

Climatological data representative of Kew, Surrey, from 1698 to 1970

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Summary. It was shown in Evaporation Memorandum No.24 that useful approximations to monthly estimates of (Penman) potential evaporation can be obtained, for a given station, from values of monthly average air temperature and from long-average values of monthly wind speed at 2 metres above ground and of daily duration of bright sunshine.

In this memorandum attempts are made (i) to assemble a series of monthly averages of air temperature representative of Kew from 1698 to 1870, (ii) to homogenise wind speed averages obtained at Kew Observatory up to 1930 with the later part of the record (to 1970) and (iii) to obtain, from the homogenised wind speed record, estimates run-of-wind at 2 metres above ground. The data used to produce estimates of potential evaporation at Kew for calendar months from 1698 to 1970 are set out in the Appendices to this memorandum. (Early months are in old-style calendar; September 1752 has only 19 days.)

Much of the content of Memoranda 24 and 26 are combined in a paper by the writer, entitled "Evaporation in the London Area 1698-1970."
(unpublished ms as at 9 Apr 1973)



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MONTHLY AVERAGE (SCREEN) AIR TEMPERATURE AT KEW OBSERVATORY.

Sources of Data and Estimates.

- 1698 - 1722 Manley's Central England Series adjusted to give estimates for the London Region as shown in Fig.1.
Manley, G. "Temperature trends in England 1698-1957"
Archiv. für Meteorologie, Geophysik und Bioklimatologie
Band 9 Heft 3.4 1959.
- 1723 - 1811 Manley, G. Temperatures for the London Region. (Typescript communicated to the Meteorological Office 1967).
- 1812 - Oct 1822 Greenwich Observatory values adjusted to give estimates for Kew as shown in Fig.2.
Eaton, H.S. "Greenwich Temperatures 1811 - 1856" Royal Met. Soc. ms. (Meteorological Office Library).
- Nov 1822 - 1840 Various sites in the Greenwich area. Values adjusted by subtracting 0.2°C (to "correct" from 25 - 40 ft. asl to observatory height, 155 ft.) then adjusted as shown in Fig.2.
Eaton, H.S. (as above).
- 1841 - 1870 Greenwich Observatory temperatures adjusted as shown in Fig.2.
Brazzell, J.H. "London Weather" Meteorological Office London HMSO 1968.
- 1871 - 1920 "London Weather" Brazzell J.H. Kew Observatory Temperatures.
- 1921 "Meteorological and Magnetic Year Book" Kew temperatures.
- 1922 - 1956 "Observatories Year Books" Kew temperatures.
- 1957 - 1970 "Monthly Weather Reports" Kew temperatures.

The above, from 1698 to 1870, are set out on 20-year sheets. (App.4.)
From 1870 to 1970 the values are given on computer print-out. (App.1.)

MONTHLY AVERAGES OF DAILY RUN-OF-WIND AT 20 TO 23 METRES (above ground)
AT KEW OBSERVATORY.

Sources of Data.

1870 - Sep 1876	"Wind Tabulations for Kew 1868-1877" (M.O. Archives).
Oct 1876 - 1900	"Reports of the Kew Observatory Committee of the Royal Society" (Meteorological Office Library).
1901 - 1910	"Reports of the National Physical Laboratory and Observatory Department" (Meteorological Office Library).
1911 - 1921	"British Meteorological and Magnetic Year Books" (Meteorological Office Library).
1922 - 1956	"Observatories Year Books" (Meteorological Office Library).
1957 - 1970	"Monthly Weather Reports" of the Meteorological Office.

Notes:

- (1) Data from 1870 - 1925 are from the Robinson anemometer, variously stated to have been at 70 feet (21.3 m) and 20 m above ground.
- (2) Instrumental readings up to 1905 were multiplied by Dr. Robinson's original factor 3 but, from 1906 onwards, the revised factor 2.2 was used. (See p. 23 of the reports for 1905 and 1906, respectively.) 1870-1905 values have been multiplied by $2.2/3$ to remove the inconsistency introduced by the change of factor.
- (3) Data from 1926 - 1970 are from the Dines anemograph with head at 23 m above ground.

The above, from 1870 - 1970, are set out on 20-year sheets. (App. 2)

The overall slope of values in Fig. 3 has been coarsely removed in the manner set out on the sheet dealing with run-of-wind at 2 metres by multiplying all values from 1870 to 1900 by 1.128 and all values from 1901 to 1930 by 1.08. These results are set out on 20-year sheets. (App. 3)

MONTHLY AVERAGES OF RUN-OF-WIND AT 2 METRES ABOVE GROUND AT KEW OBSERVATORY.

Estimates based on the measured values at 20 - 23 metres above ground from 1870 to 1956 are given in the computer print-out.

The annual averages of measured winds are plotted in Fig.3 from which it may be seen that there has been a sustained increase from the beginning of the record to about 1930.

Decadal averages are as follows:

1871	1881	1891	1901	1911	1921	1931	1941	1951	1961
1880	1890	1900	1910	1920	1930	1940	1950	1960	1970
180	178	180	187	188	188	205	200	202	206 miles/day

From this simple table it is easy to derive factors to remove most of the slope from the graph,

1871 - 1900 multiply by 203/180 or 1.128

1901 - 1930 multiply by 203/188 or 1.080

it being assumed that the increase has been mostly due to greater sensitivity of measuring and recording apparatus over the years.

Thus, starting with the raw, published data the following modifications have been made to produce estimates of 2 metre wind-run (monthly average daily run).

1870 - 1900	Multiply by .733 to change instrument factor		
	multiply by .54 to adjust values from 21 to 2 metres	*	} .446
	multiply by 1.128 to allow for apparent low sensitivity of speed measurements.		

1901 - 1905	Multiply by .733	} .427
	Multiply by .54*	
	multiply by 1.08	

1906 - 1930	Multiply by .54*	} .583	1931 - 1957 Multiply by .54.
	multiply by 1.08		

The values from 1957 onwards are measured run-of-wind at 2 metres.

These estimates and measurements of 2 m run-of-wind are given on computer print-out. (APP. I)

* See Fig.4.

MONTHLY AVERAGES OF VAPOUR PRESSURE (in the screen) AT KEW OBSERVATORY.

Sources of Data and Estimates.

- 1870 - Sep 1876 Estimated from air temperatures, using Fig.2 of Meteorological Office, Met O 8, Evaporation Memorandum No.24.
- Oct 1876 - 1900 "Reports of the Kew Observatory Committee of the Royal Society" (Meteorological Office Library)
- 1901 - 1910 "Reports of the National Physical Laboratory and Observatory Department" (Meteorological Office Library)
- 1911 - 1921 "British Meteorological and Magnetic Year Books" (Meteorological Office Library)
1911 - 1913 values obtained from average temperature and average relative humidity. 1914 - 1920 values are means of vapour pressures at 09 and 21 hr. GMT. 1921 values were computed from daily mean temperature and daily mean relative humidity.
- 1922 - 1956 "Observatories Year Books" (Meteorological Office Library).
Computed as in 1921.
- 1957 - 1970 "Monthly Weather Reports" of the Meteorological Office.
Averages of values at 09, 15 and 21 hr GMT.

The above values are given in computer print-out. (App. 1)

pre - 1870 estimates may be obtained by the method of Evap.Memo.No.24 as for 1870 - 76.

MONTHLY AVERAGES OF DAILY DURATION OF BRIGHT SUNSHINE AT KEW OBSERVATORY.

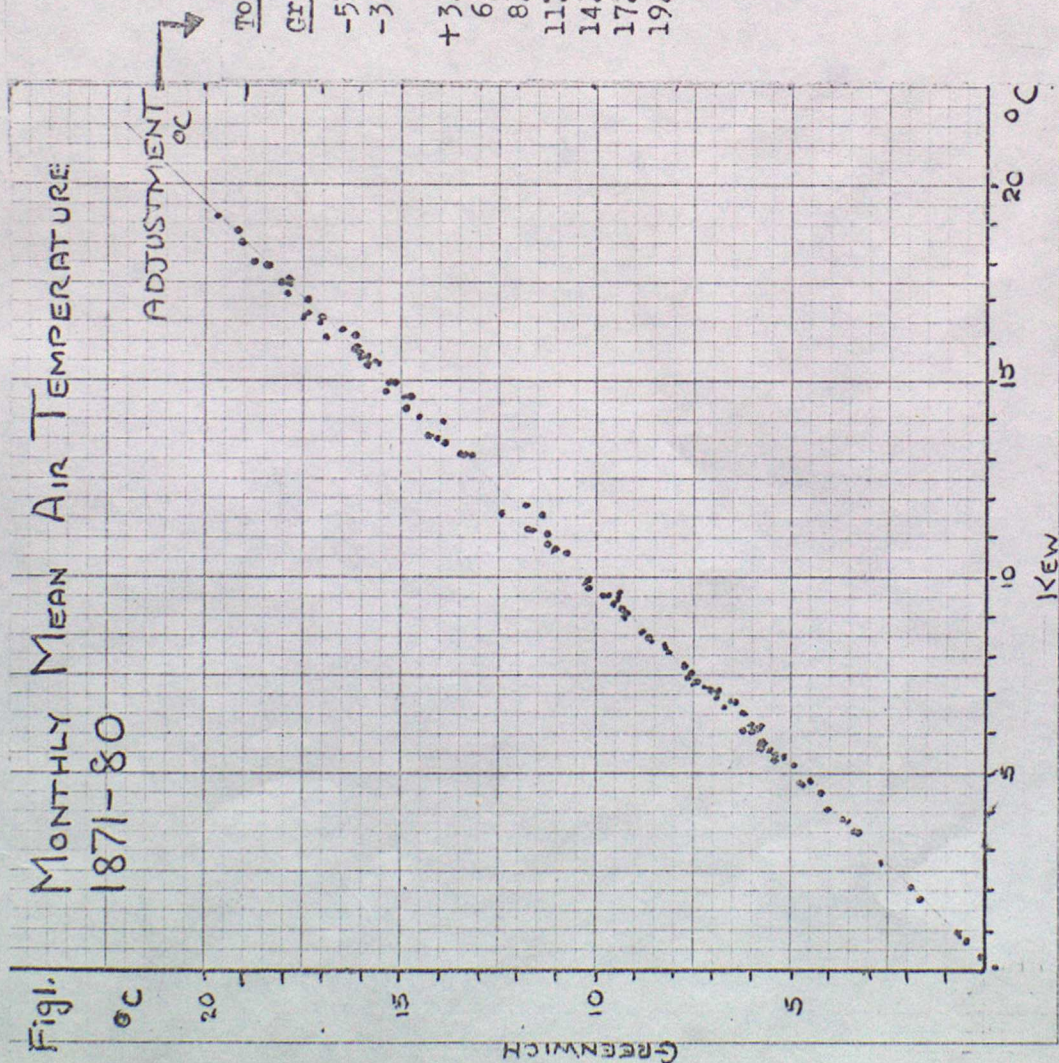
Sources of Data and Estimates.

1870 - Sep 1876	Estimated as set out in Evaporation Memorandum No.24 (using Fig.1.)
Oct 1876 - 1880	"Reports of the Kew Observatory Committee of the Royal Society."
1881 - 1920	"London Weather" J.H.Brazzell Meteorological Office HMSO
1921	"British Meteorological and Magnetic Year Book"
1922 - 1956	"Observatories Year Books"
1957 - 1970	"Monthly Weather Reports"

The above values are given in computer print-out. (App.1.)

pre - 1870 estimates may be obtained by the method of Evap.Mem.No.24
as for 1870-76.

MONTHLY MEAN AIR TEMPERATURE 1871-80

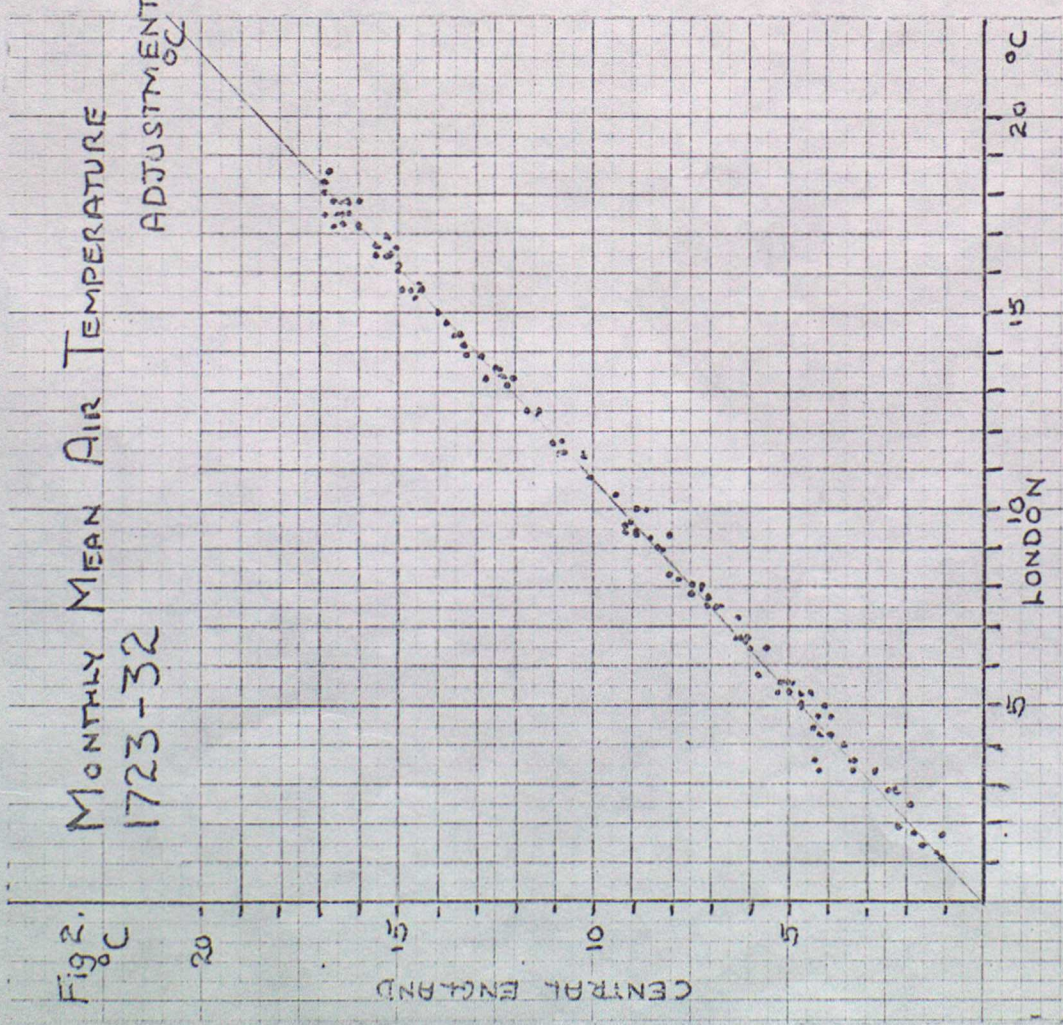


To obtain estimates of average temperature for Kew

Greenwich °C	Adjustment °C
-5.0	+0.4
-3.0	0.3
0	0.2
+3.0	0.1
6.0	0
8.0	-0.1
11.0	-0.2
13.0	-0.3
14.0	-0.3
17.0	-0.4
19.0	-0.5

Fig. 2.

MONTHLY MEAN AIR TEMPERATURE
1723-32



To obtain estimates of average temperature for London:

Central °C	Adjustment °C
England	
-2.9	-1.1
-1.0	-0.1
0	0
+2.0	+0.1
3.0	0.2
5.0	0.3
6.0	0.4
7.0	0.5
8.0	0.6
9.0	0.7
10.0	0.8
12.0	0.9
14.0	1.0
15.0	1.1
16.0	1.2
17.0	1.3
18.0	1.4
19.0	1.5
20.0	1.6

Fig 3. ANNUAL AVERAGES OF DAILY RUN-OF-WIND AT 21.3 M (ROBINSON ANEMOGRAPH) AND 23 M (DINES ANEMOGRAPH) AT KEW, SURREY IN MILES/DAY. 1871-1970

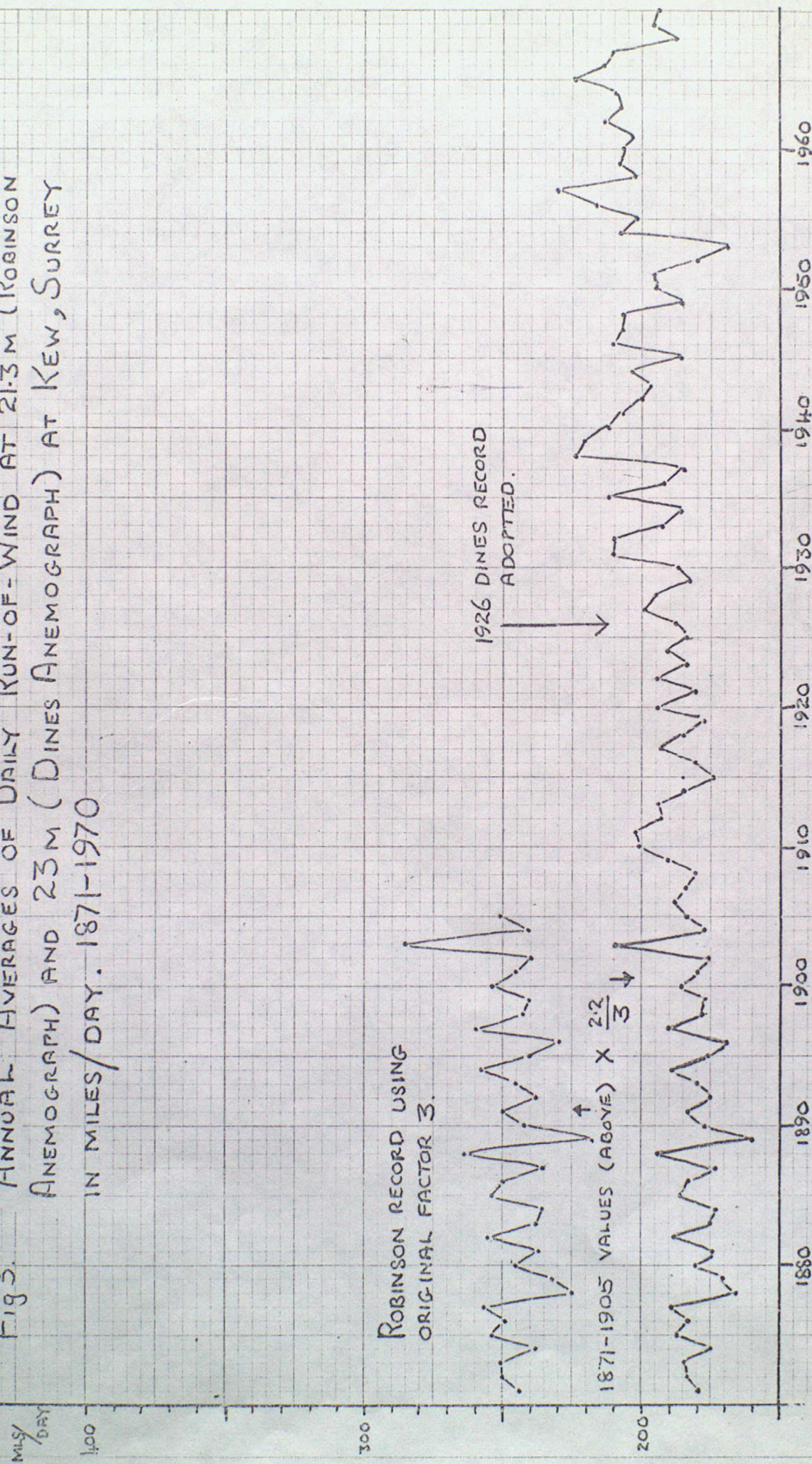
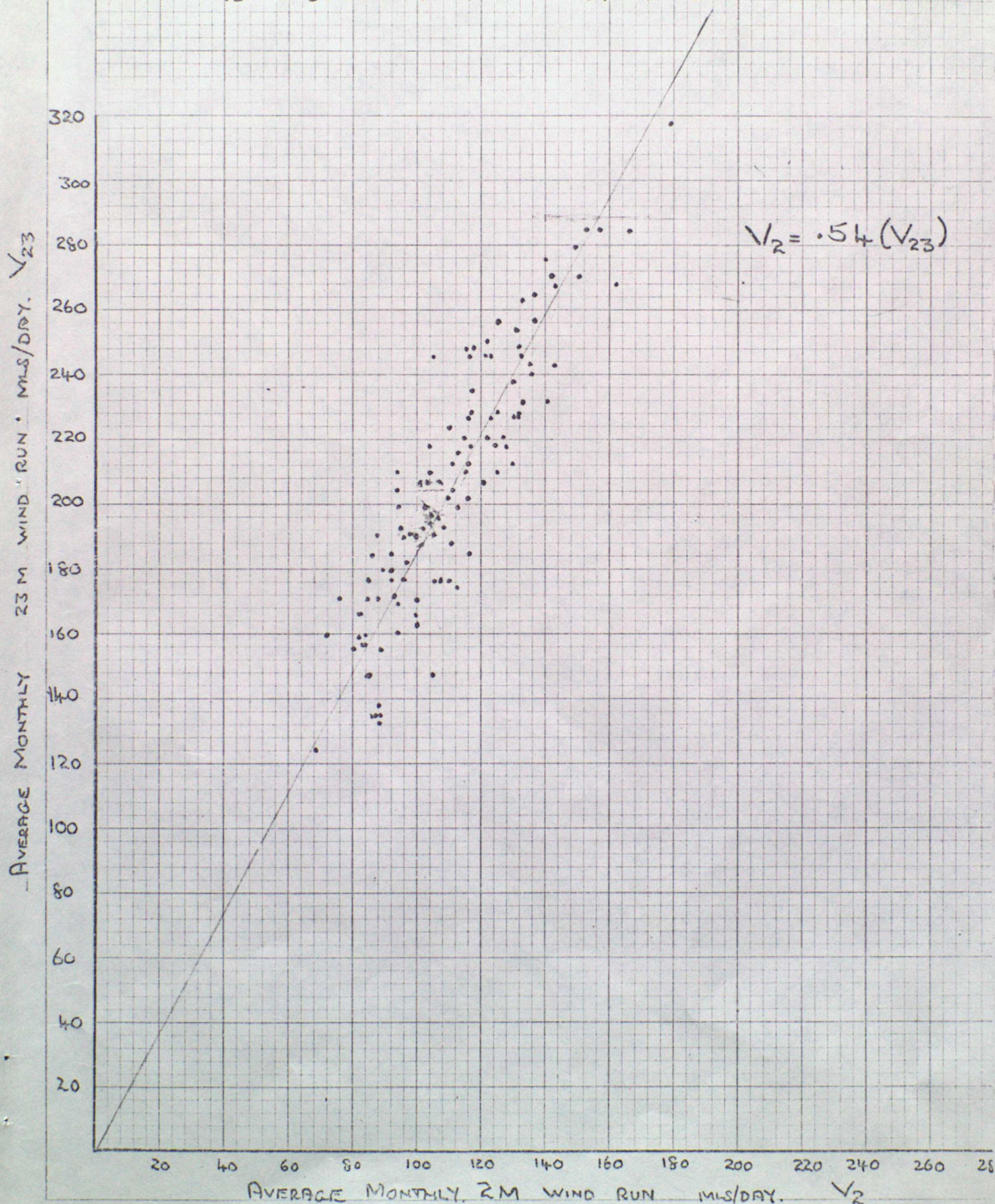


Fig. 4. COMPARISON OF MONTHLY AVERAGES
OF RUN-OF-WIND AT 23 AND 2 METRES
ABOVE GROUND AT KEW 1961-1970



Appendix I.

DATE	TEMP °C	V.P. mb	SVP mb	WIND mi/day	SUN hrs
1870 JAN	3.5	7.20	7.85	124	1.5
FEB	2.6	6.10	7.36	154	2.3
MAR	4.7	6.80	8.54	134	2.9
APR	10.1	9.60	12.35	98	6.1
MAY	12.5	10.60	14.48	112	6.3
JUN	17.1	14.00	19.49	92	8.3
JUL	19.5	16.50	22.65	93	8.0
AUG	17.2	15.20	19.61	98	6.3
SEP	13.7	12.70	15.67	97	4.3
OCT	10.3	10.50	12.52	122	3.0
NOV	5.3	8.10	8.90	97	1.6
DEC	0.8	5.00	6.47	105	1.3
1871 JAN	0.8	5.70	6.47	114	1.5
FEB	6.1	8.20	9.41	130	2.3
MAR	7.4	8.10	10.29	123	4.2
APR	9.5	9.20	11.87	119	5.5
MAY	11.2	9.80	13.29	97	5.7
JUN	13.4	11.10	15.36	101	5.9
JUL	17.1	14.20	19.49	118	6.1
AUG	18.0	15.70	20.62	86	6.9
SEP	14.3	13.20	16.29	107	4.4
OCT	9.7	10.30	12.03	73	2.9
NOV	3.5	6.90	7.85	100	1.8
DEC	3.5	7.00	7.85	105	1.3
1872 JAN	5.4	7.50	8.96	137	1.5
FEB	7.3	9.00	10.22	124	2.3
MAR	7.5	8.10	10.36	87	4.2
APR	9.5	9.20	11.87	105	5.5
MAY	10.8	9.40	12.94	96	5.3
JUN	15.6	12.90	17.71	92	7.0
JUL	18.6	15.90	21.69	71	7.2
AUG	16.6	14.90	18.88	94	5.8
SEP	14.6	13.50	16.61	111	4.6
OCT	9.2	9.80	11.63	88	2.8
NOV	7.7	9.50	10.50	162	1.8
DEC	6.2	8.40	9.47	138	1.3
1873 JAN	5.8	8.10	9.22	158	1.5
FEB	1.8	5.70	6.95	123	2.3
MAR	6.1	7.50	9.41	130	3.3
APR	8.4	8.50	11.02	120	5.0
MAY	11.1	9.70	13.21	108	5.7
JUN	15.4	12.80	17.48	96	7.0
JUL	17.9	15.00	20.50	101	6.5
AUG	17.5	15.40	19.99	107	6.3
SEP	13.1	12.20	15.07	87	4.1
OCT	9.1	9.80	11.55	78	2.8
NOV	7.1	9.10	10.08	122	1.8
DEC	4.7	7.80	8.54	78	1.3
1874 JAN	5.3	7.50	8.90	116	1.5
FEB	4.1	7.00	8.18	107	2.3
MAR	7.1	8.00	10.08	119	3.8
APR	10.6	10.00	12.77	123	6.7
MAY	10.7	9.40	12.86	88	5.3
JUN	14.7	12.30	16.71	98	6.5
JUL	18.5	15.70	21.28	86	7.0
AUG	16.3	14.60	18.52	112	5.7
SEP	14.9	13.70	16.93	98	4.7
OCT	11.6	11.60	13.65	103	3.3
NOV	5.8	8.10	9.22	86	1.8
DEC	0.9	5.10	6.52	106	1.3

1875 JAN	6.5	8.50	9.67	123	1.5
FEB	2.1	6.00	7.10	110	2.3
MAR	5.2	7.10	8.84	133	3.0
APR	8.4	8.50	11.02	98	5.0
MAY	13.1	11.20	15.07	106	6.9
JUN	15.7	12.90	17.82	117	7.0
JUL	15.5	13.00	17.60	98	5.5
AUG	17.6	15.40	20.11	94	6.3
SEP	16.2	14.70	18.40	101	5.4
OCT	9.6	10.10	11.95	110	2.9
NOV	6.2	8.70	9.47	132	1.8
DEC	3.8	7.20	8.01	102	1.8
1876 JAN	2.7	6.70	7.41	104	1.5
FEB	5.4	7.90	8.96	133	2.3
MAR	5.6	7.20	9.09	157	3.1
APR	9.0	8.80	11.47	119	5.2
MAY	9.9	8.70	12.19	114	5.1
JUN	15.4	12.80	17.48	93	7.0
JUL	19.2	16.10	22.23	87	7.7
AUG	17.9	15.80	20.50	98	6.7
SEP	13.9	12.80	15.87	88	4.4
OCT	11.8	11.50	13.83	86	2.1
NOV	6.7	8.50	9.81	93	2.2
DEC	6.8	8.80	9.87	128	0.5
1877 JAN	6.2	8.20	9.47	146	1.3
FEB	6.8	7.90	9.87	130	2.6
MAR	5.3	7.00	8.90	106	3.3
APR	8.2	8.30	10.87	137	2.6
MAY	9.8	8.70	12.11	109	4.5
JUN	16.5	12.70	16.76	114	7.4
JUL	16.1	13.70	18.29	92	5.9
AUG	16.6	14.20	18.88	104	6.6
SEP	11.6	11.00	13.65	79	4.5
OCT	9.3	9.40	11.71	106	3.9
NOV	7.2	8.90	10.15	123	2.7
DEC	4.8	7.50	8.60	94	1.8
1878 JAN	4.8	7.30	8.60	106	1.7
FEB	5.7	8.10	9.15	78	1.6
MAR	6.2	6.90	9.47	123	3.5
APR	9.4	9.00	11.79	123	5.2
MAY	13.1	11.70	15.07	119	4.2
JUN	15.8	13.30	17.94	84	5.0
JUL	17.5	14.50	19.99	74	6.0
AUG	17.2	15.10	19.61	103	5.8
SEP	13.6	12.70	15.56	72	5.0
OCT	10.7	10.70	12.86	90	3.6
NOV	4.5	7.10	8.42	110	1.7
DEC	0.9	5.90	6.52	87	0.6
1879 JAN	0.1	5.20	6.15	126	0.7
FEB	3.8	7.00	8.01	116	1.5
MAR	5.3	7.10	8.90	121	3.0
APR	6.8	7.70	9.87	95	2.7
MAY	9.4	8.80	11.79	98	3.6
JUN	14.1	12.80	16.08	110	4.1
JUL	14.9	13.50	16.93	111	3.2
AUG	15.8	14.40	17.94	109	5.0
SEP	13.5	12.70	15.46	77	3.9
OCT	9.4	10.30	11.79	89	2.2
NOV	3.8	6.80	8.01	78	1.5
DEC	0.3	5.70	6.24	81	0.6

1885	JAN	2.8	6.30	7.47	136	0.5
	FEB	6.7	8.10	9.81	136	1.9

1880	JAN	0.7	5.60	6.42	70	1.5
	FEB	5.6	7.90	9.09	129	2.3
	MAR	7.3	7.70	10.22	143	4.6
	APR	8.6	8.30	11.17	135	4.3
	MAY	11.2	9.00	13.29	114	6.2
	JUN	14.6	12.30	16.61	96	5.1
	JUL	16.7	14.20	19.00	97	6.2
	AUG	17.5	14.70	19.99	96	4.5
	SEP	15.6	13.80	17.71	73	4.7
	OCT	8.1	9.10	10.79	98	2.2
	NOV	5.7	7.70	9.15	121	2.2
	DEC	6.1	8.20	9.41	112	1.0

1881	JAN	-0.2	5.10	6.02	100	1.1
	FEB	3.3	6.70	7.72	115	1.0
	MAR	6.1	7.20	9.41	126	3.7
	APR	7.9	7.40	10.65	155	4.5
	MAY	12.1	9.60	14.11	121	7.5
	JUN	15.1	11.50	17.15	93	7.2
	JUL	18.2	13.50	20.89	89	8.2
	AUG	15.1	12.80	17.15	97	5.3
	SEP	13.3	12.30	15.26	66	3.2
	OCT	7.5	8.20	10.36	122	3.6
	NOV	9.1	10.10	11.55	140	2.1
	DEC	4.1	7.40	8.18	101	1.4

1882	JAN	4.5	7.50	8.42	95	1.0
	FEB	5.8	7.80	9.22	102	1.6
	MAR	7.8	8.20	10.57	122	5.0
	APR	9.2	8.50	11.63	146	5.6
	MAY	12.6	10.00	14.58	113	8.5
	JUN	13.7	11.60	15.67	118	4.9
	JUL	16.1	12.90	18.29	111	6.7
	AUG	15.7	12.10	17.82	96	4.9
	SEP	12.5	10.90	14.48	79	4.2
	OCT	10.3	10.80	12.52	94	2.6
	NOV	6.5	7.90	9.67	157	2.6
	DEC	4.5	7.60	8.42	105	0.7

1883	JAN	5.3	7.70	8.90	136	1.5
	FEB	6.2	8.10	9.47	126	2.6
	MAR	2.5	5.50	7.31	146	4.7
	APR	8.5	7.90	11.09	94	5.3
	MAY	11.5	9.60	13.56	83	6.7
	JUN	14.8	12.00	16.82	83	6.4
	JUL	15.6	12.70	17.71	94	5.7
	AUG	16.7	13.30	19.00	83	6.1
	SEP	14.2	12.70	16.18	94	4.4
	OCT	10.3	10.50	12.52	94	2.8
	NOV	6.3	8.20	9.54	94	2.7
	DEC	4.7	7.20	8.54	114	1.1

1884	JAN	6.5	8.30	9.67	126	0.9
	FEB	5.7	7.50	9.15	136	1.9
	MAR	6.8	7.50	9.87	94	3.5
	APR	7.1	7.50	10.08	94	3.3
	MAY	12.1	9.60	14.11	126	6.6
	JUN	14.7	11.80	16.71	73	5.2
	JUL	17.3	14.30	19.73	83	5.0
	AUG	18.1	13.90	20.75	73	7.3
	SEP	15.2	13.60	17.26	94	4.3
	OCT	9.2	9.40	11.63	83	2.7
	NOV	5.7	7.70	9.15	94	1.4
	DEC	5.2	7.20	8.84	157	0.7

1886	JAN	2.2	6.20	7.15	114	1.5
	FEB	1.1	5.50	6.61	83	1.4
	MAR	4.6	6.70	8.48	146	2.3
	APR	8.3	8.10	10.94	157	5.0
	MAY	11.4	10.00	13.47	105	5.5
	JUN	14.1	11.10	16.08	94	7.5
	JUL	16.7	13.40	19.00	94	6.8
	AUG	16.9	14.00	19.24	83	6.1
	SEP	14.7	12.60	16.71	105	4.5
	OCT	11.8	11.40	13.83	105	2.5
	NOV	6.3	8.50	9.54	83	1.5
	DEC	2.5	6.20	7.31	136	2.3

1887	JAN	1.9	6.40	7.00	83	1.2
	FEB	3.9	6.50	8.07	126	2.4
	MAR	3.6	6.10	7.90	105	3.1
	APR	6.9	6.90	9.94	146	5.6
	MAY	10.1	9.20	12.35	114	4.3
	JUN	15.7	12.20	17.82	94	8.0
	JUL	18.5	13.60	21.28	94	8.9
	AUG	16.6	12.10	18.88	83	7.7
	SEP	12.2	10.80	14.20	105	4.0
	OCT	7.3	7.90	10.22	83	3.5
	NOV	4.8	7.50	8.60	105	1.4
	DEC	3.4	6.70	7.79	94	1.4

1888	JAN	3.3	6.70	7.74	114	1.3
	FEB	2.1	5.70	7.10	157	1.0
	MAR	3.8	6.40	8.01	146	1.8
	APR	6.7	7.40	9.81	126	3.5
	MAY	11.3	9.40	13.38	126	7.1
	JUN	14.4	12.30	16.39	94	4.3
	JUL	14.6	13.30	16.61	105	3.3
	AUG	14.8	13.30	16.82	105	5.0
	SEP	13.2	12.50	15.16	83	4.1
	OCT	7.5	8.50	10.36	73	3.5
	NOV	8.5	9.50	11.09	157	0.8
	DEC	4.6	7.80	8.48	94	1.1

1889	JAN	2.5	6.60	7.31	83	0.8
	FEB	3.0	6.20	7.57	136	1.9
	MAR	4.8	6.70	8.60	114	2.7
	APR	7.9	8.40	10.65	114	3.1
	MAY	13.6	12.20	15.56	94	4.8
	JUN	16.2	13.60	18.40	83	6.7
	JUL	16.1	13.60	18.29	94	4.8
	AUG	15.5	13.50	17.60	94	5.5
	SEP	13.2	11.80	15.16	83	4.5
	OCT	9.1	10.10	11.55	83	2.7
	NOV	7.2	8.80	10.15	73	1.4
	DEC	2.9	6.90	7.52	83	1.0

890	JAN	6.4	8.30	9.61	146	1.8
	FEB	3.4	6.40	7.79	126	2.0
	MAR	6.2	7.50	9.47	126	3.5
	APR	7.7	7.70	10.50	126	4.8
	MAY	12.1	10.10	14.11	105	7.1

1895	JAN	0.9	5.60	6.52	119	1.6
	FEB	-1.6	3.70	5.43	107	1.4
	MAR	6.3	7.50	9.54	114	3.7
	APR	9.3	8.90	11.71	117	4.3
	MAY	12.9	10.00	14.87	102	7.9
	JUN	15.9	11.50	18.05	82	7.9
	JUL	16.9	13.10	19.24	106	6.2
	AUG	16.6	14.20	18.88	95	7.3

	JUN	14.6	12.50	16.61	94	4.7
	JUL	15.4	13.20	17.48	94	4.5
	AUG	15.1	13.00	17.15	94	5.9
	SEP	15.2	13.30	17.26	73	5.7
	OCT	9.6	9.20	11.95	83	3.9
	NOV	6.0	8.00	9.34	105	1.9
	DEC	-1.5	4.30	5.47	94	0.0
1891	JAN	1.1	5.60	6.61	113	2.4
	FEB	3.4	6.60	7.79	62	2.2
	MAR	4.8	6.30	8.60	146	3.2
	APR	6.9	7.10	9.94	121	3.9
	MAY	10.2	9.00	12.44	102	5.3
	JUN	15.5	12.70	17.60	107	6.7
	JUL	15.4	13.20	17.48	94	5.8
	AUG	14.8	13.20	16.82	107	4.7
	SEP	14.5	13.20	16.50	97	5.2
	OCT	10.3	10.60	12.52	126	3.6
	NOV	5.9	8.30	9.28	95	1.4
	DEC	4.7	7.40	8.54	135	1.3
1892	JAN	2.7	6.30	7.41	103	1.1
	FEB	3.9	6.80	8.07	120	1.7
	MAR	3.2	5.80	7.68	130	3.0
	APR	8.2	7.10	10.87	103	7.2
	MAY	12.5	9.90	14.48	112	6.8
	JUN	14.3	11.40	16.29	106	7.9
	JUL	15.5	12.60	17.60	116	6.3
	AUG	16.3	13.90	18.52	95	6.4
	SEP	13.3	12.10	15.26	86	4.7
	OCT	7.6	8.70	10.43	102	3.0
	NOV	7.1	9.20	10.08	78	1.3
	DEC	2.5	6.30	7.31	94	1.1
1893	JAN	2.1	6.20	7.10	102	0.7
	FEB	5.4	7.50	8.96	138	2.3
	MAR	7.6	7.60	10.43	93	5.1
	APR	10.9	8.30	13.03	114	7.8
	MAY	13.9	10.50	15.87	103	6.7
	JUN	16.2	11.70	18.40	100	6.9
	JUL	17.6	13.60	20.11	103	5.7
	AUG	18.5	14.30	21.28	96	7.2
	SEP	13.9	11.50	15.87	93	5.1
	OCT	10.7	10.30	12.66	86	4.4
	NOV	5.6	7.50	9.09	138	1.4
	DEC	4.2	7.40	8.24	114	1.8
1894	JAN	3.6	6.90	7.90	146	1.7
	FEB	5.5	7.50	9.03	146	2.6
	MAR	6.9	7.70	9.94	125	5.2
	APR	10.5	9.30	12.59	99	4.9
	MAY	10.1	8.70	12.35	124	5.7
	JUN	14.8	12.30	16.82	105	5.5
	JUL	16.8	14.10	19.12	96	5.7
	AUG	15.7	13.50	17.82	99	4.8
	SEP	12.5	11.30	14.48	82	3.3
	OCT	10.1	10.60	12.35	94	1.7
	NOV	7.9	9.30	10.65	114	2.5
	DEC	5.4	7.90	8.96	114	1.4

	SEP	16.3	13.80	18.52	61	7.1
	OCT	7.6	8.90	10.43	72	2.5
	NOV	8.3	9.40	10.94	141	1.6
	DEC	4.5	7.20	8.42	138	1.0
1896	JAN	4.8	7.30	8.60	91	1.0
	FEB	4.6	7.10	8.48	90	2.1
	MAR	7.9	8.40	10.65	134	2.8
	APR	9.3	8.50	11.71	89	4.9
	MAY	12.2	9.20	14.20	106	7.5
	JUN	17.1	13.20	19.49	89	7.7
	JUL	17.9	13.20	20.50	88	7.3
	AUG	15.3	12.50	17.37	75	4.5
	SEP	13.9	13.10	15.87	105	3.2
	OCT	7.9	8.80	10.65	107	3.1
	NOV	4.5	6.90	8.42	106	2.1
	DEC	4.2	7.30	8.24	120	0.9
1897	JAN	2.2	6.10	7.15	121	1.1
	FEB	6.4	8.30	9.61	107	1.5
	MAR	7.3	8.10	10.22	151	3.8
	APR	7.9	8.10	10.65	137	4.6
	MAY	10.9	9.00	13.03	123	8.2
	JUN	16.2	13.60	18.40	99	6.1
	JUL	17.7	13.60	20.24	93	8.2
	AUG	17.3	14.10	19.73	113	6.9
	SEP	12.8	11.70	14.77	92	4.1
	OCT	10.3	10.30	12.52	83	3.2
	NOV	7.2	9.10	10.15	98	0.7
	DEC	4.6	7.40	8.48	141	1.4
1898	JAN	6.1	8.40	9.41	81	0.8
	FEB	5.2	7.00	8.84	128	2.5
	MAR	4.6	6.60	8.48	130	2.9
	APR	8.7	8.40	11.24	113	4.8
	MAY	11.2	10.10	13.29	110	4.6
	JUN	14.4	12.00	16.39	106	5.5
	JUL	16.5	12.90	18.76	81	6.8
	AUG	17.8	14.40	20.37	114	6.5
	SEP	16.2	12.70	18.40	81	7.0
	OCT	11.9	11.80	13.92	106	2.0
	NOV	7.4	9.10	10.29	91	1.9
	DEC	7.3	8.70	10.22	130	1.6
1899	JAN	5.9	7.60	9.28	156	2.1
	FEB	5.5	7.30	9.03	130	2.7
	MAR	4.6	6.60	8.48	95	3.7
	APR	8.7	8.50	11.24	117	4.2
	MAY	10.9	9.30	13.03	113	6.8
	JUN	16.1	12.00	18.29	86	8.1
	JUL	19.0	14.20	21.96	89	8.4
	AUG	18.9	14.30	21.82	106	8.3
	SEP	14.4	11.60	16.39	98	5.7
	OCT	9.5	10.00	11.87	78	3.2
	NOV	8.3	9.50	10.94	96	1.6
	DEC	2.6	6.50	7.36	94	1.2

1900	JAN	4.5	7.30	8.42	119	1.4
	FEB	3.5	6.70	7.85	131	1.8
	MAR	4.4	6.20	8.36	109	2.3
	APR	8.6	8.10	11.17	110	5.5
	MAY	11.1	9.40	13.21	116	5.4
	JUN	15.7	12.40	17.82	114	5.8
	JUL	19.6	14.70	22.79	89	9.3
	AUG	16.3	13.30	18.52	107	5.8
	SEP	14.6	12.30	16.61	76	5.7
	OCT	10.3	10.40	12.52	105	4.2
	NOV	7.9	9.40	10.65	110	1.5

DEC 7.4 9.10 10.29 141 1.2

1901	JAN	3.9	7.00	8.07	113	1.3
	FEB	2.4	5.90	7.26	90	1.6
	MAR	4.4	6.50	8.36	153	2.1
	APR	9.1	8.10	11.55	131	7.1
	MAY	11.9	9.40	13.92	101	7.9
	JUN	15.2	11.00	17.26	111	7.7
	JUL	18.8	14.60	21.69	69	7.5
	AUG	17.1	13.40	19.49	91	7.5
	SEP	14.5	12.50	16.50	86	3.8
	OCT	10.2	10.40	12.44	78	2.7
	NOV	4.6	7.10	8.48	93	1.2
	DEC	3.9	7.20	8.07	115	1.5
1902	JAN	5.4	7.50	8.96	118	1.5
	FEB	2.2	6.10	7.15	95	1.7
	MAR	7.3	8.10	10.22	99	3.8
	APR	8.5	8.00	11.09	128	4.5
	MAY	9.8	8.80	12.11	95	5.4
	JUN	14.8	12.10	16.82	92	5.8
	JUL	16.2	12.60	18.40	82	6.5
	AUG	15.7	13.60	17.82	70	4.1
	SEP	13.6	11.90	15.56	83	5.4
	OCT	9.9	10.10	12.19	98	1.9
	NOV	7.2	8.80	10.15	103	1.3
	DEC	5.3	7.50	8.90	141	1.0
1903	JAN	4.8	7.40	8.60	150	1.7
	FEB	7.2	8.40	10.15	153	2.7
	MAR	7.7	8.30	10.50	158	4.1
	APR	7.1	7.20	10.08	119	4.5
	MAY	12.2	10.40	14.20	110	5.1
	JUN	13.2	11.20	15.16	101	6.1
	JUL	16.4	13.50	18.64	88	6.1
	AUG	15.5	13.10	17.60	111	6.2
	SEP	14.1	12.80	16.08	102	5.4
	OCT	11.5	11.40	13.56	125	2.7
	NOV	6.9	8.60	9.94	96	1.6
	DEC	3.9	7.00	8.07	123	0.6
1904	JAN	4.2	7.30	8.24	116	0.9
	FEB	4.4	6.90	8.36	137	1.9
	MAR	4.9	6.90	8.66	113	2.5
	APR	9.5	8.90	11.87	131	5.6
	MAY	12.1	10.70	14.11	95	4.7
	JUN	14.6	11.40	16.61	106	6.8
	JUL	18.7	14.50	21.55	98	8.5
	AUG	16.6	13.00	18.88	84	7.7
	SEP	12.9	11.40	14.87	90	5.3
	OCT	10.4	10.90	12.60	78	2.2
	NOV	5.6	7.80	9.09	71	1.7
	DEC	4.7	7.80	8.54	88	0.9

1905	JAN	3.6	6.50	7.90	105	2.3
	FEB	5.9	7.40	9.28	130	2.7
	MAR	7.3	8.30	10.22	133	3.5
	APR	8.6	8.40	11.17	125	3.4
	MAY	11.7	9.00	13.74	106	8.1
	JUN	15.8	13.10	17.94	110	5.2
	JUL	19.1	15.20	22.10	75	7.7
	AUG	16.1	13.00	18.29	101	5.4

SEP	13.5	12.00	15.46	103	3.7
OCT	7.4	8.30	10.29	88	3.3
NOV	5.2	7.80	8.84	103	1.9
DEC	4.8	7.70	8.60	78	0.7

1906	JAN	5.9	7.80	9.28	148	2.1
	FEB	3.9	6.50	8.07	135	3.2
	MAR	5.6	7.20	9.09	148	3.5
	APR	7.9	7.10	10.65	116	7.3
	MAY	11.8	10.50	13.83	111	4.9
	JUN	15.2	11.60	17.26	93	8.2
	JUL	17.7	13.70	20.24	85	8.0
	AUG	18.4	14.40	21.15	97	7.7
	SEP	15.1	12.20	17.15	84	5.6
	OCT	12.2	12.00	14.20	96	3.3
	NOV	7.7	9.30	10.50	106	1.3
	DEC	3.3	6.30	7.74	104	1.5
1907	JAN	3.8	6.50	8.01	116	1.8
	FEB	3.4	6.10	7.79	115	2.9
	MAR	6.7	7.20	9.81	113	5.9
	APR	8.4	8.20	11.02	102	4.5
	MAY	11.8	10.10	13.83	113	4.8
	JUN	14.1	11.70	16.08	134	5.2
	JUL	15.3	12.80	17.37	93	6.2
	AUG	15.8	13.60	17.94	102	5.8
	SEP	14.6	12.90	16.61	70	5.0
	OCT	10.4	11.00	12.60	97	3.0
	NOV	7.3	9.00	10.22	84	1.3
	DEC	5.7	7.60	9.15	154	1.5
1908	JAN	2.7	6.30	7.41	118	1.1
	FEB	5.8	7.20	9.22	123	2.7
	MAR	5.1	6.70	8.78	115	3.3
	APR	6.9	7.30	9.94	134	5.0
	MAY	13.6	11.70	15.56	112	6.2
	JUN	15.7	12.60	17.82	101	8.6
	JUL	17.3	14.20	19.73	93	6.0
	AUG	15.7	13.10	17.82	106	6.6
	SEP	13.4	12.50	15.36	88	4.8
	OCT	12.4	12.10	14.39	85	3.5
	NOV	8.1	9.20	10.79	101	2.0
	DEC	4.6	7.30	8.48	96	0.7
1909	JAN	3.6	6.70	7.90	101	1.5
	FEB	3.2	5.70	7.68	118	3.0
	MAR	4.4	6.80	8.36	126	2.2
	APR	9.6	8.30	11.95	126	8.0
	MAY	11.8	9.10	13.83	124	10.2
	JUN	12.8	11.10	14.77	98	3.5
	JUL	16.2	13.30	18.40	112	5.9
	AUG	16.8	14.30	19.12	78	7.2
	SEP	12.9	12.00	14.87	82	3.5
	OCT	11.4	11.50	13.47	141	2.8
	NOV	5.5	7.50	9.03	101	2.6
	DEC	4.8	7.30	8.60	134	1.8

1970	JAN	4.6	7.10	8.48	126	2.0
	FEB	5.7	7.70	9.15	149	2.6
	MAR	6.3	7.20	9.54	104	4.6
	APR	8.4	8.20	11.02	124	3.9
	MAY	12.3	10.30	14.30	130	7.1
	JUN	16.3	13.50	18.52	96	5.5
	JUL	15.3	13.00	17.37	109	3.6
	AUG	16.2	14.20	18.40	109	5.3

	SEP	13.6	11.80	15.56	83	4.5
	OCT	12.1	11.50	14.11	120	2.0
	NOV	4.0	6.70	8.13	111	2.4
	DEC	7.1	8.60	10.08	152	0.9
1911	JAN	3.8	6.70	8.01	99	1.5
	FEB	5.3	7.60	8.90	129	2.4
	MAR	5.9	7.50	9.28	144	2.3
	APR	8.2	7.90	10.87	157	4.9
	MAY	13.7	11.80	15.67	92	6.2
	JUN	15.8	12.60	17.94	120	7.0
	JUL	19.7	15.10	22.94	98	10.8
	AUG	20.0	16.60	23.37	100	7.9
	SEP	15.4	12.70	17.48	85	7.5
	OCT	10.4	10.50	12.60	113	2.7
	NOV	6.7	8.00	9.81	144	1.8
	DEC	6.9	8.50	9.94	136	1.4
1912	JAN	4.9	7.40	8.66	103	0.6
	FEB	6.7	8.10	9.81	129	1.3
	MAR	8.1	8.80	10.79	142	3.0
	APR	9.5	8.30	11.87	118	7.8
	MAY	13.7	11.50	15.67	94	5.5
	JUN	14.9	13.20	16.93	107	6.4
	JUL	17.7	15.40	20.24	98	4.9
	AUG	14.3	13.10	16.29	113	3.5
	SEP	12.1	11.10	14.11	113	3.7
	OCT	8.6	9.40	11.17	92	3.7
	NOV	6.6	8.00	9.74	100	1.0
	DEC	7.7	9.00	10.50	144	1.0
1913	JAN	5.3	7.80	8.90	116	1.3
	FEB	5.2	7.00	8.84	126	1.3
	MAR	7.3	8.00	10.22	160	2.8
	APR	8.4	8.50	11.02	151	4.0
	MAY	12.9	11.20	14.87	136	6.8
	JUN	15.5	12.60	17.60	107	6.6
	JUL	15.5	13.70	17.60	87	3.4
	AUG	16.4	14.30	18.64	82	4.5
	SEP	14.9	14.20	16.93	87	4.2
	OCT	12.0	12.20	14.02	82	3.1
	NOV	8.9	9.90	11.40	110	2.4
	DEC	5.6	7.30	9.09	116	1.3
1914	JAN	3.6	6.90	7.90	129	0.8
	FEB	7.1	8.40	10.08	129	2.9
	MAR	6.7	8.10	9.81	136	2.8
	APR	10.2	9.10	12.44	113	7.3
	MAY	11.9	10.30	13.92	100	6.5
	JUN	15.7	12.70	17.82	87	8.5
	JUL	17.5	14.80	19.99	94	5.1
	AUG	17.4	15.40	19.86	87	5.6
	SEP	14.3	12.20	16.29	94	6.6
	OCT	11.1	10.90	13.21	75	2.3
	NOV	7.6	8.90	10.43	120	2.2
	DEC	5.7	7.90	9.15	136	1.3

1915	JAN	4.7	7.20	8.54	116	1.2
	FEB	4.8	7.30	8.60	129	2.5
	MAR	5.6	7.40	9.09	94	2.7
	APR	8.1	8.00	10.79	113	5.5
	MAY	12.3	10.10	14.30	126	7.3
	JUN	15.6	12.30	17.71	94	7.0
	JUL	16.3	13.60	18.52	94	5.9
	AUG	16.5	14.80	18.76	62	5.1
	SEP	14.1	12.90	16.08	92	5.8
	OCT	9.7	10.30	12.03	75	1.7
	NOV	4.0	7.00	8.13	92	2.1

	DEC	6.6	8.70	9.74	138	1.1
1916	JAN	7.7	9.10	10.50	129	1.5
	FEB	4.6	6.90	8.48	144	2.6
	MAR	4.4	7.00	8.36	129	1.9
	APR	9.1	8.40	11.55	116	6.2
	MAY	13.0	11.30	14.97	85	6.0
	JUN	12.6	10.80	14.58	100	4.7
	JUL	16.1	13.80	18.29	72	5.2
	AUG	17.6	14.70	20.11	82	5.2
	SEP	13.4	12.50	15.36	79	3.4
	OCT	11.7	11.70	13.74	138	2.9
	NOV	6.6	8.80	9.74	116	2.3
	DEC	2.7	6.80	7.41	82	0.7
1917	JAN	2.2	5.80	7.15	157	0.8
	FEB	2.2	6.00	7.15	85	1.0
	MAR	3.7	6.50	7.96	132	2.3
	APR	6.0	7.00	9.34	107	5.1
	MAY	14.1	11.50	16.08	113	6.8
	JUN	17.3	13.50	19.73	107	6.9
	JUL	17.2	13.90	19.61	100	6.8
	AUG	16.5	14.60	18.76	129	5.4
	SEP	15.2	14.00	17.26	85	5.3
	OCT	8.3	9.30	10.94	110	4.5
	NOV	8.3	9.50	10.94	113	1.5
	DEC	2.3	6.00	7.20	113	1.8
1918	JAN	4.1	7.10	8.18	116	1.9
	FEB	6.6	8.20	9.74	132	2.3
	MAR	6.6	7.40	9.74	123	4.1
	APR	7.3	8.30	10.22	123	2.8
	MAY	13.8	11.30	15.77	103	7.2
	JUN	14.2	11.30	16.18	94	7.7
	JUL	16.7	14.00	19.00	103	5.9
	AUG	16.9	14.50	19.24	85	5.9
	SEP	13.3	12.10	15.26	126	5.0
	OCT	9.7	10.50	12.03	92	2.4
	NOV	6.1	8.30	9.41	79	1.8
	DEC	7.9	9.50	10.65	126	0.9
1919	JAN	3.4	7.00	7.79	110	1.0
	FEB	2.7	6.30	7.41	97	1.1
	MAR	4.9	7.10	8.66	132	2.9
	APR	7.7	8.10	10.50	113	3.5
	MAY	14.2	11.00	16.18	110	7.7
	JUN	15.4	11.60	17.48	98	7.3
	JUL	14.6	12.40	16.61	75	3.8
	AUG	17.6	14.10	20.11	94	7.3
	SEP	13.9	13.00	15.87	186	5.1
	OCT	7.4	8.50	10.29	79	3.9
	NOV	4.1	7.10	8.18	110	1.5
	DEC	6.0	8.40	9.34	144	0.8

1920	JAN	5.9	7.90	9.28	164	1.5
	FEB	6.3	8.00	9.54	110	2.3
	MAR	8.1	8.40	10.79	113	4.1
	APR	9.7	9.70	12.03	129	2.6
	MAY	13.1	11.20	15.07	126	6.8
	JUN	15.7	12.90	17.82	92	6.5
	JUL	15.6	13.60	17.71	107	4.3
	AUG	14.3	12.30	16.29	82	4.5
	SEP	13.9	13.10	15.87	157	3.5
	OCT	11.1	11.20	13.21	87	3.7
	NOV	6.3	8.60	9.54	75	1.6
	DEC	5.0	7.90	8.72	126	0.9
1921	JAN	8.1	9.30	10.79	144	1.0
	FEB	5.1	7.10	8.78	90	1.9

	MAR	8.0	8.30	10.72	138	4.0
	APR	9.0	8.50	11.47	113	6.5
	MAY	12.9	10.50	14.87	100	7.4
	JUN	15.7	11.40	17.82	110	7.4
	JUL	20.0	14.00	23.37	100	8.3
	AUG	17.1	13.60	19.49	103	5.4
	SEP	15.3	12.90	17.37	83	5.5
	OCT	13.1	12.50	15.07	66	4.9
	NOV	4.7	7.30	6.54	84	1.2
	DEC	7.2	8.50	10.15	138	1.2
1922	JAN	4.7	7.50	8.54	132	1.6
	FEB	5.4	7.40	8.96	138	3.2
	MAR	5.4	7.20	8.96	157	2.9
	APR	6.6	7.40	9.74	129	4.7
	MAY	14.3	11.50	16.29	97	9.4
	JUN	15.4	11.70	17.48	113	7.5
	JUL	15.1	12.90	17.15	110	4.9
	AUG	14.7	13.00	16.71	87	4.2
	SEP	12.8	12.00	14.77	90	3.6
	OCT	8.9	9.30	11.40	116	3.8
	NOV	5.9	8.00	9.28	72	1.3
	DEC	6.4	8.20	9.61	126	1.4

1923	JAN	5.4	7.80	8.96	100	1.6
	FEB	6.5	8.50	9.67	132	1.8
	MAR	7.0	8.50	10.01	103	2.3
	APR	8.7	8.60	11.24	129	4.0
	MAY	10.8	9.70	12.94	107	5.3
	JUN	13.3	11.20	15.26	97	3.9
	JUL	19.2	15.50	22.23	100	7.5
	AUG	16.7	13.40	19.00	110	8.0
	SEP	13.5	12.30	15.46	90	5.8
	OCT	10.7	10.90	12.86	126	3.0
	NOV	3.8	7.00	8.01	97	2.4
	DEC	4.2	7.30	8.24	97	1.1

1924	JAN	5.4	8.00	8.96	110	1.7
	FEB	3.3	6.20	7.74	123	1.3
	MAR	4.7	6.60	8.54	123	5.0
	APR	8.0	8.30	10.72	123	4.1
	MAY	13.1	11.40	15.07	110	5.9
	JUN	15.4	12.80	17.48	97	6.6
	JUL	16.6	13.40	18.88	107	7.4
	AUG	15.0	13.30	17.04	97	4.7
	SEP	14.4	13.10	16.39	123	3.9
	OCT	11.2	11.40	13.29	94	2.0
	NOV	8.1	9.30	10.79	120	1.3
	DEC	6.8	8.90	9.87	116	1.5

1925	JAN	5.7	8.10	9.15	123	1.2
	FEB	6.0	7.80	9.34	144	2.1
	MAR	5.2	6.90	8.84	116	2.6
	APR	8.2	8.30	10.87	113	4.4
	MAY	12.9	11.30	14.87	120	6.4
	JUN	16.1	12.30	18.29	84	9.4
	JUL	17.9	15.00	20.50	94	6.0
	AUG	16.3	14.60	18.52	83	4.6
	SEP	12.1	11.40	14.11	90	4.2
	OCT	11.2	11.60	13.29	94	2.7
	NOV	4.8	7.70	8.60	113	2.6
	DEC	3.8	7.20	8.01	116	1.7
1926	JAN	5.0	7.80	8.72	129	1.4
	FEB	7.7	9.30	10.50	110	1.6
	MAR	7.1	7.50	10.08	132	3.3
	APR	9.6	9.60	11.95	100	3.7
	MAY	11.3	10.00	13.38	126	4.7

	JUN	14.4	12.30	16.39	97	6.3
	JUL	17.5	15.00	19.99	100	5.4
	AUG	17.3	14.90	19.73	97	6.7
	SEP	15.4	14.70	17.48	83	4.3
	OCT	8.8	9.40	11.32	103	2.8
	NOV	7.5	9.10	10.36	132	1.4
	DEC	4.7	7.10	8.54	116	1.7
1927	JAN	5.1	7.70	8.78	129	1.7
	FEB	4.7	7.50	8.54	103	1.2
	MAR	7.8	8.40	10.57	138	3.8
	APR	9.0	8.20	11.47	120	5.7
	MAY	12.8	10.20	14.77	113	7.7
	JUN	13.9	11.30	15.87	123	5.4
	JUL	16.3	14.70	18.52	113	4.1
	AUG	16.3	15.10	18.52	123	5.6
	SEP	13.2	12.90	15.16	103	3.4
	OCT	10.6	11.30	12.77	100	2.3
	NOV	6.5	8.70	9.67	116	1.4
	DEC	2.8	6.50	7.47	116	0.9

1928	JAN	5.7	8.00	9.15	144	1.9
	FEB	6.5	7.90	9.67	141	3.0
	MAR	6.9	8.00	9.94	107	3.0
	APR	8.9	8.60	11.40	123	4.4
	MAY	11.5	9.70	13.56	97	5.3
	JUN	14.3	11.40	16.29	129	7.0
	JUL	18.3	13.80	21.02	90	9.4
	AUG	16.3	14.00	18.52	100	6.5
	SEP	13.3	11.90	15.26	79	6.7
	OCT	10.8	11.00	12.94	116	3.6
	NOV	8.5	9.50	11.09	151	1.9
	DEC	4.0	7.40	8.13	94	1.5

1929	JAN	1.8	5.90	6.95	87	1.0
	FEB	0.3	5.20	6.24	107	1.8
	MAR	5.9	7.30	9.28	76	4.7
	APR	7.0	7.10	10.01	116	4.9
	MAY	12.3	10.00	14.30	129	7.9
	JUN	14.6	11.50	16.61	110	7.0
	JUL	17.7	13.60	20.24	103	8.3
	AUG	16.5	14.10	18.76	84	6.0
	SEP	17.0	14.40	19.36	79	6.5
	OCT	10.3	10.40	12.52	103	3.5
	NOV	7.4	9.00	10.29	126	2.2
	DEC	6.6	8.40	9.74	160	2.0

1930	JAN	6.7	8.60	9.81	141	1.4
	FEB	3.7	6.30	7.96	138	1.7
	MAR	6.1	7.40	9.41	113	3.9
	APR	8.9	8.90	11.40	120	3.5
	MAY	11.8	10.60	13.83	97	4.9
	JUN	16.6	13.60	18.88	100	7.6
	JUL	16.5	13.50	18.76	100	5.6
	AUG	17.0	15.00	19.36	100	7.1
	SEP	14.6	13.70	16.61	100	3.9
	OCT	11.2	11.00	13.29	103	3.7
	NOV	7.4	8.80	10.29	120	2.0
	DEC	4.9	7.90	8.66	83	0.7

1931	JAN	3.9	7.00	8.07	114	1.7
	FEB	4.3	6.80	8.30	125	2.1
	MAR	4.7	6.20	8.54	143	4.0
	APR	8.4	8.40	11.02	125	3.8
	MAY	12.4	10.80	14.39	117	5.1
	JUN	15.9	13.40	18.05	117	5.8
	JUL	16.5	14.10	18.76	114	4.9
	AUG	15.5	13.90	17.60	131	4.4
	SEP	12.2	12.00	14.20	77	3.9
	OCT	9.5	10.30	11.87	84	2.9
	NOV	8.2	9.70	10.87	114	2.0
	DEC	5.8	8.00	9.22	114	0.9

1932	JAN	6.7	8.80	9.81	125	1.2
	FEB	3.4	6.20	7.79	123	1.6
	MAR	5.0	6.70	8.72	120	3.9
	APR	7.7	8.00	10.50	149	3.9
	MAY	11.4	11.00	13.47	102	3.7
	JUN	15.1	12.20	17.15	111	7.0
	JUL	17.1	15.10	19.49	99	4.5
	AUG	18.9	16.80	21.82	84	6.3
	SEP	14.3	13.80	16.29	114	3.4
	OCT	9.7	10.20	12.03	114	3.1
	NOV	7.5	8.90	10.36	120	0.9
	DEC	6.1	8.30	9.41	117	1.6

1933	JAN	3.2	6.80	7.68	123	1.3
	FEB	5.0	7.30	8.72	146	2.7
	MAR	7.7	8.10	10.50	123	5.7
	APR	9.6	8.70	11.95	87	5.8
	MAY	13.1	10.90	15.07	84	5.6
	JUN	16.6	12.50	18.88	90	8.6
	JUL	19.3	16.00	22.37	99	7.9
	AUG	19.0	15.10	21.96	90	8.1
	SEP	16.0	13.80	18.17	105	6.3
	OCT	11.0	10.90	13.12	111	3.5
	NOV	6.3	8.10	9.54	87	1.6
	DEC	2.0	5.60	7.05	111	0.6

1934	JAN	4.2	7.30	8.24	111	1.4
	FEB	3.3	6.40	7.74	87	2.7
	MAR	5.6	7.20	9.09	105	3.6
	APR	9.0	8.70	11.47	114	4.4
	MAY	12.8	10.30	14.77	102	6.5
	JUN	16.3	12.80	18.52	111	6.8
	JUL	19.5	14.50	22.65	90	9.1
	AUG	16.5	13.90	18.76	93	6.2
	SEP	15.7	14.00	17.82	96	6.2
	OCT	11.4	11.20	13.50	114	2.6
	NOV	6.9	8.80	9.94	73	1.3
	DEC	8.8	10.30	11.32	117	0.8

1935	JAN	5.2	7.60	8.84	105	1.5
	FEB	6.5	7.70	9.67	158	1.9
	MAR	7.0	7.70	10.01	108	3.5
	APR	8.5	8.50	11.09	140	3.8
	MAY	10.9	8.90	13.03	137	6.1
	JUN	16.3	14.10	18.52	125	6.9
	JUL	19.0	14.60	21.96	93	8.8
	AUG	17.8	14.60	20.37	67	6.2

SEP	14.8	13.20	16.82	111	5.0
OCT	10.5	10.50	12.69	114	3.1
NOV	7.8	9.20	10.57	111	1.7
DEC	4.0	7.10	8.13	114	1.1
1936 JAN	5.1	7.80	8.78	111	1.0
FEB	3.3	6.30	7.74	105	2.6
MAR	7.6	8.50	10.43	90	2.5
APR	7.0	7.40	10.01	117	4.4
MAY	12.3	10.40	14.30	114	6.4
JUN	16.2	13.90	18.40	81	6.3
JUL	16.4	14.50	18.64	117	4.5
AUG	17.1	14.90	19.49	73	5.9

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SEP	15.2	14.40	17.26	93	3.0
OCT	9.8	9.80	12.11	111	2.9
NOV	6.8	8.70	9.87	114	1.4
DEC	5.9	8.10	9.28	125	1.9
1937 JAN	6.1	8.20	9.41	140	1.5
FEB	6.5	8.10	9.67	131	2.2
MAR	4.4	6.60	8.36	123	3.6
APR	9.8	9.50	12.11	108	3.4
MAY	13.2	11.70	15.16	93	5.6
JUN	15.8	12.80	17.94	84	6.9
JUL	17.5	14.80	19.99	96	4.4
AUG	18.4	15.90	21.15	71	6.8
SEP	13.9	12.90	15.87	80	5.1
OCT	11.3	11.30	13.38	90	2.6
NOV	5.6	8.30	9.09	81	1.3
DEC	4.0	7.30	8.13	111	0.8

1938 JAN	6.5	8.30	9.67	152	1.4
FEB	5.3	7.00	8.90	161	2.5
MAR	9.3	9.00	11.71	108	5.6
APR	8.1	7.40	10.79	120	5.0
MAY	11.5	9.60	13.56	134	5.2
JUN	16.3	12.30	18.52	134	6.9
JUL	16.7	13.70	19.00	111	4.7
AUG	17.3	14.90	19.73	84	5.1
SEP	14.8	13.60	16.82	87	4.2
OCT	10.7	10.60	12.86	117	3.8
NOV	10.1	10.80	12.35	120	2.1
DEC	4.6	7.60	8.48	131	1.0

1939	JAN	5.6	8.00	9.09	158	1.5
	FEB	6.0	7.80	9.34	125	3.7
	MAR	6.3	7.20	9.54	146	3.0
	APR	9.2	8.80	11.63	123	5.8
	MAY	11.7	10.30	13.74	102	6.3
	JUN	15.1	11.80	17.15	131	7.3
	JUL	16.2	13.90	18.40	123	6.3
	AUG	17.2	15.70	19.61	81	5.6
	SEP	15.3	13.60	17.37	102	5.4
	OCT	9.2	9.80	11.63	120	2.9
	NOV	9.4	10.60	11.79	125	1.2
	DEC	3.5	7.00	7.85	105	1.1
1940	JAN	-0.2	5.10	6.02	120	1.7
	FEB	3.3	7.00	7.74	123	0.9
	MAR	6.5	7.60	9.67	140	3.9
	APR	9.2	8.90	11.63	120	4.3
	MAY	13.6	10.90	15.56	93	7.9
	JUN	17.3	13.10	19.73	102	9.3
	JUL	16.1	13.30	18.29	96	6.7

	AUG	16.8	13.10	19.12	96	6.7
	SEP	14.0	11.60	15.97	99	5.5
	OCT	10.2	10.50	12.44	120	3.0
	NOV	7.5	9.10	10.36	140	2.5
	DEC	4.3	7.10	8.30	131	1.2
1941	JAN	1.7	6.10	6.90	140	0.9
	FEB	4.3	7.10	8.30	137	1.9
	MAR	5.6	7.50	9.09	131	3.1
	APR	7.1	7.40	10.08	149	3.2
	MAY	9.7	8.70	12.03	117	4.8
	JUN	16.2	13.60	18.40	93	7.2
	JUL	18.7	15.60	21.55	84	7.9
	AUG	15.2	14.00	17.26	111	5.5
	SEP	15.1	14.30	17.15	67	3.8
	OCT	10.8	10.90	12.94	111	3.4
	NOV	7.3	8.90	10.22	108	1.3
	DEC	5.9	8.20	9.28	105	1.2
1942	JAN	1.2	5.60	6.66	117	0.1
	FEB	0.5	4.90	6.33	128	1.3
	MAR	5.4	7.60	8.96	114	2.3
	APR	9.7	7.80	12.03	170	7.2
	MAY	11.9	10.00	13.92	128	7.4
	JUN	16.1	12.00	18.29	77	8.4
	JUL	16.5	13.60	18.76	105	5.7
	AUG	17.3	15.60	19.73	84	5.1
	SEP	14.7	13.40	16.71	93	4.2
	OCT	11.5	11.60	13.56	96	2.8
	NOV	5.8	8.00	9.22	71	1.9
	DEC	7.1	8.90	10.08	123	1.7
1943	JAN	5.7	8.10	9.15	126	1.4
	FEB	6.0	7.60	9.34	111	2.8
	MAR	7.1	7.70	10.08	99	3.7
	APR	11.6	9.50	13.65	117	5.5
	MAY	13.5	10.60	15.46	126	8.0
	JUN	15.3	12.30	17.37	108	7.1
	JUL	17.4	14.20	19.86	108	6.4
	AUG	17.1	14.00	19.49	114	6.5
	SEP	14.1	12.70	16.08	87	4.8
	OCT	11.4	11.80	13.47	78	2.6
	NOV	6.5	8.30	9.67	108	1.8
	DEC	4.5	7.30	8.42	102	1.1

1944	JAN	6.8	8.40	9.87	136	1.0
	FEB	4.0	6.30	8.13	136	1.9
	MAR	5.4	6.60	8.96	93	3.2
	APR	10.8	9.50	12.94	99	4.5
	MAY	12.4	9.80	14.39	96	7.3
	JUN	14.4	11.40	16.39	140	6.2
	JUL	17.2	14.90	19.61	102	3.5
	AUG	18.3	15.60	21.02	99	6.4
	SEP	13.3	12.00	15.26	99	4.8
	OCT	10.0	10.20	12.27	117	2.6
	NOV	7.1	8.80	10.08	117	1.7
	DEC	3.9	7.30	8.07	93	1.3
1945	JAN	1.1	5.70	6.61	120	1.2
	FEB	7.6	9.10	10.43	128	2.1
	MAR	8.4	8.30	11.02	102	4.6
	APR	10.9	9.50	13.03	99	6.1
	MAY	13.4	11.80	15.36	105	6.1
	JUN	15.6	12.90	17.71	111	6.7
	JUL	17.7	14.60	20.24	102	6.3
	AUG	16.6	14.40	18.88	84	4.8
	SEP	15.0	13.90	17.04	102	2.1
	OCT	12.1	12.60	14.11	81	3.5

	NOV	8.2	9.50	10.87	77	1.1
	DEC	5.6	8.00	9.09	102	1.4
1946	JAN	3.7	6.80	7.96	128	1.7
	FEB	6.8	7.90	9.87	134	2.4
	MAR	5.3	7.10	8.90	117	2.7
	APR	10.6	9.00	12.77	90	6.6
	MAY	11.3	9.80	13.38	134	6.2
	JUN	14.0	12.30	15.97	106	5.6
	JUL	17.4	14.60	19.86	96	7.7
	AUG	15.5	13.80	17.60	108	5.1
	SEP	14.4	14.00	16.39	120	3.9
	OCT	10.8	10.50	12.94	99	2.5
	NOV	8.7	9.80	11.24	131	1.3
	DEC	3.1	6.70	7.63	108	1.6
1947	JAN	2.3	6.30	7.20	128	1.8
	FEB	-0.9	4.60	5.72	140	0.7
	MAR	4.7	7.40	8.54	143	2.1
	APR	9.5	8.80	11.87	146	5.8
	MAY	14.2	12.00	16.18	99	5.9
	JUN	16.9	14.00	19.24	96	7.2
	JUL	18.4	16.20	21.15	90	5.6
	AUG	19.8	15.30	23.08	99	9.0
	SEP	16.1	14.00	18.29	90	5.7
	OCT	11.0	10.60	13.12	81	3.3
	NOV	7.9	9.10	10.65	122	2.1
	DEC	6.0	8.00	9.34	117	0.8
1948	JAN	6.6	8.50	9.74	149	1.4
	FEB	5.3	7.10	8.90	149	2.5
	MAR	8.6	8.70	11.17	108	4.5
	APR	10.2	8.80	12.44	114	7.5
	MAY	12.7	10.30	14.68	105	7.7
	JUN	14.7	12.60	16.71	125	6.0
	JUL	16.7	14.00	19.00	96	6.0
	AUG	15.9	14.30	18.05	96	4.9
	SEP	14.6	13.40	16.61	102	5.2
	OCT	10.3	10.70	12.52	84	3.0
	NOV	7.5	9.50	10.36	78	2.3
	DEC	6.7	8.60	9.81	143	1.5

1949	JAN	5.9	7.90	9.28	111	1.8
	FEB	5.5	7.53	9.03	114	3.8
	MAR	5.5	6.80	9.03	128	3.3
	APR	11.0	9.60	13.12	134	7.0
	MAY	11.8	9.80	13.83	111	7.0
	JUN	16.2	12.60	18.40	81	7.8
	JUL	18.9	14.00	21.82	78	8.1
	AUG	18.1	14.50	20.75	84	7.3
	SEP	17.7	15.60	20.24	93	5.3
	OCT	12.4	12.60	14.39	81	3.7
	NOV	6.7	8.70	9.81	84	2.2
	DEC	6.6	8.40	9.74	111	1.6
1950	JAN	5.0	7.60	8.72	93	0.9
	FEB	6.6	8.30	9.74	140	2.4
	MAR	8.1	8.30	10.79	105	4.5
	APR	8.4	8.00	11.02	120	5.6
	MAY	12.1	10.40	14.11	114	5.8
	JUN	17.4	14.40	19.86	102	8.5
	JUL	17.2	15.00	19.61	99	7.3
	AUG	16.7	14.80	19.00	96	6.5
	SEP	13.9	13.00	15.87	108	4.4
	OCT	10.4	10.60	12.60	84	3.4
	NOV	7.0	8.70	10.01	117	2.1
	DEC	2.2	6.00	7.15	96	1.1
1951	JAN	5.0	7.70	8.72	108	1.6

	FEB	4.3	7.30	8.30	114	2.2
	MAR	5.2	7.20	8.84	125	2.9
	APR	7.7	7.50	10.50	123	6.6
	MAY	10.8	9.80	12.94	123	5.0
	JUN	15.0	12.10	17.04	105	8.6
	JUL	17.7	14.60	20.24	90	7.2
	AUG	15.9	14.10	18.05	102	6.1
	SEP	14.9	14.30	16.93	96	4.0
	OCT	10.2	10.70	12.44	71	3.4
	NOV	9.3	10.20	11.71	114	2.4
	DEC	6.5	8.50	9.67	108	1.7
1952	JAN	4.0	6.80	8.13	117	2.7
	FEB	3.7	6.50	7.96	77	2.5
	MAR	7.0	8.50	10.01	111	3.0
	APR	10.3	9.30	12.52	87	5.9
	MAY	14.5	12.10	16.50	81	7.3
	JUN	15.9	12.90	18.05	90	8.2
	JUL	18.2	14.30	20.89	99	6.8
	AUG	17.1	15.20	19.49	102	6.3
	SEP	12.0	10.80	14.02	105	4.8
	OCT	9.7	9.90	12.03	105	3.0
	NOV	5.1	7.30	8.78	114	2.1
	DEC	3.5	7.40	7.85	87	1.8
1953	JAN	3.7	7.10	7.96	77	1.1
	FEB	4.4	7.00	8.36	111	2.2
	MAR	5.6	7.30	9.09	87	3.5
	APR	8.4	8.10	11.02	120	5.7
	MAY	13.5	11.30	15.46	105	7.7
	JUN	14.8	13.30	16.82	90	5.8
	JUL	16.1	14.30	18.29	108	6.6
	AUG	17.5	14.80	19.99	90	7.7
	SEP	14.5	12.90	16.50	93	6.1
	OCT	11.1	11.50	13.21	61	2.6
	NOV	8.9	10.20	11.40	84	1.8
	DEC	8.1	9.90	10.79	73	1.1

1954	JAN	3.4	6.40	7.79	128	2.1
	FEB	3.4	6.80	7.79	111	2.0
	MAR	6.7	8.00	9.81	111	3.3
	APR	8.0	7.50	10.72	99	6.2
	MAY	12.1	10.50	14.11	99	5.1
	JUN	14.3	12.60	16.29	108	5.4
	JUL	15.2	13.00	17.26	114	4.9
	AUG	15.3	14.30	17.37	90	4.9
	SEP	13.6	12.50	15.56	114	5.7
	OCT	12.8	12.70	14.77	128	3.1
	NOV	8.3	9.60	10.94	114	1.9
	DEC	7.5	8.60	10.36	140	1.7
1955	JAN	3.5	6.90	7.85	125	1.1
	FEB	2.7	6.10	7.41	137	2.8
	MAR	4.0	5.90	8.13	146	5.1
	APR	9.9	8.80	12.19	105	6.1
	MAY	10.6	9.50	12.77	131	7.4
	JUN	15.1	12.90	17.15	117	5.7
	JUL	18.3	15.10	21.02	93	7.9
	AUG	18.6	15.90	21.42	81	6.4
	SEP	14.7	13.20	16.71	87	5.5
	OCT	9.7	10.10	12.03	84	3.6
	NOV	8.1	9.30	10.79	93	1.4
	DEC	7.0	8.60	10.01	117	1.5
1956	JAN	4.6	7.30	8.48	114	1.6
	FEB	0.1	4.80	6.15	120	2.2
	MAR	6.8	7.40	9.87	125	4.6
	APR	7.4	7.20	10.29	108	4.9

	MAY	13.3	10.10	15.26	105	8.3
	JUN	14.1	11.80	16.08	114	4.9
	JUL	16.7	14.90	19.00	117	5.6
	AUG	14.6	13.40	16.61	125	5.3
	SEP	15.3	14.70	17.37	123	3.7
	OCT	10.2	10.60	12.44	111	3.6
	NOV	6.7	8.20	9.81	123	1.9
	DEC	6.9	9.00	9.94	131	0.3

1957	JAN	6.4	8.20	9.61	167	1.8
	FEB	6.6	8.00	9.74	102	2.5
	MAR	10.1	9.80	12.35	109	3.5
	APR	9.6	7.80	11.95	131	5.7
	MAY	11.4	8.60	13.47	133	6.7
	JUN	16.8	11.00	19.12	115	9.7
	JUL	18.3	15.10	21.02	110	5.7
	AUG	16.6	13.60	18.88	121	5.3
	SEP	13.8	12.20	15.77	115	3.5
	OCT	11.9	11.70	13.92	95	3.1
	NOV	7.4	8.20	10.29	110	2.3
	DEC	5.0	7.50	8.72	105	1.8
1958	JAN	4.7	7.20	8.54	107	1.4
	FEB	6.1	7.70	9.41	131	1.7
	MAR	4.8	6.30	8.60	112	3.8
	APR	8.2	7.40	10.67	126	5.2
	MAY	12.7	10.00	14.68	128	6.5
	JUN	15.2	12.60	17.26	88	5.5
	JUL	17.4	14.20	19.66	98	6.4
	AUG	16.9	15.80	19.24	85	4.1
	SEP	16.1	14.80	18.29	93	4.9
	OCT	11.3	11.70	13.83	76	3.1
	NOV	7.6	9.10	10.43	67	1.4
	DEC	5.8	8.40	9.22	74	1.1

1959	JAN	2.8	6.30	7.47	103	2.6
	FEB	4.7	7.20	8.54	84	2.1
	MAR	8.2	8.60	10.87	113	3.5
	APR	10.5	9.20	12.69	121	4.6
	MAY	13.3	10.10	15.26	112	7.4
	JUN	16.6	11.80	18.88	107	8.0
	JUL	19.1	13.20	22.10	106	9.4
	AUG	18.9	14.40	21.82	90	7.7
	SEP	16.7	11.90	19.00	95	7.1
	OCT	13.4	11.50	15.36	97	5.1
	NOV	7.7	9.10	10.50	75	1.9
	DEC	7.1	8.40	10.08	151	1.2
1960	JAN	5.2	7.50	8.84	121	1.5
	FEB	5.3	7.30	8.90	125	2.8
	MAR	7.4	7.90	10.29	129	2.3
	APR	9.9	8.40	12.19	122	5.8
	MAY	13.8	10.80	15.77	87	6.1
	JUN	17.1	13.00	19.49	111	8.5
	JUL	16.1	13.40	18.29	117	5.3
	AUG	16.1	13.80	18.29	81	5.7
	SEP	14.3	12.70	16.29	90	4.9
	OCT	11.4	11.40	13.47	84	2.3
	NOV	8.5	9.60	11.09	119	2.4
	DEC	5.2	7.60	8.84	102	1.6
1961	JAN	4.7	7.10	8.54	130	1.7
	FEB	8.1	8.70	10.79	130	2.4
	MAR	8.7	8.10	11.24	85	5.5
	APR	11.1	10.50	13.21	94	3.4
	MAY	12.2	9.10	14.20	123	7.5
	JUN	16.2	12.10	18.40	92	8.1
	JUL	17.1	12.70	19.49	102	6.5
	AUG	17.1	13.70	19.49	115	5.4

	SEP	16.3	14.90	18.52	84	4.3
	OCT	12.0	11.20	14.02	103	4.0
	NOV	7.4	8.30	10.29	123	2.1
1962	DEC	4.3	7.20	8.30	104	1.7
	JAN	5.3	7.60	8.90	137	2.1
	FEB	5.3	6.70	8.90	179	2.4
	MAR	3.8	5.80	8.01	111	3.6
	APR	8.7	8.00	11.24	143	4.7
	MAY	11.2	9.20	13.29	133	5.1
	JUN	14.7	10.70	16.71	113	8.7
	JUL	16.3	12.60	18.52	100	4.3
	AUG	15.9	13.10	18.55	125	5.6
	SEP	13.8	12.20	15.77	99	5.1
	OCT	11.7	11.20	13.74	82	3.8
	NOV	6.7	8.60	9.81	94	1.2
	DEC	2.8	6.20	7.47	131	2.2
1963	JAN	-1.1	4.60	5.63	141	1.6
	FEB	0.4	5.00	6.28	116	2.5
	MAR	6.9	7.60	9.94	140	3.3
	APR	9.7	9.00	12.03	127	4.5
	MAY	11.6	9.40	13.65	125	6.6
	JUN	15.9	12.30	18.05	128	6.7
	JUL	16.5	13.40	18.76	93	6.6
	AUG	15.7	13.30	17.82	109	4.6
	SEP	14.1	12.50	16.08	87	4.2
	OCT	11.7	11.40	13.74	85	2.9
	NOV	9.4	10.00	11.79	118	2.1
	DEC	3.6	6.60	7.90	104	1.4

1964	JAN	4.1	6.90	8.18	82	1.2
	FEB	5.4	7.30	8.96	101	2.2
	MAR	5.3	6.70	8.90	137	2.3
	APR	9.4	8.80	11.79	133	4.3
	MAY	14.7	11.80	16.71	117	6.7
	JUN	15.4	12.50	17.48	92	5.7
	JUL	18.3	14.70	21.02	96	7.2
	AUG	17.2	13.90	19.61	95	7.1
	SEP	15.5	12.70	17.60	94	7.3
	OCT	9.6	9.60	11.95	72	4.3
	NOV	8.9	9.40	11.40	115	1.8
	DEC	4.9	7.10	8.66	149	1.6
1965	JAN	4.6	6.80	8.48	166	2.1
	FEB	4.0	6.00	8.13	117	1.1
	MAR	6.7	7.50	9.81	117	4.4
	APR	9.4	8.30	11.79	116	4.5
	MAY	13.1	10.30	15.07	113	6.1
	JUN	15.5	12.70	17.60	107	6.0
	JUL	15.8	13.00	17.94	113	4.0
	AUG	16.6	13.90	18.88	92	6.1
	SEP	13.3	12.20	15.26	86	4.4
	OCT	12.1	11.30	14.11	89	4.5
	NOV	6.0	7.40	9.34	125	3.2
	DEC	5.9	8.00	9.28	130	1.9
1966	JAN	3.9	6.70	8.07	117	1.3
	FEB	7.4	8.50	10.29	157	1.1
	MAR	7.5	7.40	10.36	122	4.1
	APR	9.2	9.00	11.63	116	3.0
	MAY	12.5	10.00	14.48	112	7.0
	JUN	17.1	13.70	19.49	103	6.7
	JUL	16.5	13.40	18.76	109	5.2
	AUG	16.3	13.90	18.52	96	6.4
	SEP	15.3	13.50	17.37	88	5.0
	OCT	11.8	12.10	13.83	74	2.5
	NOV	6.7	7.80	9.81	122	1.9

	DEC	6.6	8.00	9.74	122	1.2
1967	JAN	5.3	7.60	8.90	94	2.1
	FEB	6.6	7.60	9.74	137	3.1
	MAR	8.2	7.50	10.87	153	5.5
	APR	8.6	8.10	11.17	132	4.8
	MAY	11.9	10.70	13.92	105	6.2
	JUN	15.5	12.40	17.60	98	7.1
	JUL	18.9	15.20	21.82	97	7.9
	AUG	17.3	14.90	19.73	89	6.0
	SEP	14.9	13.90	16.93	92	4.3
	OCT	12.1	11.70	14.11	133	3.1
	NOV	6.5	8.40	9.67	84	2.3
	DEC	5.0	7.60	8.72	106	1.8
1968	JAN	5.0	7.30	8.72	125	1.4
	FEB	3.4	6.20	7.79	121	2.3
	MAR	7.6	7.50	10.43	162	4.6
	APR	9.3	8.60	11.71	97	6.2
	MAY	11.3	10.10	13.38	80	5.4
	JUN	16.2	13.60	18.40	110	5.3
	JUL	16.7	14.00	19.00	105	4.7
	AUG	16.5	15.20	18.76	110	3.9
	SEP	15.1	14.20	17.15	107	4.5
	OCT	13.7	13.50	15.67	83	2.5
	NOV	7.5	8.90	10.36	105	1.4
	DEC	3.4	6.90	7.79	94	1.1

KEW

CHECK SHEET - STANDARD UNITS (DE)

	DATE	TEMP	V.P.	SVP	WIND	SUN
1969	JAN	6.4	8.40	9.61	106	1.2
	FEB	2.3	5.90	7.20	132	2.5
	MAR	4.5	6.90	8.42	143	2.1
	APR	8.5	7.70	11.09	143	6.9
	MAY	12.1	11.10	14.11	104	5.3
	JUN	14.3	11.30	16.29	111	8.8
	JUL	17.9	15.20	20.50	89	7.3
	AUG	16.9	14.90	19.24	89	4.9
	SEP	14.7	14.00	16.71	88	4.0
	OCT	13.1	12.60	15.07	69	3.9
	NOV	6.3	8.10	9.54	131	2.3
	DEC	3.7	7.10	7.96	110	0.5
1970	JAN	4.9	7.90	8.66	99	1.0
	FEB	4.2	6.40	8.24	151	3.9
	MAR	4.7	6.40	8.54	136	3.4
	APR	7.8	7.90	10.57	135	4.2
	MAY	14.3	11.40	16.29	100	7.2
	JUN	18.0	13.10	20.62	111	9.4
	JUL	17.1	13.70	19.49	117	6.1
	AUG	17.4	14.50	19.86	86	6.2
	SEP	15.6	13.40	17.71	85	5.5
	OCT	12.0	11.00	14.02	114	3.3
	NOV	9.1	9.50	11.55	101	2.2
	DEC	4.9	7.50	8.66	87	1.2

Appendix 2. Wind data before Final Adjustment based on decadal averages.

MONTHLY AVERAGES OF DAILY WIND RUN 01-22M REPRESENTATIVE OF KEW, SURREY. (M/S/DAY)

Decade 1871 - 1880

Data Robinson anemograph values (using factor 3) $\times \frac{2.2}{3}$

	Average 1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880	1871- 1880
January ...	209	193	231	266	195	207	175	247	180	213	117	202
February ...	260	219	210	207	180	185	224	219	132	195	218	199
March ...	227	208	147	220	201	224	264	180	208	204	242	210
April ...	164	201	177	202	208	166	201	230	208	160	228	198
May ...	189	163	162	182	148	179	192	183	202	167	194	177
June ...	155	169	155	162	166	197	157	194	141	186	161	177
July ...	157	198	119	169	144	165	147	155	124	187	164	157
August ...	165	146	158	180	189	159	166	175	175	183	162	169
September	163	181	188	147	164	169	148	134	121	130	123	150
October ...	205	123	148	132	175	186	144	177	153	150	167	155
November	163	169	273	205	145	221	156	208	186	132	204	190
December	176	176	233	131	178	172	216	159	147	136	189	174
Average	186	179	183	184	175	186	183	189	165	170	180	180

Decade 1881 - 1890

Data AS 1871-1880

	Average	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890	
January ...		169	160	229	211	229	194	141	194	141	246	191
February ...		194	171	211	229	229	141	211	264	229	211	209
March ...		212	205	246	158	176	246	176	246	194	211	207
April ...		261	247	158	158	211	264	246	211	194	211	216
May ...		203	191	141	211	176	176	194	211	158	176	184
June ...		156	199	141	123	176	158	158	158	141	158	157
July ...		150	188	158	141	158	158	158	176	158	158	161
August ...		163	162	141	123	176	141	141	176	158	158	154
September		111	134	158	158	158	176	176	141	141	123	147
October ...		205	158	158	141	194	176	141	123	141	141	158
November		235	264	158	158	194	141	176	264	123	176	189
December		170	176	194	264	158	229	158	158	141	158	180
Average		174	188	175	173	186	183	173	194	160	177	178

MONTHLY AVERAGES OF DAILY WIND RUN at 22M REPRESENTATIVE OF KEW, SURREY. (m/s/day)

Decade 1891 - 1900

Data AS 1871-1880

	Average	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	
January ...		190	175	172	214.5	201	153	204	136	263	201	194
February ...		106	202	234	246	181	151	181	216	219	221	196
March ...		246	220	157	211	194	225	255	220	160	183	207
April ...		204	175	194	167	197	150	230	190	197	185	189
May ...		172	189	175	210	171	177	207	185	190	195	187
June ...		181	177	169	176	137	150	167	177	146	194	167
July ...		158	195	175	162	180	148	157	136	150	150	161
August ...		181	160	162	167	160	127	190	192	180	181	170
September		163	145	157	137	102	176	155	136	166	128	147
October ...		211	172	145	158	122	181	141	180	132	176	162
November		160	131	233	194	238	180	166	153	162	185	180
December		227	158	192	194	233	202	238	219	158	238	206
Average		183	175	180	189	176	169	191	178	177	186	180

Decade 1901 - 1910

Data 1901-1905 as 1871-1880.

1906-1910 Robinson anemograph values (using factor 2.2)

	Average	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	
January ...		199	206	263	204	185	252	199	202	173	216	210
February ...		158	167	268	241	227	230	197	209	202	254	215
March ...		269	175	278	199	234	252	194	197	216	178	219
April ...		229	225	210	230	220	197	175	228	216	211	214
May ...		176	167	194	167	186	190	194	192	211	223	190
June ...		195	162	176	186	194	158	228	173	168	163	180
July ...		122	145	153	172	132	146	158	158	192	185	156
August ...		160	123	195	148	177	166	175	180	132	185	164
September		151	146	180	158	181	144	120	151	139	142	151
October ...		136	172	220	137	153	163	166	146	240	204	174
November		163	181	169	125	181	180	144	173	173	190	168
December		202	246	216	153	137	178	264	163	228	259	205
Average		180	176	210	177	184	188	184	181	191	201	187

MONTHLY AVERAGES OF DAILY WIND RUN at 22M REPRESENTATIVE OF KEW, SURREY. (MKS/DAY)

Decade 1911 - 1920

Data As 1906-1910

	Average	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	
January ...		170	177	199	220	199	220	269	199	188	279	212
February ...		220	220	215	220	220	247	145	226	166	187	207
March ...		247	242	274	231	161	220	226	209	226	193	223
April ...		269	204	258	193	193	199	183	209	193	220	212
May ...		156	161	231	172	215	145	193	177	187	215	185
June ...		204	183	183	150	160	172	183	161	167	156	172
July ...		167	167	150	161	161	123	172	177	129	183	159
August ...		172	193	140	150	107	140	220	145	161	140	157
September		145	193	150	161	156	134	145	215	134	269	170
October ...		193	156	140	129	129	236	188	156	134	150	161
November		247	172	188	204	156	199	193	134	188	129	181
December		231	247	199	231	236	140	193	216	247	215	215

Average 202 193 194 185 174 181 193 185 177 195 188

Decade 1921 - 1930

Data 1921-1925 as 1906-1910

1926-1930 Dines anemograph values.

	Average	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	
January ...		246	227	171	188	210	221	221	246	149	240	212
February ...		155	235	227	210	246	188	177	240	182	235	209
March ...		235	268	177	210	199	227	235	182	130	193	206
April ...		193	221	221	210	193	171	205	210	199	205	203
May ...		171	166	182	188	205	216	193	166	221	166	181
June ...		188	193	166	166	144	166	210	221	188	171	181
July ...		171	188	171	182	160	171	193	155	177	171	174
August ...		177	149	188	166	141	166	210	171	144	171	168
September		141	155	155	210	155	141	177	135	135	171	157
October ...		113	199	216	160	160	177	171	199	177	177	175
November		144	124	166	205	193	227	199	257	216	205	194
December		235	216	166	199	199	188	199	160	274	141	198

Average 181 195 184 191 184 188 199 195 183 187 188

MONTHLY AVERAGES OF DAILY WIND RUN at 22M REPRESENTATIVE OF KEW, SURREY. (MIS/DAY)

Decade 1931 - 1940

Data AS 1926-1930

	Average	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	
January ...		210	229	227	205	193	205	257	279	290	221	232
February ...		229	227	268	160	290	193	240	296	229	227	236
March ...		263	221	227	193	199	166	227	199	268	257	222
April ...		229	274	160	210	257	216	199	221	227	221	221
May ...		216	188	155	188	251	210	171	246	188	171	198
June ...		216	205	166	205	229	149	155	246	240	188	200
July ...		210	182	182	166	171	216	177	205	227	177	191
August ...		240	155	166	171	124	135	130	155	149	177	160
September		141	210	193	177	205	171	147	160	188	182	177
October ...		155	210	205	210	210	205	166	216	221	221	202
November		210	221	160	135	205	210	149	221	229	257	200
December		210	216	205	216	210	229	205	240	193	240	216
Average		211	211	193	186	212	192	185	224	221	212	205

Decade 1941 - 1950

Data AS 1926-1930

	Average	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	
January ...		257	216	232	251	221	235	235	274	205	171	230
February ...		251	235	205	251	235	246	257	274	210	257	242
March ...		240	210	182	171	188	216	263	199	235	193	210
April ...		274	312	216	182	182	166	268	210	246	221	228
May ...		216	235	232	177	193	246	182	193	205	210	209
June ...		171	141	199	257	205	199	177	229	149	188	191
July ...		155	193	199	188	188	177	166	177	144	182	177
August ...		205	155	210	182	155	199	182	177	155	177	180
September		124	171	160	182	188	221	166	188	171	199	177
October ...		205	177	144	216	149	182	149	155	149	155	168
November		199	130	199	216	141	240	224	144	155	216	186
December		193	227	188	171	188	199	216	263	205	177	203
Average		207	200	197	204	186	211	207	207	186	195	200

MONTHLY AVERAGES OF DAILY WIND RUN @ 2.2M REPRESENTATIVE OF KEW, SURREY. (MIS/DAY)

Decade 1951 - 1960

Data As 1926-1930

	Average	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	
January ...		199	216	141	235	229	210	326	221	210	213	220
February ...		210	141	205	205	251	221	243	254	177	235	214
March ...		229	205	160	205	268	229	229	232	227	265	225
April ...		227	160	221	182	193	199	257	246	227	246	216
May ...		227	149	193	182	240	193	243	243	235	182	209
June ...		193	166	166	199	216	210	216	174	216	218	197
July ...		166	182	199	210	171	216	221	196	196	229	199
August ...		188	188	166	166	149	229	224	171	174	163	182
September		177	193	171	210	160	227	205	193	180	177	189
October ...		130	193	113	235	155	205	185	177	193	169	175
November		210	210	155	210	171	227	207	144	174	210	192
December		199	160	135	257	216	240	218	169	285	182	206
Average		196	180	169	208	202	217	231	202	208	207	202

Decade 1961 - 1970

Data As 1926-1930

	Average	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	
January ...		227	257	232	166	285	235	205	218	191	191	221
February ...		213	318	213	207	229	285	265	207	229	271	244
March ...		171	213	276	257	246	221	285	268	271	240	245
April ...		210	268	221	263	227	202	249	177	243	243	230
May ...		246	232	229	218	229	213	246	155	210	171	215
June ...		180	199	218	177	207	199	191	177	205	188	194
July ...		193	163	152	191	216	193	182	147	135	185	176
August ...		221	210	177	193	185	177	155	202	133	135	179
September		160	166	135	199	185	171	180	196	138	147	168
October ...		207	149	177	160	180	171	246	157	124	174	175
November		227	169	249	210	257	246	157	196	254	188	215
December		196	227	218	279	238	251	177	160	224	191	216
Average		204	214	208	210	224	214	211	188	196	194	206

Appendix 3. Wind data from Appendix 2 adjusted on the basis of relationships between decadal averages.

MONTHLY AVERAGES OF DAILY WIND RUN at 22M REPRESENTATIVE OF KEW, SURREY. (MKS/DAY)

Decade 1871 - 1880

Data Robinson data (factor 2.2) X by 1.128

	Average 1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880	
January ...	236	218	261	300	220	233	197	279	203	240	132	228
February ...	293	247	237	253	203	209	253	247	149	220	246	225
March ...	256	235	166	248	227	253	298	203	235	230	273	237
April ...	185	227	200	228	235	187	227	259	235	181	257	223
May ...	213	184	183	205	167	202	217	206	228	188	219	200
June ...	175	191	175	183	187	222	177	219	159	210	182	200
July ...	177	223	134	191	162	186	166	175	140	211	185	177
August ...	186	165	178	203	213	179	187	197	197	206	183	191
September	184	204	212	166	185	191	167	151	137	147	139	169
October ...	231	139	167	149	197	210	162	200	173	169	188	175
November	184	191	308	231	164	249	176	235	210	149	230	214
December	199	199	263	148	201	194	244	179	166	153	213	196

Average 210 202 206 207 197 210 206 213 186 192 203 203

Decade 1881 - 1890

Data As 1871-1880

	Average	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890	
January ...		191	181	258	238	258	219	159	219	159	277	215
February ...		219	193	238	258	258	159	238	298	258	238	236
March ...		239	231	277	178	199	277	199	277	219	238	233
April ...		294	279	178	178	238	298	277	238	219	238	244
May ...		229	215	159	238	199	199	219	238	178	199	207
June ...		176	225	159	139	199	178	178	178	159	178	177
July ...		169	212	178	159	178	178	178	199	178	178	182
August ...		184	183	159	139	199	159	159	199	178	178	174
September		125	151	178	178	178	199	199	159	159	139	166
October ...		231	178	178	159	219	199	159	139	159	159	178
November		265	298	178	178	219	159	199	297	139	199	213
December		192	199	219	298	178	258	178	178	159	178	203

Average 196 212 197 195 210 206 195 249 181 200 201

MONTHLY AVERAGES OF DAILY WIND RUN at 2.2m REPRESENTATIVE OF K&W, SURREY. (MIS/DAY)

Decade 1891 - 1900.

Data AS 1871-1880

	Average	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	
January ...		214	197	194	276	227	173	230	153	297	227	219
February ...		120	228	264	277	204	170	204	244	247	249	221
March ...		277	248	177	238	219	254	288	248	181	206	233
April ...		230	197	219	188	222	169	259	214	222	209	213
May ...		194	213	197	237	193	200	233	209	214	220	211
June ...		204	200	191	199	155	169	188	200	165	219	188
July ...		178	220	197	183	203	167	177	153	169	169	182
August ...		204	181	183	188	181	143	214	217	203	204	192
September		184	164	177	155	115	199	175	153	187	144	166
October ...		238	194	164	178	138	204	159	203	149	199	183
November		181	148	263	219	269	203	187	173	183	209	203
December		256	178	217	219	263	228	269	247	178	269	232
Average		206	197	203	213	199	191	215	201	200	210	203.

Decade 1901 - 1910

Data Robinson data (Factor 2.2) X by 1.08

	Average	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	
January ...		215	223	284	220	200	272	215	218	187	233	227
February ...		171	180	289	260	245	248	213	226	218	274	232
March ...		291	189	300	215	253	272	209	213	233	192	237
April ...		247	243	227	248	238	215	189	246	233	228	231
May ...		190	180	209	180	201	205	209	207	228	241	205
June ...		211	175	190	201	209	171	246	187	181	176	194
July ...		132	157	165	186	143	158	171	171	207	200	169
August ...		173	133	211	160	191	179	189	194	143	200	177
September		163	158	194	171	195	155	130	163	150	153	163
October ...		147	186	238	148	165	176	179	158	259	220	188
November		176	195	183	135	195	194	155	187	187	205	181
December		218	266	233	165	148	192	285	176	246	280	221
Average		194	190	227	191	199	203	199	195	206	217	202.

MONTHLY AVERAGES OF DAILY WIND RUN 3-2204 REPRESENTATIVE OF KLV, SURREY. (MIS/DAY)

Decade 1911 - 1920.

Data AS 1901-1910.

	Average	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	
January ...		184	191	215	238	215	238	291	215	203	301	229
February ...		238	238	232	238	238	267	157	244	179	202	224
March ...		267	261	296	249	174	238	244	226	244	208	241
April ...		291	220	279	208	208	215	198	226	208	238	229
May ...		169	174	249	186	232	157	208	191	202	232	200
June ...		220	198	198	162	173	186	198	174	180	169	186
July ...		180	180	162	174	174	133	186	191	139	198	172
August ...		186	208	151	162	116	151	238	157	174	151	170
September		157	208	162	174	169	145	157	232	145	291	184
October ...		208	169	151	139	139	256	203	169	145	162	174
November		267	186	203	220	169	215	208	145	203	139	195
December		249	267	215	249	255	151	208	233	267	232	232
Average		218	208	209	200	188	195	208	200	191	211	203

Decade 1921 - 1930

Data AS 1901-1910

	Average	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	
January ...		266	245	185	203	227	239	239	266	161	259	229
February ...		167	254	245	227	267	203	191	259	197	254	226
March ...		254	289	191	227	215	245	254	197	140	208	223
April ...		208	239	239	227	208	185	221	227	215	221	219
May ...		185	179	197	203	221	233	208	179	239	179	195
June ...		203	208	179	179	155	179	227	239	203	185	195
July ...		185	203	185	197	173	185	208	167	191	185	188
August ...		191	161	203	179	152	179	227	185	155	185	181
September		152	167	167	227	167	152	191	146	146	185	170
October ...		122	215	233	173	173	191	185	215	191	191	189
November		155	134	179	221	208	245	215	278	233	221	209
December		254	233	179	215	215	203	215	173	296	152	214
Average		195	211	199	206	199	203	215	211	198	202	203

Appendix 4

MONTHLY AVERAGES OF (SCREEN) AIR TEMPERATURE REPRESENTATIVE OF KEW, SURREY. (°C)

Decade 1698 - 1700

Data Manley's Central England series adjusted as shown in Fig.1.

	Average	1	1	1	1	1	1	1	1698	1699	1700
January ...									1.7	3.5	4.9
February ...									1.7	3.8	2.9
March ...									4.6	4.1	3.5
April ...									7.7	6.1	9.9
May ...									8.9	10.4	12.5
June ...									14.8	15.7	14.0
July ...									16.7	18.5	16.1
August ...									16.7	15.4	16.1
September									13.7	14.2	13.7
October ...									10.1	10.8	9.5
November									4.1	5.9	5.9
December									4.6	4.1	4.1

Decade 1701 - 1710

Data Manley's Central England series adjusted as shown in Fig.1.

	Average	1701	1702	1703	1704	1705	1706	1707	1708	1709	1710
January ...		3.3	4.6	2.6	2.3	2.9	2.9	3.5	6.5	-1.9	2.9
February ...		2.9	7.1	3.8	3.5	3.5	4.4	2.9	4.1	1.7	3.5
March ...		2.6	6.8	5.9	5.6	4.1	6.5	5.3	7.1	2.9	6.5
April ...		4.9	5.3	8.9	9.2	8.0	9.2	8.9	10.1	9.5	7.1
May ...		11.4	11.4	10.4	11.6	10.8	12.7	11.9	11.4	13.1	12.5
June ...		15.2	14.2	13.7	14.8	13.1	16.9	17.3	14.8	15.4	15.4
July ...		19.5	16.1	16.4	17.9	16.4	16.7	18.5	15.4	16.7	15.4
August ...		16.9	17.3	16.7	17.6	18.1	16.9	17.3	19.1	16.7	16.7
September		14.8	15.2	11.9	12.5	12.7	12.5	14.8	16.1	14.2	14.2
October ...		8.3	10.4	8.7	9.2	9.5	11.4	8.9	8.9	10.8	10.1
November		6.8	4.9	7.7	6.8	3.8	6.5	7.1	7.7	9.5	8.3
December		4.1	3.5	5.3	4.4	4.9	5.3	3.5	2.9	5.3	8.3

MONTHLY AVERAGES OF (SCREEN) AIR TEMPERATURE REPRESENTATIVE OF KEW, SURREY. (°C)

Decade 1711 - 1720

Data Manley's Central England Series adjusted as shown in Fig.1.

	Average	1711	1712	1713	1714	1715	1716	1717	1718	1719	1720
January ...		5.3	2.9	2.9	4.1	4.1	-2.4	4.6	1.1	3.5	4.6
February ...		2.3	4.6	5.9	5.9	5.3	2.9	2.9	2.9	4.6	4.1
March ...		5.9	5.3	3.5	5.3	7.1	4.6	4.6	5.9	5.3	4.1
April ...		10.1	8.3	5.3	7.7	10.1	9.5	7.7	8.3	7.1	7.7
May ...		11.9	11.9	10.8	10.8	11.9	11.4	10.8	11.9	12.5	11.9
June ...		16.7	16.1	14.2	15.4	14.8	14.8	14.8	15.4	15.4	13.7
July ...		16.1	17.3	14.8	19.1	16.1	16.7	16.1	18.5	19.2	17.3
August ...		16.1	15.4	16.1	15.4	16.1	16.1	16.1	18.5	18.5	14.8
September		13.7	13.7	14.8	13.7	14.8	13.1	14.2	15.4	14.8	14.2
October ...		10.1	10.1	10.1	11.4	11.4	10.1	10.1	10.1	9.5	8.9
November		7.7	6.5	4.6	6.5	7.1	5.9	5.9	6.5	6.5	6.5
December		3.5	5.9	4.1	4.1	1.1	2.9	5.3	4.6	3.5	5.9

Decade 1721 - 1730

Data 1721-1722 Manley's Central England Series adjusted as shown in Fig.1.
1723-1730 Manley's London Region Series.

	Average	1721	1722	1723	1724	1725	1726	1727	1728	1729	1730
January ...		5.3	4.1	1.7	6.4	4.4	1.1	3.6	4.7	1.1	5.0
February ...		1.7	5.3	5.3	4.7	3.3	3.3	5.6	2.8	2.8	5.3
March ...		2.9	6.5	7.8	5.0	5.3	4.2	5.6	7.7	3.3	6.7
April ...		8.9	8.3	10.0	8.0	9.3	9.0	9.6	8.9	7.5	10.0
May ...		10.1	11.4	12.5	12.5	11.4	14.4	14.4	13.6	11.4	13.6
June ...		14.8	14.8	16.1	16.4	13.1	17.2	15.6	17.5	16.7	15.0
July ...		15.4	16.1	16.4	16.1	14.7	17.2	17.5	18.3	18.6	16.9
August ...		16.7	16.1	16.7	17.5	13.9	16.4	18.1	17.2	17.2	17.8
September		14.8	14.2	14.2	15.6	13.3	15.6	15.6	13.9	17.5	16.4
October ...		9.5	10.8	11.7	9.2	10.3	10.3	11.7	9.7	10.8	11.4
November		6.5	8.3	8.1	5.3	7.5	6.7	5.0	7.8	8.3	9.4
December		4.6	4.1	5.8	3.6	4.2	1.7	3.9	1.4	5.6	3.6

MONTHLY AVERAGES OF (SCREEN) AIR TEMPERATURE REPRESENTATIVE OF KEW, SURREY. (°C)

Decade 1731 - 1740

Data Manley's London Region series.

	Average	1731	1732	1733	1734	1735	1736	1737	1738	1739	1740
January ...		2.5	2.8	7.8	5.6	5.3	6.1	7.2	4.4	3.9	-2.5
February ...		1.9	6.7	7.2	6.9	4.7	3.6	5.3	5.3	7.5	-1.7
March ...		6.4	6.6	7.1	8.8	7.2	6.7	6.9	6.3	6.7	4.6
April ...		7.5	9.4	11.4	10.8	10.3	9.2	10.0	10.8	7.2	6.9
May ...		13.3	12.5	12.2	12.2	12.2	11.1	13.6	12.8	12.8	9.7
June ...		16.7	15.3	16.1	14.7	14.4	16.4	16.9	15.0	16.1	13.3
July ...		17.8	17.8	19.7	17.5	15.8	17.5	18.6	17.8	17.5	16.7
August ...		17.8	17.7	17.7	17.7	18.1	19.2	14.7	17.2	15.6	16.1
September		16.4	15.7	13.6	14.2	15.3	15.0	15.6	13.6	13.9	14.7
October ...		13.3	11.4	9.7	9.0	14.3	11.1	9.7	11.1	10.3	6.1
November		8.3	7.2	7.4	6.7	7.2	7.8	6.9	6.7	3.6	3.3
December		5.6	2.8	8.1	4.4	6.1	6.9	5.0	6.7	3.6	2.2

Decade 1741 - 1750

Data Manley's London Region series.

	Average	1741	1742	1743	1744	1745	1746	1747	1748	1749	1750
January ...		2.5	2.5	4.2	2.2	4.4	2.2	3.9	2.8	5.6	4.4
February ...		5.3	4.4	6.4	2.8	2.9	1.4	5.8	1.9	4.2	6.7
March ...		5.0	4.4	6.1	5.8	5.0	3.6	3.3	1.9	6.1	8.9
April ...		7.8	7.2	6.1	7.9	8.3	7.5	8.2	6.7	7.8	8.3
May ...		10.3	11.4	13.8	11.9	12.2	13.9	12.8	11.4	13.3	11.7
June ...		16.1	15.8	16.1	15.3	13.1	15.3	15.6	15.8	12.8	15.3
July ...		17.5	17.2	16.4	17.2	17.2	18.1	18.1	16.7	18.6	18.3
August ...		18.1	16.1	18.6	16.7	16.4	17.2	19.4	16.9	16.7	16.1
September		15.8	13.3	15.0	15.2	15.3	15.3	15.6	15.6	14.7	16.4
October ...		11.7	10.0	9.2	10.3	10.8	8.3	10.0	10.0	10.8	10.0
November		8.3	4.7	9.2	7.8	6.1	3.3	7.5	6.9	7.2	4.4
December		4.2	1.1	5.4	4.3	2.8	5.6	5.8	6.1	5.0	4.7

MONTHLY AVERAGES OF (SCREEN) AIR TEMPERATURE REPRESENTATIVE OF KEW, SURREY. (°C)

Decade 1751 - 1760

Data Manley's London Region series.

	Average	1751	1752	1753	1754	1755	1756	1757	1758	1759	1760
January ...		4.4	4.2	3.1	4.2	3.1	5.0	0.8	3.3	6.1	2.2
February ...		1.9	3.6	4.2	3.3	1.7	5.0	4.7	4.2	6.1	4.2
March ...		6.9	6.4	6.9	4.2	4.7	6.7	5.8	5.8	7.2	6.9
April ...		7.8	7.8	8.3	7.5	10.8	7.5	8.3	8.1	9.7	10.6
May ...		10.3	11.1	12.8	12.8	10.6	10.0	11.7	14.4	13.1	12.8
June ...		16.1	15.8	15.6	14.4	16.7	14.7	14.7	15.6	15.8	16.1
July ...		16.1	16.7	16.1	15.6	16.1	16.7	19.7	15.3	19.7	18.1
August ...		15.6	16.7	16.7	16.9	15.8	15.8	16.7	17.2	18.1	17.2
September		13.3	14.7	13.9	14.8	14.2	14.7	14.2	12.8	14.7	16.4
October ...		9.4	11.4	10.0	11.4	9.7	10.0	8.6	8.9	11.1	9.4
November		4.7	6.9	5.0	6.1	5.3	4.4	7.8	6.1	5.0	6.1
December		3.3	4.4	4.7	3.9	4.2	3.3	3.6	3.9	2.5	5.8

Decade 1761 - 1770

Data Manley's London Region series.

	Average	1761	1762	1763	1764	1765	1766	1767	1768	1769	1770
January ...		3.9	5.0	-0.6	5.6	5.6	0.6	0.6	1.4	3.3	3.9
February ...		6.2	4.2	5.3	4.2	0.6	2.2	5.8	5.3	3.3	5.0
March ...		7.2	4.4	5.6	4.7	5.8	4.8	5.6	4.7	5.6	3.6
April ...		10.0	10.8	9.4	8.1	8.3	8.9	7.5	8.9	8.3	6.4
May ...		12.8	15.3	11.1	13.1	12.2	10.8	11.1	13.3	12.2	10.8
June ...		15.3	17.8	15.6	15.0	14.7	14.7	13.6	15.0	15.0	14.2
July ...		17.2	19.2	16.1	16.9	16.1	16.9	15.0	16.4	16.9	16.4
August ...		17.8	16.4	16.4	16.1	16.7	17.5	16.9	16.9	16.1	16.9
September		10.0	14.7	13.6	13.1	14.7	15.0	15.3	12.5	13.6	14.7
October ...		9.7	8.9	8.9	9.2	10.0	10.0	10.0	10.0	8.6	9.4
November		6.7	5.8	6.1	5.0	4.4	7.8	7.2	6.1	6.1	5.6
December		5.0	3.9	6.4	3.1	1.7	3.6	3.3	5.0	5.3	4.2

MONTHLY AVERAGES OF (SCREEN) AIR TEMPERATURE REPRESENTATIVE OF KEW, SURREY. (°C)

Decade 1771 - 1780

Data Manley's London Region series.

	Average	1771	1772	1773	1774	1775	1776	1777	1778	1779	1780
January ...		1.1	1.4	3.9	0.8	5.0	-1.9	1.9	2.5	2.8	-0.6
February ...		2.8	2.8	2.5	4.4	6.9	5.3	2.8	3.1	8.3	2.5
March ...		2.8	4.7	6.7	6.5	6.2	7.3	7.4	5.4	8.5	8.6
April ...		6.1	6.9	8.9	9.3	10.8	10.2	7.8	9.3	11.1	7.6
May ...		13.1	11.1	11.4	11.9	13.1	11.7	12.5	13.3	13.9	14.4
June ...		15.3	17.2	15.6	15.8	17.7	15.3	14.4	16.7	15.6	15.8
July ...		16.7	17.5	16.9	17.2	18.1	17.8	16.7	19.4	18.9	18.1
August ...		15.6	17.2	18.1	16.9	17.2	17.5	17.5	18.1	18.6	18.9
September		13.1	13.9	13.6	13.5	15.6	13.4	15.3	12.8	16.4	16.1
October ...		10.2	12.1	10.4	10.2	9.8	11.4	11.1	8.3	11.6	10.3
November		6.7	7.4	4.8	5.0	5.3	6.7	7.2	7.5	6.0	4.7
December		5.8	4.7	4.0	3.6	4.6	5.0	2.6	6.4	4.2	3.2

Decade 1781 - 1790

Data Manley's London Region series.

	Average	1781	1782	1783	1784	1785	1786	1787	1788	1789	1790
January ...		2.3	5.6	3.9	-0.3	4.0	3.2	3.2	3.7	1.6	4.9
February ...		5.6	2.2	4.2	1.4	0.3	3.3	6.1	4.4	5.3	6.1
March ...		6.8	4.7	3.9	3.3	1.7	2.5	7.5	4.3	1.9	7.1
April ...		10.0	6.1	10.8	6.6	8.4	8.9	7.9	10.3	8.1	6.1
May ...		11.9	9.7	11.7	14.4	12.8	12.5	11.7	14.7	13.1	12.8
June ...		17.5	16.1	15.8	14.4	17.2	17.2	15.0	16.4	14.4	15.8
July ...		18.9	16.9	20.3	16.1	17.2	16.1	16.2	16.8	15.9	16.0
August ...		18.3	15.3	17.8	15.1	15.2	15.8	16.7	16.4	17.1	16.9
September		15.0	14.7	15.1	15.3	14.7	12.2	15.0	15.3	13.6	13.1
October ...		10.3	8.1	10.6	7.8	9.2	8.1	10.8	10.3	9.2	11.6
November		6.9	2.8	6.9	5.8	5.6	3.6	4.7	5.3	4.6	6.4
December		5.6	3.4	2.3	-0.6	2.5	2.8	4.7	-1.4	6.1	4.6

MONTHLY AVERAGES OF (SCREEN) AIR TEMPERATURE REPRESENTATIVE OF KEW, SURREY. (°C)

Decade 1791 - 1800

Data Manley's London Region series.

	Average	1791	1792	1793	1794	1795	1796	1797	1798	1799	1800
January ...		5.0	3.1	2.6	1.4	-3.3	8.1	3.3	3.9	1.5	3.3
February ...		4.7	4.2	5.2	7.9	1.8	5.1	3.3	4.2	3.4	2.1
March ...		6.5	6.6	4.9	7.9	4.6	4.9	4.2	5.7	3.8	4.1
April ...		10.4	10.6	6.8	10.9	8.3	10.3	8.2	10.8	6.3	10.3
May ...		11.1	11.1	11.7	11.7	12.2	11.1	12.2	13.3	11.0	13.7
June ...		15.6	15.0	14.4	15.8	13.3	14.7	15.1	17.8	14.7	14.4
July ...		16.1	15.8	19.1	19.9	15.6	15.8	18.4	17.1	16.5	18.6
August ...		17.2	18.0	16.7	16.7	17.1	16.8	16.4	18.1	15.6	18.3
September		14.7	12.4	12.6	13.0	16.9	15.8	13.4	14.6	13.4	15.3
October ...		9.2	9.9	12.0	10.0	12.7	8.8	9.2	14.2	9.4	9.7
November		6.0	7.1	6.8	7.1	5.6	5.2	6.1	5.2	6.9	6.4
December		1.6	5.0	5.6	3.3	7.7	-0.3	5.7	1.6	1.2	4.3

Decade 1801 - 1810

Data Manley's London Region series.

	Average	1801	1802	1803	1804	1805	1806	1807	1808	1809	1810
January ...		5.2	1.6	1.8	6.7	2.1	5.3	3.2	3.3	2.7	2.1
February ...		4.4	4.9	3.3	3.4	4.4	6.1	5.3	3.3	7.2	4.6
March ...		7.5	6.2	6.6	6.0	6.5	5.7	3.5	3.8	6.7	6.1
April ...		8.8	10.0	9.8	7.6	8.3	7.2	8.4	6.9	6.0	9.3
May ...		12.7	11.4	11.3	14.8	11.1	13.1	13.3	14.7	14.2	10.0
June ...		16.1	15.0	14.4	17.2	13.6	15.8	15.0	15.3	14.7	15.6
July ...		16.8	14.7	18.6	16.7	16.1	16.8	18.7	19.6	16.2	17.2
August ...		18.2	18.9	17.2	16.1	17.2	17.2	18.3	17.7	16.1	15.8
September		15.7	14.8	11.9	15.6	15.3	14.3	12.2	13.4	13.9	15.0
October ...		11.0	11.4	10.0	11.4	9.2	11.1	12.2	7.9	10.0	10.8
November		5.2	5.6	5.8	6.9	4.4	8.4	3.7	6.7	4.3	6.1
December		2.8	4.0	5.3	1.9	4.2	8.1	3.1	2.2	4.9	4.1

MONTHLY AVERAGES OF (SCREEN) AIR TEMPERATURE REPRESENTATIVE OF Kew, SURREY. (°C)

Decade 1811 - 1820

Data 1811 Manley's London Series

1812 - 1820 Greenwich Observatory records adjusted (Fig.2.)

	Average	1811	1812	1813	1814	1815	1816	1817	1818	1819	1820
January ...		1.2	2.1	1.1	-2.9	0.4	2.6	4.3	4.6	4.4	-0.1
February ...		5.3	5.1	5.6	0	6.6	1.6	6.2	2.3	4.4	2.3
March ...		7.2	3.7	6.2	2.7	7.4	4.1	4.9	4.9	6.3	4.2
April ...		9.7	5.7	8.1	9.7	7.9	6.5	5.8	7.6	8.7	9.0
May ...		14.2	11.9	12.7	9.7	13.3	9.7	8.8	11.1	12.6	11.5
June ...		15.0	13.3	14.0	12.5	15.3	12.8	15.3	17.6	13.7	13.7
July ...		17.2	14.6	15.0	17.2	15.6	13.9	14.3	19.3	16.5	15.6
August ...		15.4	14.4	15.1	15.5	16.1	13.7	13.7	16.8	17.9	15.6
September		14.4	12.5	12.9	12.9	13.8	12.0	13.6	14.0	13.9	12.0
October ...		13.5	9.6	8.5	8.3	10.0	10.0	6.4	11.4	9.3	8.3
November		7.8	4.4	4.4	5.0	3.5	3.7	8.9	9.0	4.7	5.2
December		3.6	1.1	2.4	5.2	2.6	3.1	2.7	2.9	2.2	4.4

Decade 1821 - 1830

Data 1821 - Oct 1822 As 1812 - 1820

Nov 1822 - 1830 Various Greenwich area records with 0.2°C subtracted
to adjust to Observatory height asl then adjusted (Fig.

	Average	1821	1822	1823	1824	1825	1826	1827	1828	1829	1830
January ...		3.3	4.0	-0.4	3.4	3.8	-0.5	1.2	4.6	0	-0.3
February ...		1.8	6.2	3.6	4.3	3.6	5.8	0	4.6	3.5	1.8
March ...		6.0	8.0	4.6	5.0	3.8	5.3	6.0	6.0	3.7	7.3
April ...		10.1	8.2	7.0	7.2	9.2	9.0	8.7	8.4	6.6	8.9
May ...		10.0	13.2	12.8	10.3	11.7	10.3	11.9	12.2	12.0	12.3
June ...		12.3	17.5	13.3	13.4	14.3	17.0	14.1	15.6	14.9	13.1
July ...		14.5	16.6	14.2	17.1	17.8	18.3	17.1	16.4	15.3	16.8
August ...		16.9	16.4	15.6	16.0	16.6	18.5	14.7	15.3	14.7	14.3
September		15.4	13.2	12.8	14.5	15.5	14.0	13.8	14.2	11.4	11.9
October ...		10.0	11.4	8.7	10.0	10.5	11.2	10.9	9.4	8.4	10.0
November		8.9	8.3	6.5	7.9	5.3	4.6	5.9	6.9	4.0	6.7
December		6.8	1.1	4.8	5.7	4.8	5.8	6.9	6.9	0.4	1.7

MONTHLY AVERAGES OF (SCREEN) AIR TEMPERATURE REPRESENTATIVE OF KEW, SURREY. (°C)

Decade 1831 - 1840

Data ^{Nov} AS, 1822-1830

	Average	1831	1832	1833	1834	1835	1836	1837	1838	1839	1840
January ...		1.6	2.2	1.3	6.8	3.3	3.2	3.1	-1.9	2.8	3.5
February ...		5.0	2.8	5.8	4.1	5.2	2.8	4.3	0.8	4.1	3.1
March ...		6.6	4.7	3.1	6.6	5.1	6.5	2.3	5.1	4.2	3.1
April ...		9.0	7.9	7.5	7.4	7.9	6.6	4.3	5.9	5.8	8.8
May ...		10.8	10.8	14.5	13.0	11.3	10.3	9.0	10.6	9.9	12.2
June ...		14.8	14.9	15.1	15.6	15.3	15.6	15.0	14.3	14.8	14.9
July ...		17.1	15.9	15.6	17.6	17.4	16.7	16.4	15.6	15.7	14.7
August ...		17.1	15.9	13.8	16.5	16.8	15.6	16.0	15.4	14.8	16.6
September		13.7	13.2	11.6	14.2	13.5	11.6	12.5	12.2	12.7	11.4
October ...		12.5	10.4	10.1	9.6	8.7	8.2	9.9	9.6	9.2	7.3
November		5.8	6.5	6.1	6.5	6.2	5.4	4.7	4.9	7.5	6.0
December		5.3	5.5	6.9	4.6	1.6	4.2	5.0	3.5	4.1	0

Decade 1841 - 1850

Data Greenwich Observatory values adjusted to give estimates for Kew as per Fig. 2.

	Average	1841	1842	1843	1844	1845	1846	1847	1848	1849	1850
January ...		1.3	0.7	4.4	4.0	4.0	6.5	2.3	1.8	4.6	1.1
February ...		2.6	5.1	2.5	2.5	0.8	6.7	2.5	6.7	6.2	7.2
March ...		8.5	7.5	6.5	5.8	2.8	7.2	5.7	6.8	6.2	4.7
April ...		9.0	7.8	9.5	11.3	8.8	9.3	7.6	9.0	7.1	10.2
May ...		14.5	12.4	12.2	12.7	10.5	13.6	13.9	14.5	12.7	11.3
June ...		14.0	17.2	14.2	16.6	16.4	19.3	14.9	15.1	14.6	15.9
July ...		14.9	16.1	16.7	17.1	16.5	18.8	18.7	16.6	16.7	16.8
August ...		16.5	19.1	17.2	14.8	14.9	18.0	17.2	15.0	17.4	15.9
September		15.0	13.8	16.0	14.6	12.9	16.3	12.8	13.5	15.3	13.6
October ...		9.9	8.0	9.3	10.2	10.3	10.8	12.1	10.7	10.8	8.6
November		6.4	6.4	6.8	7.2	7.7	7.5	8.1	6.4	6.6	8.1
December		4.8	7.2	6.9	1.0	5.4	0.6	5.7	6.3	3.8	4.8

MONTHLY AVERAGES OF (SCREEN) AIR TEMPERATURE REPRESENTATIVE OF KEW, SURREY. (°C)

Decade 1851 - 1860

Data AS 1841-1850

	Average	1851	1852	1853	1854	1855	1856	1857	1858	1859	1860
January ...		6.2	5.8	5.9	4.2	2.0	4.3	2.9	3.3	4.8	4.5
February ...		4.9	5.4	1.4	4.7	-0.9	5.9	4.5	2.3	6.3	2.6
March ...		6.2	5.4	4.0	7.4	4.0	4.3	6.2	5.7	8.4	5.7
April ...		7.8	7.9	8.2	10.0	8.3	8.7	8.4	8.7	8.8	7.1
May ...		10.6	11.2	11.4	11.3	10.1	10.4	12.9	11.6	12.2	12.6
June ...		15.1	14.1	15.0	14.1	14.3	15.5	17.0	18.8	17.1	13.5
July ...		15.9	19.6	16.3	16.5	17.2	16.8	18.5	16.8	20.3	15.1
August ...		17.0	17.2	16.0	16.7	17.0	18.1	19.1	17.3	18.1	15.0
September		13.9	14.1	13.2	14.9	14.2	13.4	15.9	16.2	14.2	12.4
October ...		11.6	9.0	10.7	10.4	10.9	11.4	12.2	10.9	10.9	10.7
November		3.6	9.5	5.9	5.3	5.5	5.2	7.9	4.5	5.9	5.1
December		4.8	8.3	1.4	5.4	2.3	4.7	7.2	5.0	2.8	2.6

Decade 1861 - 1870

Data AS 1841-1850.

	Average	1861	1862	1863	1864	1865	1866	1867	1868	1869	1870
January ...		1.4	4.0	5.5	2.7	2.6	5.8	1.3	3.0	5.3	3.6
February ...		5.9	5.4	6.0	2.6	3.0	5.0	7.3	6.3	7.6	2.8
March ...		7.2	6.8	7.1	5.7	3.2	5.4	3.8	7.2	3.7	4.8
April ...		7.5	9.7	10.3	9.4	12.0	9.6	10.2	9.6	10.8	10.0
May ...		11.7	13.7	11.7	12.5	13.7	10.5	12.4	14.3	11.0	12.3
June ...		15.9	14.3	15.3	14.9	16.2	16.6	15.1	17.1	13.5	16.7
July ...		16.8	15.7	16.3	17.0	17.9	16.6	15.8	20.0	18.3	19.0
August ...		17.8	15.9	17.2	15.6	15.9	15.8	17.0	18.0	16.5	16.8
September		14.3	14.6	12.4	14.3	18.0	14.1	14.8	16.0	15.5	13.5
October ...		13.1	11.5	11.2	10.6	10.9	10.9	9.7	9.1	9.7	10.2
November		4.9	4.6	7.6	5.7	7.1	6.8	5.4	5.4	6.3	5.4
December		5.0	6.3	6.0	3.5	5.9	5.9	3.0	7.7	3.3	1.0