

(To face p. 61.)

### MONTHLY METEOROLOGICAL TABLE

Deduced from observations taken at Tiberias, by Mr. LAWIN, at about 652 feet below the level of the Mediterranean, and 30 feet above the level of the Sea of Galilee, open on all sides.  
Latitude, 32° 48' N.; Longitude, 35° 34' E.

Months.	Pressure of atmosphere in month—corrected to 32° Fahrenheit.							Temperature of the air in month.							8 a.m.							4 p.m.							Rain.			
	Highest.	Lowest.	Range.	Mean at 8 a.m.	Mean at 4 p.m.	Lower reading at 4 p.m. than at 8 a.m.	Mean at 8 a.m. and 4 p.m.	Highest.	Lowest.	Range.	Mean of all highest.	Mean of all lowest.	Mean daily range.	Mean.	Mean reading.			Vapour.			Degree of humidity.	Weight of a cubic foot of air.	Mean reading.			Vapour.			Degree of humidity.	Weight of a cubic foot of air.	Number of days on which rain fell.	Amount collected.
															Dry bulb.	Wet bulb.	Dew point.	Elastic force of vapour.	Weight in a cubic foot of air.	Additional weight required for saturation.			Dry bulb.	Wet bulb.	Dew point.	Elastic force of vapour.	Weight in a cubic foot of air.	Additional weight required for saturation.				
1896.	in.	in.	in.	in.	in.	in.	in.	°	°	°	°	°	°	°	°	°	°	in.	grs.	grs.	°	grs.	°	°	°	in.	grs.	grs.	°	grs.		in.
January ...	31·023	30·333	0·690	30·723	30·673	0·050	30·698	66·0	34·0	34·0	61·6	45·8	15·8	53·7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11	2·78	
February ...	31·109	30·427	0·682	30·820	30·761	0·059	30·791	76·0	40·0	36·0	62·2	47·7	14·5	55·0	53·7	51·3	49·0	·346	3·9	0·7	84	555	58·4	54·0	50·0	·362	4·1	1·4	74	549	12	4·08
March ...	30·820	30·228	0·592	30·623	30·551	0·072	30·587	75·0	41·0	34·0	68·6	47·9	20·7	58·3	59·2	56·9	54·8	·431	4·8	0·8	86	546	64·6	58·7	53·8	·415	4·5	2·1	68	539	9	2·08
April ...	30·864	30·368	0·496	30·662	30·588	0·074	30·625	95·0	43·0	52·0	77·8	54·5	23·3	66·1	65·8	61·1	57·7	·477	5·3	1·6	77	539	72·3	64·4	58·4	·492	5·4	3·2	61	531	5	1·45
May ...	30·735	30·263	0·472	30·586	30·503	0·083	30·544	99·0	54·0	45·0	87·3	60·7	26·6	74·0	73·2	68·0	64·2	·601	6·6	2·3	73	529	83·0	70·2	61·6	·550	5·9	6·1	49	518	0	0·00
June ...	30·661	30·235	0·426	30·520	30·422	0·098	30·471	111·0	59·0	52·0	95·2	65·2	30·0	80·2	81·2	74·7	70·3	·741	7·9	3·5	70	520	90·2	71·7	60·1	·520	5·5	9·1	37	511	0	0·00
July ...	30·546	30·245	0·301	30·445	30·358	0·087	30·401	104·0	67·0	37·0	99·1	70·7	28·4	84·9	85·1	79·1	75·2	·876	9·2	3·6	72	514	93·1	80·2	72·4	·792	8·3	8·0	51	505	0	0·00
August ...	30·541	30·205	0·336	30·423	30·331	0·092	30·377	112·0	69·0	43·0	102·0	74·4	27·6	88·2	88·3	81·2	76·7	·918	9·7	4·5	69	510	95·7	82·4	74·5	·850	8·9	8·7	51	502	0	0·00
September ...	30·646	30·310	0·336	30·534	30·446	0·088	30·480	105·0	64·0	41·0	95·4	70·3	25·1	82·8	81·5	76·3	72·8	·807	8·6	2·9	76	519	90·1	76·2	67·5	·671	7·1	7·7	47	510	0	0·00
October ...	30·844	30·433	0·411	30·683	30·576	0·107	30·629	102·0	57·0	45·0	92·7	66·3	26·4	79·5	80·0	68·0	59·8	·513	5·5	5·5	50	525	86·2	70·1	59·6	·511	5·4	7·9	43	517	0	0·00
November ...	30·931	30·483	0·448	30·771	30·679	0·092	30·725	89·0	50·0	39·0	77·1	56·1	21·0	66·6	68·4	62·1	57·2	·463	5·2	2·4	66	538	72·2	63·9	57·7	·478	5·2	3·8	60	533	9	4·64
December ...	30·988	30·478	0·510	30·807	30·735	0·071	30·772	82·0	44·0	38·0	73·6	53·3	20·3	63·4	63·7	58·1	53·4	·409	4·6	2·0	70	544	64·3	61·3	58·8	·498	5·5	1·2	82	542	6	3·77
Means ...	30·809	30·334	0·475	30·633	30·552	0·081	30·592	93·2	51·8	41·3	82·7	59·4	23·3	71·1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	sum. 52	sum. 13·75	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32

## WHAT WAS THE DATE OF THE YEAR OF THE CRUCIFIXION ?

By EDWARD PEARSON.

HAS this question ever been considered in the light of the following statements :—

1. That Jordan overfloweth all its banks all the time of harvest.
2. Then when the Israelites crossed on the 10th day of the first month, the overflow was in full force.
3. That the Passover is held on the 14th day of the first month.
4. That Jesus reached Bethany six days before the Passover, *i.e.*, on the 8th day of the first month.
5. That apparently the night before, he lodged at Zacchaeus' house.
6. That apparently he crossed Jordan and entered Jericho the day before that.
7. From this we may gather that in that year, on the 6th day of the first month, Jordan was *not* overflowing all his banks.
8. The question then arises, was it a very early Passover in the year of the Crucifixion ?
9. We are told that the eve of the Crucifixion the night was cold.
10. It should not be difficult to ascertain how the new moons fell about A.D. 33.

## RESULTS OF METEOROLOGICAL OBSERVATIONS TAKEN AT TIBERIAS IN THE YEAR 1896.

By JAMES GLAISHER, F.R.S.

THE numbers in column 1 of this table show the highest reading of the barometer in each month; the highest appear in the winter, and the lowest in the summer months; the maximum for the year was 31·109 inches, in February, and the next in order 31·023 inches, in January.

In column 2 the lowest reading in each month is shown; the minimum for the year was 30·205 inches, in August; and the next in order 30·228 inches, in March.

The range of readings in the year was 0·904 inch. The range in the morning observations was 0·876 inch, being 0·175 inch greater than the range at Jerusalem.

The numbers in the 3rd column show the extreme range of readings in each month; the smallest was 0·301 inch, in July, and the next in order 0·336 inch, in both August and September; the largest was 0·690 inch, in January, and the next in order 0·682 inch, in February.

The numbers in columns 4 and 5 show the mean monthly reading of the barometer at 8 a.m. and 4 p.m.; and those in column 6 the lower reading at 4 p.m. than at 8 a.m.; the smallest difference between these two readings was 0.050 inch, in January, and the next in order 0.059 inch, in February; the largest was 0.107 inch, in October; and the next in order 0.098 inch, in June. In England in January the readings at 8 a.m. and 4 p.m. are practically the same; in all other months the reading at 4 p.m. is lower than at 8 a.m.; the greatest difference is 0.025 inch, in June. The mean for the year at Tiberias was 0.081 inch, being about four times greater than in England.

The numbers in the 7th column show the mean monthly pressure of the atmosphere; the highest was 30.791 inches, in February, and the next in order 30.772 inches, in December; the lowest was 30.377 inches, in August, and the next in order 30.401 inches, in July. The mean for the year was 30.592 inches.

The highest temperature of the air in each month is shown in column 8. The first day in the year the temperature reached 90° was on April 3rd, and there were 3 other days in April when the temperature reached or exceeded 90°; in May, 10 days; in June, 23 days; in July and August it reached or exceeded 90° on every day; in September, 28 days; and in October, 22 days; thus the temperature reached or exceeded 90° on 149 days during the year. At Jerusalem the temperature did not reach 90° till June 4th, and there were only 29 days in the year on which the temperature was as high as 90°. At Tiberias the temperature was 100° on June 11th, and reached or exceeded 100° on 4 other days in this month; in July, 14 days; in August, 26 days, and in September 1 day; thus on 46 days in the year the temperature reached or exceeded 100°. At Jerusalem there were only 3 days of this temperature, viz., August 13th, 14th, and 15th. The highest temperature in the year at Tiberias was 112°, on August 13th; at Jerusalem it was 103° on August 14th.

The lowest temperature of the air in each month is shown in column 9. The lowest in the year was 34°, on January 31st. The next lowest was 37°, on January 30th; and from February 1st to the end of the year there was no temperature so low as 37°; the nearest approach being 40°, on both February 4th and 19th; thus the temperature was as low or lower than 40° on only 4 nights during the year. At Jerusalem the lowest in the year was 28°, on January 31st; and there were 61 nights in the year when the temperature was as low or lower than 40°.

The yearly range of temperature was 78°; at Jerusalem it was 75°.

The range of temperature in each month is shown in column 10; and these numbers vary from 34° in both January and March, to 52° in both April and June. At Jerusalem the range varied from 29° in January, to 49° in April.

In column 11 the mean of all the high day temperatures in each month is shown. The lowest was 61.6 in January, being 11.8 higher than that at Jerusalem; the next in order were 62.2 in February, and 68.6 in

March; the highest was  $102^{\circ}$  in August; and the next in order  $99^{\circ}\cdot 1$  in July, and  $95^{\circ}\cdot 4$  in September. At Jerusalem the lowest were  $49^{\circ}\cdot 8$  in January,  $52^{\circ}$  in February, and  $58^{\circ}$  in March; the highest were  $91^{\circ}\cdot 3$  in August,  $86^{\circ}\cdot 7$  in July, and  $84^{\circ}\cdot 5$  in September. The mean for the year at Tiberias was  $82^{\circ}\cdot 7$ ; at Jerusalem it was  $71^{\circ}\cdot 5$ .

In column 12 the mean of all the low night temperatures in each month is shown. The lowest was  $45^{\circ}\cdot 8$  in January, the next in order were  $47^{\circ}\cdot 7$  in February, and  $47^{\circ}\cdot 9$  in March; the highest was  $74^{\circ}\cdot 4$  in August, and the next in order were  $70^{\circ}\cdot 7$  in July, and  $70^{\circ}\cdot 3$  in September. At Jerusalem the lowest were  $37^{\circ}\cdot 9$  in January,  $38^{\circ}\cdot 6$  in February, and  $42^{\circ}\cdot 2$  in March; the highest were  $69^{\circ}\cdot 5$  in August,  $65^{\circ}\cdot 4$  in July, and  $63^{\circ}\cdot 5$  in September. At Tiberias the yearly value was  $59^{\circ}\cdot 4$ ; at Jerusalem it was  $54^{\circ}\cdot 3$ .

In column 13 the mean daily range of temperature is shown in each month; the smallest was  $14^{\circ}\cdot 5$  in February, the next in order were  $15^{\circ}\cdot 8$  in January, and  $20^{\circ}\cdot 3$  in December; the greatest was  $30^{\circ}$  in June, and the next in order were  $28^{\circ}\cdot 4$  in July, and  $27^{\circ}\cdot 6$  in August. At Jerusalem the smallest were  $11^{\circ}\cdot 6$  in December,  $11^{\circ}\cdot 9$  in January, and  $13^{\circ}\cdot 4$  in February; the greatest were  $21^{\circ}\cdot 8$  in August,  $21^{\circ}\cdot 3$  in July, and  $21^{\circ}\cdot 1$  in June. At Tiberias the mean daily range for the year was  $23^{\circ}\cdot 3$ ; at Jerusalem it was  $17^{\circ}\cdot 2$ .

The mean temperature of the air, as found from the maximum and minimum temperatures only, is shown in each month in column 14. The lowest was  $53^{\circ}\cdot 7$  in January, and the next in order were  $55^{\circ}$  in February, and  $58^{\circ}\cdot 3$  in March; the highest was  $88^{\circ}\cdot 2$  in August, and the next in order were  $84^{\circ}\cdot 9$  in July, and  $82^{\circ}\cdot 8$  in September. At Jerusalem the lowest temperatures were  $43^{\circ}\cdot 8$  in January,  $45^{\circ}\cdot 3$  in February, and  $50^{\circ}\cdot 1$  in March; the highest were  $80^{\circ}\cdot 4$  in August,  $76^{\circ}$  in July, and  $74^{\circ}$  in September. At both Tiberias and Jerusalem the mean temperature increased month by month to the maximum in August, then decreased month by month to the end of the year. At Tiberias the yearly value was  $71^{\circ}\cdot 1$ ; at Jerusalem it was  $62^{\circ}\cdot 9$ .

The numbers<sup>1</sup> in the 15th and 16th columns are the mean readings of a dry and wet-bulb thermometer, taken daily at 8 a.m. If those in column 15 be compared with those in column 14, it will be seen that those in column 15 were a little higher in March, June, July, August, October, November, and December, and a little lower in the remaining months. In the year 1890 the mean of the dry-bulb was  $1^{\circ}\cdot 1$  lower than that of the maximum and minimum thermometers; in 1891 it was  $1^{\circ}\cdot 5$  lower; in 1892,  $0^{\circ}\cdot 4$  higher; in 1893,  $0^{\circ}\cdot 7$  lower; in 1894,  $0^{\circ}\cdot 5$  lower; and in 1895  $0^{\circ}\cdot 1$  lower; the mean of the six differences is  $0^{\circ}\cdot 6$ ; and therefore

<sup>1</sup> In a letter from Dr. Torrance, he states that on December 12th, 1895, during a storm, the thermometer house was overturned and the dry bulb and maximum thermometers were broken. During 1896, instead of the dry bulb thermometer, the bulb of the maximum thermometer was used; consequently all the hygrometrical deductions of 1896 are approximate only.

the mean temperature of the year may be approximately determined by a single reading of the thermometers taken daily at 8 a.m.

The numbers in the 17th column are the 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 15 was  $4^{\circ}4$  in March, and the largest  $11^{\circ}6$  in September.

The numbers in column 18 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  $0\cdot346$  inch in February, and the largest  $0\cdot918$  inch in August.

In column 19 the weight in grains of the water in a cubic foot of air is shown; it was as small as  $3\cdot9$  grains in February, and as large as  $9\cdot7$  grains in August.

In column 20 the additional quantity of water required to saturate a cubic foot of air is shown; it was as small as  $0\cdot7$  grain in February, and as large as  $4\cdot5$  grains in August.

The numbers in column 21 show the degree of humidity of the air, saturation being represented by 100; the largest number is 86 in March, and the smallest 50 in October.

The numbers in column 22 show the weight in grains of a cubic foot of air, under the mean atmospheric pressure, temperature, and humidity of the air; the largest number was in February, decreasing to the smallest in August, then increasing to the end of the year.

In columns 23 and 24 are the mean readings of a dry and wet-bulb thermometer taken daily at 4 p.m. By comparing the numbers in column 15 with those in column 23, the increase of temperature from 8 a.m. to 4 p.m. is shown; in December the increase was only  $0^{\circ}6$ , and in May it was as much as  $9^{\circ}8$ .

In column 25 the temperature of the dew point at 4 p.m. is shown. By comparing these numbers with those in column 17, it will be seen that the temperature of the dew point in the months of February, April, November, and December was higher than at 8 a.m., and lower than at 8 a.m. in the remaining months. The numbers in this column are smaller than those in column 23, by  $8^{\circ}4$  in February, increasing to  $30^{\circ}1$  in June, decreasing to  $5^{\circ}5$  in December; these differences between the temperature of the air and that of the dew point are very much larger than those at 8 a.m., being in several months more than twice as large.

On several days during the months of May, June, July, September, and October, at 4 p.m., the reading of the dry-bulb thermometer exceeded that of the wet by  $20^{\circ}$  or more, and the temperature of the dew point was from  $32^{\circ}3$  to  $39^{\circ}7$  lower than the temperature of the air, as shown by the following table:—

Month and Day.	Reading of		Temperature of the Dew Point.	Temperature of the Dew Point below Dry.
	Dry.	Wet.		
	°	°	°	°
May 7 .. .	90·0	69·0	55·8	34·2
8 .. ..	95·0	73·0	59·8	35·2
30 .. ..	98·0	72·0	59·2	33·8
June 12 .. ..	106·0	81·0	67·5	38·5
13 .. ..	106·0	83·0	70·6	35·4
30 .. ..	106·0	82·0	69·0	37·0
July 25 .. ..	101·0	80·0	68·0	33·0
Sept. 19 .. ..	92·0	72·0	59·7	32·3
Oct. 10 .. ..	96·0	71·0	56·3	39·7
17 .. ..	83·0	62·0	48·0	35·0
19 .. ..	87·0	66·0	52·5	34·5
24 .. ..	87·0	66·6	52·5	34·5
27 .. ..	87·0	66·0	52·5	34·5

In column 26 the elastic force of vapour is shown, and by comparing the values with those in the same month at 8 a.m. we find that it was smaller at 4 p.m. in March, and in the months from May to October, and larger than at 8 a.m. in the remaining months.

In column 27 the amount of water in a cubic foot of air at 4 p.m. is shown, and the amount was less than at 8 a.m. in March, and in the months from June to October, of the same value in November, and larger than at 8 a.m. in the other months.

In column 28 the amount of water required to saturate a cubic foot of air was as large as 9·1 grains in June, 8·7 grains in August, and 8 grains in July; and smaller than 2 grains in both February and December.

In column 29 the degree of humidity is shown; the driest months are from May to October, the value for these months varying from 37 in June, to 51 in both July and August.

In column 30 the weight of a cubic foot of air is shown; the smallest was 502 grains, in August, and the largest 549 grains, in February.

In column 31 are given the number of days of rain in each month; the greatest number was 12, in February. The total number in the year was 52. At Jerusalem rain fell on 71 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 0·64 inch, on February 16th; and the next in order 0·60 inch, on both February 18th and April 8th. No rain fell from April 9th till November 14th, making a period of 218 consecutive days without rain. The fall of rain on November 29th was 1·22 inch, and on November 30th and December 1st 1·12 inch and 2·10 inches fell respectively. The heaviest monthly fall in

the year was 4·64 inches, in November, and the next in order, 4·03 inches, in February. The total fall for the year was 18·75 inches. At Jerusalem the total fall for the year was 32·90 inches.

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## RESULTS OF METEOROLOGICAL OBSERVATIONS TAKEN AT JERUSALEM IN THE YEAR 1896.

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 27·671 inches, in December, and the next in order, 27·656 inches, in November. The highest reading in the preceding 35 years, viz., 1861 to 1895 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 26·970 inches, in March, and the next in order, 27·036 inches, in January. The lowest reading in the preceding 35 years was 26·972 inches, in April, 1863, and February, 1865.

The numbers in the 3rd column show the extreme range of readings in each month; the smallest was 0·232 inch, in July, and the next in order, 0·223 inch, in June; the largest was 0·562 inch, in January; and the next in order, 0·468 inch, in each of the months of February, March, and April. The mean monthly range for the year was 0·356 inch. The mean for the preceding 35 years was 0·309 inch.

The range of barometer readings in the year was 0·701 inch. The largest range in the preceding 35 years was 0·742 inch, in 1872; and the smallest, 0·491 inch, in 1833.

The numbers in the 4th column show the mean monthly pressure of the atmosphere; the highest was 27·494 inches, in December, and the next in order, 27·482 inches, in November; the lowest was 27·289 inches, in July, and the next in order, 27·300 inches, in March. The mean yearly pressure was 27·379 inches. The highest mean yearly pressure in the preceding 35 years was 27·443 inches, in 1861, and the lowest, 27·357 inches, in 1894. The mean for the 35 years was 27·389 inches.

The temperature of the air reached 90° on June 4th, and there were 3 other days in June when the temperature reached or exceeded 90°. In the preceding 14 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 6 days; in August, on 17 days; and in September, on 2 days, the 29th being the last day in the year of a temperature as high as 90°. In the preceding 14 years the latest day in the year this temperature reached 90° was October 23rd, 1887. The temperature reached or exceeded 90° on 29 days during the year. In the year 1892