

comparable with the means derived from an hourly or bi-hourly series.

This has been done in the case of the temperatures at Halifax in 1870, when the observations were taken at equal intervals of four hours, commencing at 4 a.m. The correc-

tions (which are very small) were applied to the monthly means for 1870, and the corrected means were then combined with the monthly means for the years 1867, 1868, and 1869, as shown in the following table:—

MONTHLY and Annual Means of Temperature at Halifax derived from observations in the four years, 1867—70.

Jan.	Feb.	March	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
22 24	23 34	27 46	38 10	47 72	58 70	64 42	64 16	57 76	46 54	36 75	26 61	42 82

An interpolating formula being constructed from the foregoing monthly means, on the erroneous assumption that they were the mean temperatures proper to the *middle days* of the several months, the co-efficients so calculated were then corrected by aid of certain factors, whereby the following formula was obtained, in which T_n denotes the daily mean temperature at time (n), reckoned from Jan. 15, the unit of time being the twelfth part of the year.

$$T_n = 42.82 + 21.82 \sin(n \times 30^\circ + 256.48) + 0.77 \sin(2n \times 30^\circ + 55) + 0.18 \sin(3n \times 30^\circ + 252) + 0.25 \sin(4n + 30) + 0.89 \sin(5n \times 30^\circ + 5) + 0.14 \sin(6n \times 30^\circ + 270)$$

From the preceding equation which, by giving suitable values to (n), expresses the *normal* daily mean temperature at Halifax on every day in the year, the mean temperatures of the warmest and coldest days are

found, together with the times of their occurrence, and the days on which the daily mean passes through its mean annual value.

Warmest day, August 28. Mean temperature, 64°·90.

Coldest day, January 13, 14. Mean temperature, 21°·95.

In Spring, the mean of the day is below the mean of the year on April 29, and exceeds it on April 30.

In Autumn, the mean of the day passes through its annual value between October 25 and October 26.

In Table IV are shown the errors in the approximate monthly means, when the daily mean is considered as the simple arithmetic means of the temperatures observed at 7 a.m., 2 p.m. and 9 p.m., and of those observed at 6 a.m., 2 p.m. and 10 p.m.; and also when the daily mean is taken as equal to the *fourth* part of the sum of the temperatures at 7 a.m., 2 p.m., and *twice* the temperature at 9 p.m.

TABLE IV.

Combination.	Jan.	Feb.	March.	April.	May.	June.
Arithmetic Means from 7, 2, 9	+0 41	+0 56	+0 49	+0 78	+0 77	+0 75
7, 2, 9, 9	+0 25	+0 27	-0 08	-0 02	-0 18	-0 30
6, 2, 10	+0 32	+0 26	-0 19	-0 02	-0 32	-0 41

Combination.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Arithmetic Means from 7, 2, 9	+0 75	+0 54	+0 60	+0 54	+0 22	+0 40	+0 56
7, 2, 9, 9	-0 29	-0 48	-0 25	0 00	-0 01	+0 96	-0 09
6, 2, 10	-0 33	-0 44	-0 19	-0 09	+0 05	+0 32	-0 09

It is seen that the arithmetic mean of observations at 7 a.m., 2 p.m. and 9 p.m., gives a result too high by 0° 56 on the average of all months, and nearly eight-tenths too high from April to July.

The arithmetic mean of observations at 6 a.m., 2 p.m. and 10 p.m., is in no case more than half a degree in error; it is too high from November to February, and too low during the rest of the year; the average error irrespective of sign being a quarter of a degree, and the error in the annual mean less than one-tenth in defect.

When the observation at 9 p.m. is reckoned *twice*, the greatest error which occurs

in any month is slightly greater, but the average error of the twelve monthly means, the signs of the errors being disregarded, is 0°·18, and the error in the annual mean the same as in the preceding case.

These results accord in their general character with the experience of other places at which the observations have been sufficiently frequent for determining the diurnal variations.

As regards suitability for yielding daily means, 7, 2, 9, 9, and 6, 2, 10, may be regarded as of nearly equal merit; and as 7, 2, 9, are in many respects more convenient to observers than the other combination, and less