

In column 31 are given the number of days of rain in each month ; the greatest number was 14, in February. The total number in the year was 57. At Jerusalem rain fell on 72 days.

In column 32 the monthly fall of rain is given. The heaviest fall of rain on one day in the months from January to April was 2·72 inches, on January 5th ; and the next in order were 2·30 inches on January 2nd, and 2 inches on March 22nd. No rain fell from May 25th till October 29th, making a period of 156 consecutive days without rain. The fall of rain on both December 3rd and 12th was 1·00 inch. The heaviest monthly fall in the year was 11·21 inches, in January, and the next in order, 6·74 inches, in December. The total fall for the year was 27·72 inches. At Jerusalem the total fall for the year was 41·62 inches.

RESULTS OF METEOROLOGICAL OBSERVATIONS TAKEN AT JERUSALEM IN THE YEAR 1897.

By JAMES GLAISHER, F.R.S.

THE numbers in column 1 of this table show the highest reading of the barometer in each month ; of these the highest, as usual, are in the winter, and the lowest in the summer months ; the maximum for the year was 27·735 inches, in November, and the next in order, 27·680 inches, in January. The highest reading in the preceding 36 years, viz., 1861 to 1896 inclusive, was 27·816 inches, in December, 1879.

In column 2 the lowest reading of the barometer in each month is shown ; the minimum for the year was 26·980 inches, in March, and the next in order, 27·119 inches, in January. The lowest reading in the preceding 36 years was 26·970 inches, in March, 1896.

The numbers in the 3rd column show the extreme range of readings in each month ; the smallest was 0·159 inch, in October, and the next in order, 0·178 inch, in July ; the largest was 0·641 inch, in March, and the next in order, 0·561 inch, in January. The mean monthly range for the year was 0·347 inch. The mean for the preceding 36 years was 0·310 inch.

The range of barometer readings in the year was 0·755 inch. The largest range in the preceding 36 years was 0·742 inch, in 1876 ; and the smallest, 0·491 inch, in 1883.

The numbers in the 4th column show the mean monthly pressure of the atmosphere ; the highest was 27·505 inches, in November, and the next in order, 27·475 inches, in December ; the lowest was 27·262 inches, in July, and the next in order, 27·289 inches, in August. The mean yearly pressure was 27·394 inches. The highest mean yearly pressure in the preceding 36 years was 27·442 inches, in 1863, and the lowest, 27·357 inches, in 1894. The mean for the 36 years was 27·390 inches.

MONTHLY METEOROLOGICAL TABLE

Deduced from observations taken at Jerusalem, by JOSEPH GAMEL, in a garden, well within the city, about 2,500 feet above the level of the Mediterranean Sea, open on all sides. Latitude, 31° 46' 40" N., Longitude, 35° 13' 30" E.

Table with columns for Months, Pressure of atmosphere, Temperature of the air at 9 a.m., Mean reading at 9 a.m., Vapour at 9 a.m., Wind (Relative proportions of), Rain, and Mean amount of cloud. Rows include months from 1897 and a Means row.

The temperature of the air reached 90° on June 7th, and there was one other day in June when the temperature reached or exceeded 90° . In the preceding 15 years the earliest day in the year the temperature was 90° was March 25th in the year 1888; in July it reached or exceeded 90° on 1 day; in September, on 12 days; and in October, on 1 day, the 7th, this being the last day in the year the temperature was 90° . In the preceding 15 years the latest day in the year this temperature reached 90° was October 23rd, 1887. The temperature reached or exceeded 90° on 16 days during the year. In the year 1892 the number of days of this high temperature was 23, and in 1887 was 73; the average of the 15 years was 39. The highest temperature in the year was 99° , on September 23rd; the highest in the preceding 15 years, viz., 1882 to 1896, was 108° , in June, 1894.

The temperature of the air was as low or lower than 40° in January on 8 nights; in February on 12 nights; in March on 4 nights; in November on 6 nights; and in December on 6 nights. Thus the temperature was as low or lower than 40° on 36 nights during the year. In the year 1892 the number of nights of this low temperature was 19, and in 1894 was 113; the average of the 15 years was 56. The lowest temperature in the year was 25° on December 31st; the lowest in the preceding 15 years, viz., 1882 to 1896, was $26^{\circ}\cdot 5$, in January, 1890.

The highest temperature of the air in each month is shown in column 5. In December it was $59^{\circ}\cdot 5$, being the lowest in the year, and $7^{\circ}\cdot 7$ below the mean of the 15 high day temperatures in December. The high day temperature was also below its average in March, April, May, July, August, October, and November, and above in the remaining months. The mean for the year was $80^{\circ}\cdot 3$, being $3^{\circ}\cdot 7$ below the average of 15 years.

The lowest temperature of the air in each month is shown in column 6. In December it was 25° , being the lowest in the year, and $8^{\circ}\cdot 6$ below the average. The low night temperature was also below its average in February, May, June, October, and November, and above in the remaining months. The mean for the year was $44^{\circ}\cdot 5$, being $0^{\circ}\cdot 1$ above the average of 15 years.

The range of temperature in each month is shown in column 7; the numbers vary from 26° in January to $47^{\circ}\cdot 8$ in June. The mean range for the year was $35^{\circ}\cdot 8$, being $3^{\circ}\cdot 8$ less than the average of 15 years.

The range of temperature in the year was 74° . The largest in the preceding 15 years was 81° , in 1894; and the smallest, $63^{\circ}\cdot 5$, in the year 1885.

The mean of all the high day temperatures in each month is shown in column 8. The lowest was 51° , in December, being $5^{\circ}\cdot 7$ lower than the average. The highest was $88^{\circ}\cdot 6$, in September, being $3^{\circ}\cdot 3$ higher than the average. The mean for the year was $69^{\circ}\cdot 4$, being $2^{\circ}\cdot 8$ below the average of 15 years.

The mean of all the low night temperatures in each month is shown in column 9. The lowest was $41^{\circ}\cdot 1$, in February, being $1^{\circ}\cdot 4$ higher than

the average; the highest was $67^{\circ}3$, in September, being $6^{\circ}5$ higher than the average. The mean for the year was 53° , or $0^{\circ}6$ above the average of 15 years.

In column 10 the mean daily range of temperature in each month is shown; the smallest was $9^{\circ}4$, in December; and the next in order, $10^{\circ}3$, in January; the greatest was $23^{\circ}2$, in June, and the next in order, $21^{\circ}3$, in September. The mean for the year was $16^{\circ}4$, being $3^{\circ}4$ less than the average. The smallest ranges in the preceding 15 years were $9^{\circ}3$, in January, 1883, and $9^{\circ}7$, in December, 1890; the greatest were $33^{\circ}8$, in August, 1886; and $30^{\circ}1$, in August, 1887. The smallest mean for the year was $17^{\circ}2$, in 1896; and the greatest, $24^{\circ}3$, in 1886.

The mean temperature of the air, as found from the maximum and minimum temperatures only, is shown in each month in column 11; the lowest was $46^{\circ}3$, in December; and the next in order, $47^{\circ}0$, in February, and $47^{\circ}1$ in January; the highest was $77^{\circ}9$, in September; and the next in order, $76^{\circ}8$, in July, and 73° in August. The mean for the year was $61^{\circ}3$, being 1° below the average of 15 years. The lowest mean temperatures in the preceding 15 years were $39^{\circ}8$, in January, 1890; and 42° , in December, 1886; the highest were $81^{\circ}2$, in August, 1890, and $81^{\circ}1$, in July, 1888. The highest mean for the year was $63^{\circ}7$, in 1885, and the lowest, 60° , in 1894.

December was the coldest month of the year, and was below its average both by day and night.

The numbers in column 12 are the mean readings of a dry-bulb thermometer. If those in column 12 be compared with those in column 11, it will be seen that those in column 12 are a little higher in every month, the difference of the means for the year being $2^{\circ}0$; the mean difference between the mean temperature of the air and that at 9 a.m. for the 15 years was $3^{\circ}3$.

For a few days in the winter months the dry- and wet-bulb thermometers read alike, or nearly so, but in the months from April to October the difference between the readings often exceeded 15° , and was as large as 27° on June 7th.

In column 13 the mean monthly readings of the wet-bulb are shown; the smallest differences between these and those of the dry-bulb were $3^{\circ}2$, in January, and $3^{\circ}6$, in February; the largest were $14^{\circ}1$, in July, and $12^{\circ}9$, in September. The mean for the year was $55^{\circ}4$, and that of the dry-bulb $63^{\circ}4$; the mean difference was 8° .

The numbers in column 14 are the mean temperature of the dew-point, or that temperature at which the air would be saturated by the quantity of vapour mixed with it; the smallest difference between these numbers and those in column 12, were $6^{\circ}7$, in January, and $7^{\circ}6$, in February; and the largest were $23^{\circ}8$, in July and $21^{\circ}7$, in September. The mean temperature of the dew-point for the year was 49° ; the mean for the 15 years was $50^{\circ}2$.

The numbers in column 15 show the elastic force of vapour, or the length of a column of mercury in inches corresponding to the pressure

of vapour; the smallest was 0.213 inch, in December; and the largest, 0.505 inch, in August. The mean for the year was 0.359 inch; the average of the 15 years was 0.376 inch.

In column 16 the weight in grains of the water present in a cubic foot of air is shown; it was as small as $2\frac{1}{2}$ grains in December, and as large as $5\frac{1}{2}$ grains in August. The mean for the year was 4 grains; the average of the 15 years was 4.1 grains.

In column 17 the additional quantity of water required to saturate a cubic foot of air is shown; it was as small as 0.8 grain in January, and as large as 5.9 grains in July. The mean for the year was 3.0 grains, the average of the 15 years was 3.3 grains.

The numbers in column 18 show the degree of humidity, saturation being represented by 100; the largest numbers appear in January, February, March, November, and December, and the smallest from April to October; the smallest of all was 44 in July. The mean for the year was 62; that of the 15 years was 59.

The numbers in column 19 show the weight in grains of a cubic foot of air, under its mean atmospheric pressure, temperature, and humidity. The largest number was 502 grains in December, and the smallest, 468 grains in both July and September. The mean for the year was 485 grains; that of the 15 years was 482 grains.

The most prevalent winds in January were S.W. and N.W., and the least prevalent wind was S.; the most prevalent in February were W., S.W., and N.W., and the least was S.; the most prevalent in March were N.W., S.W., and W., and the least were N. and S.E.; the most prevalent in April was N.W., and the least was S.; the most prevalent in May were N.W. and W., and the least was N.E.; the most prevalent in June, July, and August were N.W. and W., and the least were N.E., E., S.E., and S.; the most prevalent in September was N.W., and the least was S.; the most prevalent in October was N.W., and the least were N.E., S.E., and S.; the most prevalent in November were N.E., W., and N.W., and the least were S.E. and S.; the most prevalent in December were N.W. and S.W., and the least were S.E. and S. The most prevalent wind in the year was N.W., which occurred on 147 times, of which 20 were in July, 18 in October, and 17 in June, and the least prevalent wind was S., which occurred on only 4 times during the year, viz., once in March and 3 times in May.

The total number of times of each wind are shown in the last line of columns 20 to 27; those winds less in number than the average of the preceding 15 years were—

N.	by	13
N.E.	„	15
E.	„	4
S.E.	„	15
S.	„	5
S.W.	„	1

and those winds greater in number than the average of 15 years were—

W. by 21
N.W. „ 32

The numbers in column 28 show the mean amount of cloud in each month; the month with the smallest amount is July, and the largest January. Of the cumulus or fine weather cloud there were 5 instances; of the nimbus or rain cloud there were 33 instances, of which 8 were in both January and February; of the cirrus there were 16 instances; of the stratus 4 instances; of the cumulus stratus 92 instances, of which 17 were in May, 14 in December, and 13 in April; of the cirro cumulus 56 instances; of the cirro stratus 11 instances; and 148 instances of cloudless skies, of which 26 were in July, 24 in June, and 20 in September, and 4 only in January.

The largest fall of rain for the month in the year was 14.46 inches, in January, of which 2.37 inches fell on the 7th, 2.20 inches on the 6th, and 1.92 inch on the 22nd. The next largest fall for the month was 8.18 inches, in March, of which 2.25 inches fell on the 23rd, and 2.02 inches on the 13th. No rain fell from May 26th till October 20th, making a period of 146 consecutive days without rain. The total fall of rain for the year was 41.62 inches, being 15.80 inches above the average of 36 years, viz., 1861 to 1896. The number of days on which rain fell was 72, being 16 more than the average.