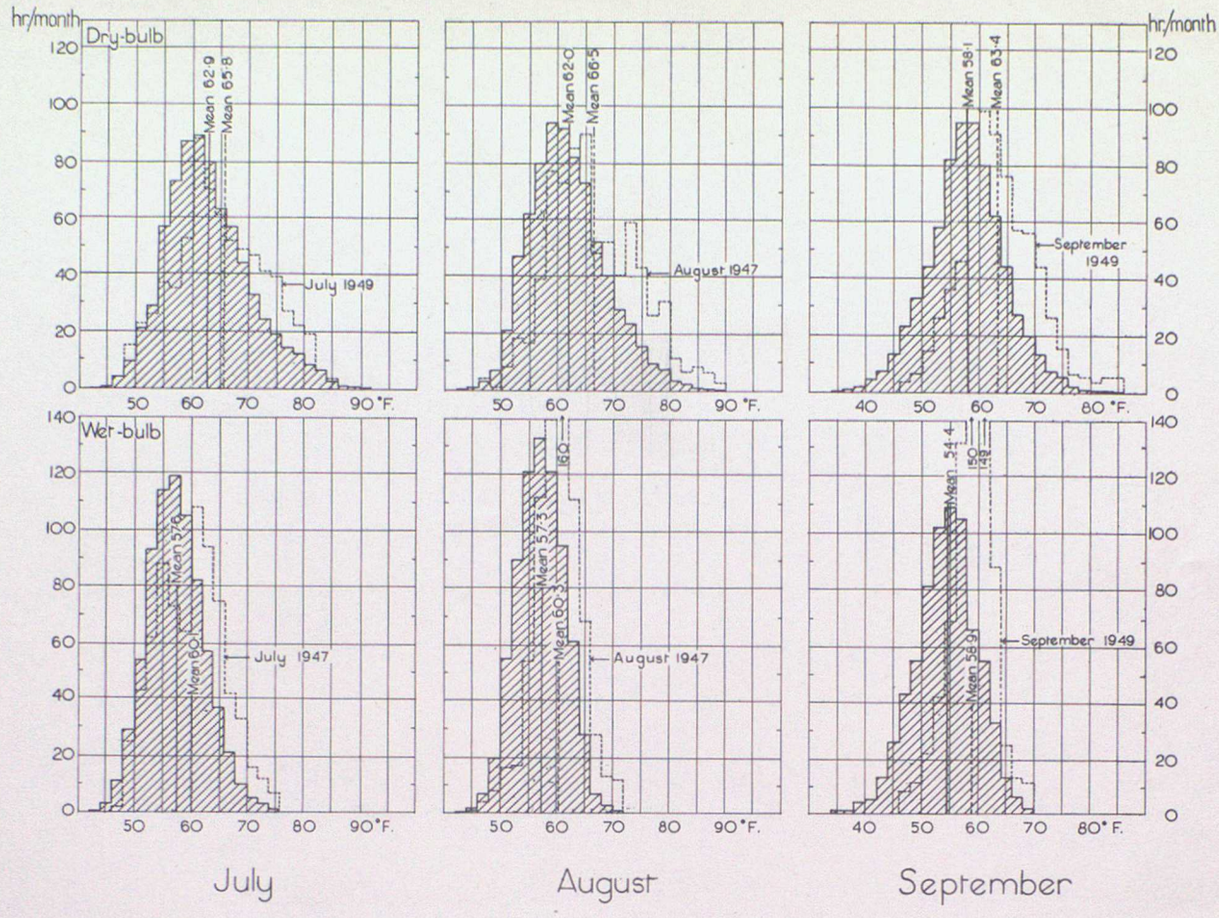


Fig. 1. Average frequency of hourly values of dry-bulb and wet-bulb temperatures within 2°F. ranges at Croydon, 1945-54
Each range includes the upper boundary but not the lower.



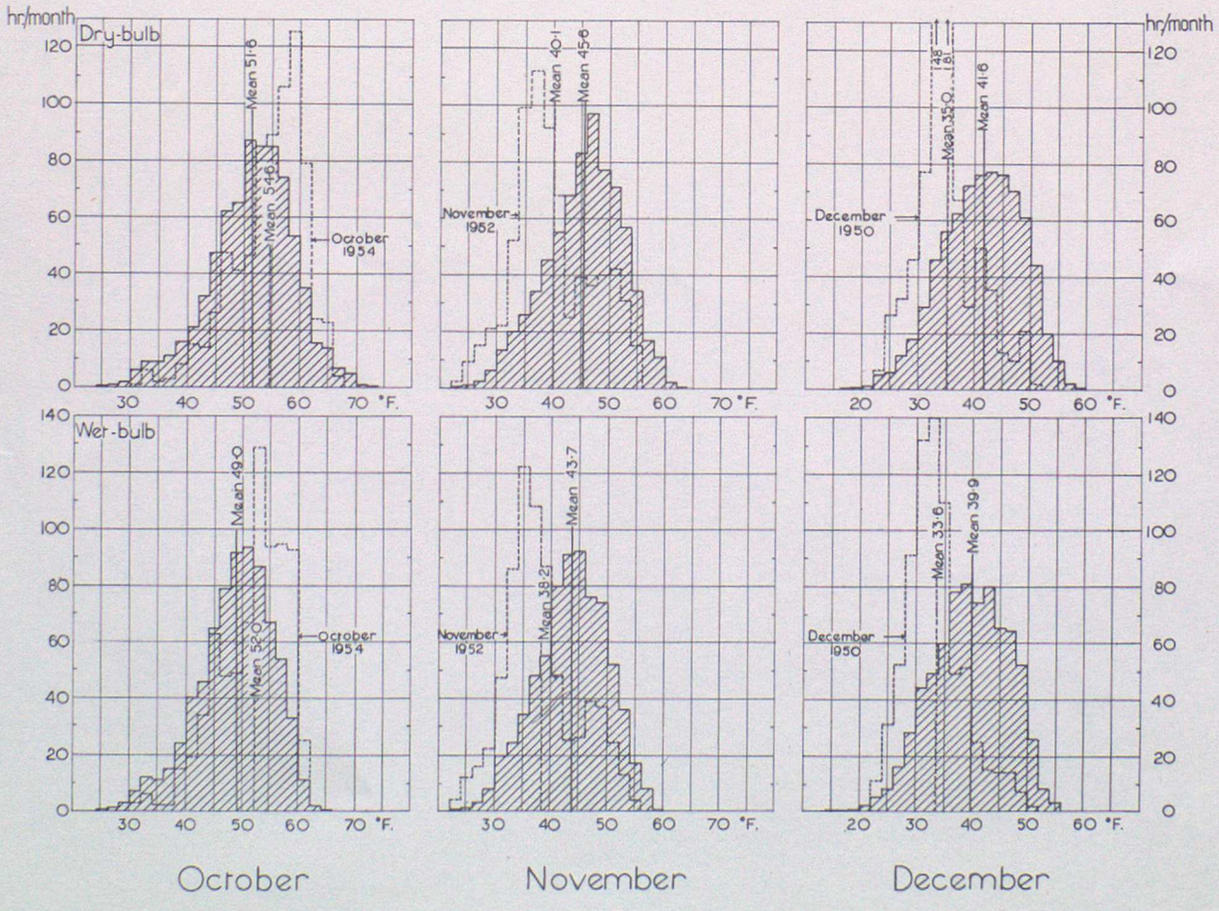


Fig. 1. continued

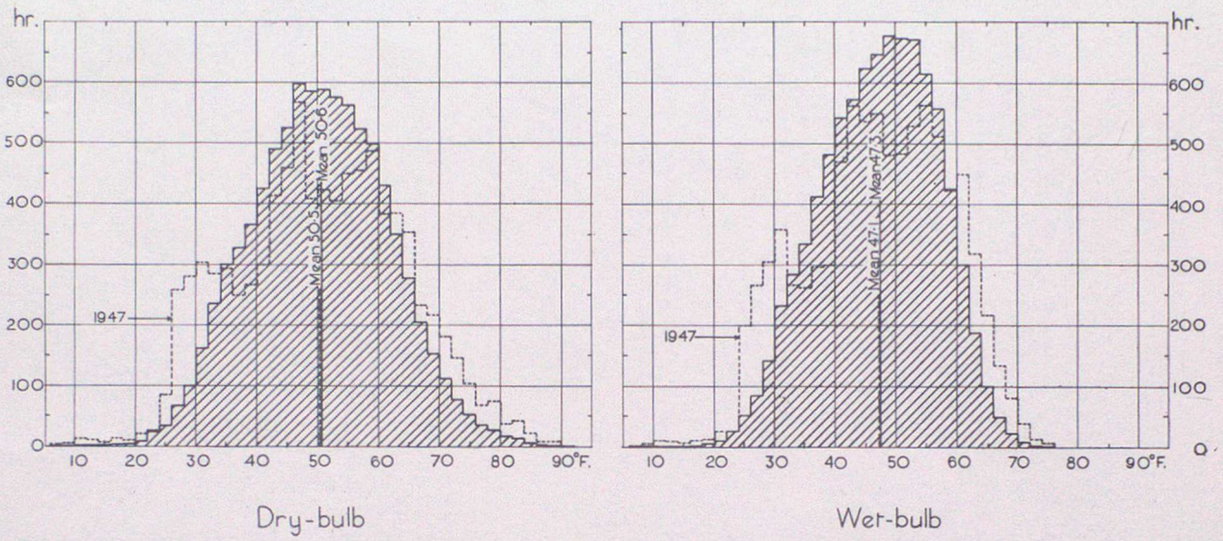


Fig. 2. Histograms of yearly frequency of hourly values of dry-bulb and wet-bulb temperature.

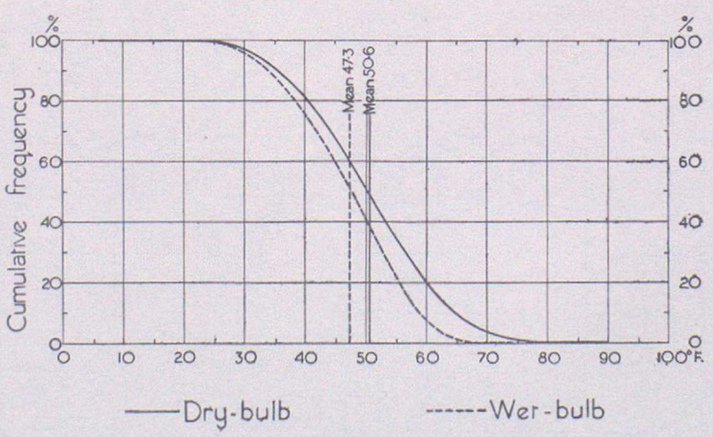


Fig. 3 Ogives of yearly frequency of hourly values of dry-bulb and wet-bulb temperature.

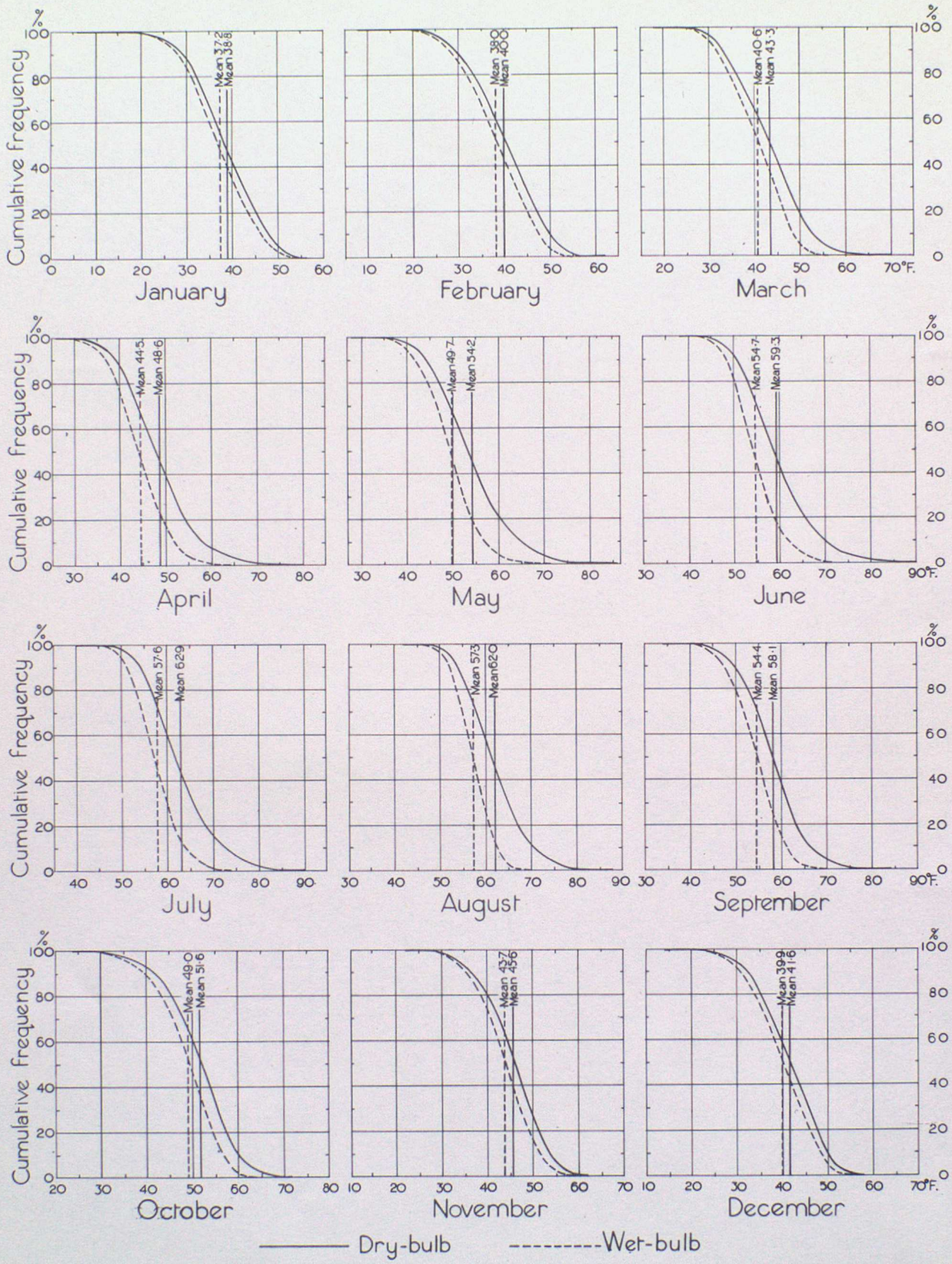


Fig.4. Ogives of monthly frequency of hourly values of dry-bulb and wet-bulb temperature.