

The numbers in column 28 show the mean amount of cloud in each month; the month with the smallest amount was August, 0·5, and the largest December, 6·7. Of the cumulus or fine weather cloud there were only 2 instances; of the nimbus or rain cloud there were 27 instances, of which 9 were in March and 8 in December, and only 3 instances from April to November; of the cirrus there were 13 instances; of the cirro cumulus 81 instances; of the cirro stratus 16 instances; of the cumulus stratus 72 instances; and 154 instances of cloudless skies, of which 26 were in June, 24 in July, and 22 in August, and only 3 instances in December.

The largest fall of rain for the month in the year was 12·35 inches, in March, of which 3·37 inches fell on the 24th, and 3·06 inches on the 23rd. The next largest fall for the month was 7·54 inches, in January, of which 2·25 inches fell on the 26th, and 1·46 inch on the 27th. No rain fell from May 17th till October 10th, making a period of 145 consecutive days without rain. The total fall of rain for the year was 30·54 inches, being 5·31 inches above the average for 32 years, viz., 1861 to 1892. The number of days on which rain fell was 62, being 7 more than the average.

RESULTS OF METEOROLOGICAL OBSERVATIONS TAKEN AT TIBERIAS IN THE YEAR 1893.

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 31·220 inches, in November, and the next in order 31·084 inches, in January.

In column 2 the lowest reading in each month is shown; the minimum for the year was 30·226 inches, in August; and the next in order 30·247 inches, in July.

The range of readings in the year was 0·994 inch. The range in the morning observations was 0·875 inch, being 0·233 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 0·291 inch, in July, and the next in order 0·357 inch, in September; the largest was 0·710 inch, in November, and the next in order 0·696 inch, in December.

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 0·032 inch, in January, and the next in order 0·060 inch, in December; the largest was 0·110 inch, in November, and the next

MONTHLY METEOROLOGICAL TABLE

Deduced from observations taken at Tiberias, by Mr. WISEMAN, at about 652 feet below 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.	Mean amount of Cloud.	Number of days on which it 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.						Degree of humidity.	Weight of a cubic foot of air.
1893.	in.	in.	in.	in.	in.	in.	in.	°	°	°	°	°	°	°	°	°	°	in.	grs.	grs.	°	grs.	°	°	°	in.	grs.	grs.	°	grs.			in.		
January ...	31·084	30·426	0·658	30·693	30·661	0·032	30·677	76·0	36·0	40·0	65·3	47·7	17·6	56·5	56·1	52·7	49·5	·356	4·0	1·0	79	550	60·0	55·0	50·6	·369	4·1	1·7	71	546	6·7	16	8·85		
February ...	30·996	30·614	0·382	30·863	30·801	0·062	30·832	78·0	40·0	38·0	67·0	45·9	21·1	56·4	56·4	52·4	48·7	·345	3·9	1·2	75	553	61·7	56·0	51·1	·375	4·2	2·0	69	546	4·2	11	4·00		
March ...	31·014	30·414	0·600	30·707	30·646	0·061	30·677	86·0	41·0	45·0	70·2	49·0	21·2	59·6	60·0	55·1	50·8	·371	4·1	1·7	72	546	64·9	58·2	52·6	·398	4·4	2·4	64	540	4·6	15	4·95		
April ...	30·934	30·423	0·511	30·741	30·650	0·091	30·696	96·0	47·0	49·0	77·0	52·4	24·6	64·7	66·2	60·1	55·1	·435	4·8	2·2	68	540	72·4	65·6	60·5	·529	5·7	2·9	66	532	2·7	4	1·24		
May ...	30·124	30·337	0·487	30·647	30·562	0·085	30·605	102·0	50·0	52·0	89·0	60·8	28·2	74·9	74·5	67·3	62·1	·558	6·0	3·2	65	530	83·7	69·5	60·1	·520	5·5	6·8	45	519	1·0	1	0·30		
June ...	30·602	30·326	0·476	30·610	30·515	0·095	30·563	100·0	61·0	39·0	96·2	67·9	28·3	82·0	80·7	72·7	67·3	·654	7·1	4·1	64	522	91·6	71·9	59·7	·512	5·4	10·1	35	511	0·3	0	0·00		
July ...	30·538	30·247	0·291	30·451	30·345	0·106	30·398	108·0	70·0	38·0	102·3	75·3	27·5	89·0	87·5	77·1	70·5	·744	7·8	6·0	57	522	95·9	76·3	64·7	·611	6·3	11·3	36	504	0·5	0	0·00		
August ...	30·692	30·226	0·466	30·520	30·440	0·080	30·480	106·0	70·0	36·0	101·4	74·0	27·4	87·7	86·0	76·9	71·0	·759	8·0	5·2	61	515	94·2	76·8	66·2	·645	6·7	10·1	40	507	0·4	0	0·00		
September ...	30·706	30·349	0·357	30·575	30·488	0·087	30·532	105·0	67·0	38·0	97·8	71·2	26·6	84·5	83·9	73·6	66·8	·658	7·0	5·4	56	518	92·5	73·8	62·3	·563	5·9	10·1	37	509	0·5	1	0·05		
October ...	30·886	30·434	0·452	30·694	30·601	0·093	30·648	100·0	61·0	39·0	92·0	69·0	23·0	80·5	78·4	71·1	66·0	·640	6·9	3·6	66	526	84·9	71·8	63·2	·583	6·1	6·6	49	518	1·6	1	0·05		
November ...	31·220	30·510	0·710	30·820	30·710	0·110	30·765	90·0	58·0	32·0	83·1	61·7	21·4	72·4	70·7	64·2	59·2	·505	5·4	2·8	67	536	78·1	67·8	60·7	·532	6·7	4·6	55	527	2·5	0	0·00		
December ...	31·041	30·345	0·696	30·741	30·681	0·060	30·711	82·0	39·0	43·0	69·3	52·2	17·1	60·8	60·5	55·4	51·0	·374	4·2	1·7	71	536	65·5	59·1	53·9	·415	4·6	2·3	67	540	5·0	16	6·18		
Means ...	30·895	30·388	0·507	30·672	30·592	0·080	30·632	94·1	53·3	40·8	84·3	60·6	23·7	72·4	71·7	64·9	59·8	·533	6·8	3·2	67	533	78·8	66·3	58·8	·504	5·4	5·9	53	525	2·5	sum. 65	sum. 25·62		
	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	33		

in order 0·106 inch, in July. 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 in June, 0·025 inch. The mean for the year at Tiberias was 0·08 inch, being four times greater than in England.

The numbers in the 7th column show the mean monthly pressure of the atmosphere; the highest was 30·832 inches, in February, and the next in order 30·765 inches, in November; the lowest was 30·398 inches, in July, and the next in order 30·480 inches, in August. The mean for the year was 30·632 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 12th, and there were 3 other days in this month when the temperature reached or exceeded 90°; in May, 15 days; in June, July, August, and September it reached or exceeded 90° on every day; in October on 21 days; and in November on 2 days; thus the temperature reached or exceeded 90° on 164 days during the year. At Jerusalem the temperature did not reach 90° till May 27th, and there were only 30 days in the year on which the temperature was as high as 90°. At Tiberias the temperature was as high as 102° on May 14th; in June it reached or exceeded 100° on 2 days; in July, 25 days; in August, 24 days; in September, 8 days; and in October on one day; thus on 81 days in the year the temperature reached or exceeded 100°; at Jerusalem the temperature reached or exceeded 100° on only one day. The highest temperature in the year at Tiberias was 108°, on July 18th; at Jerusalem the highest in the year was 104°·5, on July 19th.

The lowest temperature of the air in each month is shown in column 9. The lowest in the year was 36°·0, on January 30th. The next lowest was 39°·0, on both January 31st and December 25th; and from February 1st till December 25th there was no temperature so low as 39°, the nearest approach being 40° on February 1st and 4th; thus the temperature was as low or lower than 40° on 6 nights during the year. At Jerusalem the lowest in the year was 27°·5 on December 23rd; and there were 65 nights in the year when the temperature was as low or lower than 40°.

The yearly range of temperature at Tiberias was 72°; at Jerusalem it was 77°.

The range of temperature in each month is shown in column 10; and these numbers vary from 32° in November, to 52° in May. At Jerusalem the range varied from 32° in November to 46° in March.

In column 11 the mean of all the high day temperatures in each month is shown. The lowest was 65°·3 in January, being 12°·9 higher than at Jerusalem; the next in order were 67° in February, and 69°·3 in December; the highest was 102°·8 in July, and the next in order were 101°·4 in August, and 97°·8 in September. At Jerusalem the lowest were 52°·4 in January, 53°·0 in February, and 55°·6 in December; the highest were 90°·8 in July, 86°·9 in August, and 83°·7 in June. The mean for the year at Tiberias was 84°·3; at Jerusalem it was 71°·5.

In column 12 the mean of all the low night temperatures in each month is shown; the lowest was $45^{\circ}9$ in February; the next in order were $47^{\circ}7$, in January, and 49° in March; the highest was $75^{\circ}3$ in July; the next in order were $74^{\circ}0$ in August, and $71^{\circ}2$ in September. At Jerusalem the lowest were $39^{\circ}3$ in December, $39^{\circ}6$ in February, and $40^{\circ}6$ in January; the highest were $67^{\circ}9$ in July, $67^{\circ}0$ in June, and $61^{\circ}1$ in August. At Tiberias the yearly value was $60^{\circ}6$; at Jerusalem it was $51^{\circ}8$.

In column 13 the mean daily range of temperature is shown in each month; the smallest was $17^{\circ}1$ in December, and the next in order were $17^{\circ}6$ in January, and $21^{\circ}1$ in February; the greatest was $28^{\circ}3$ in June; the next in order were $28^{\circ}2$ in May and $27^{\circ}5$ in July. At Jerusalem the smallest were $11^{\circ}8$ in January, $13^{\circ}4$ in February, and $16^{\circ}3$ in December; the greatest were $25^{\circ}8$ in August, $25^{\circ}6$ in September, and $24^{\circ}6$ in October. The mean daily range for the year at Tiberias was $23^{\circ}7$; at Jerusalem it was $19^{\circ}7$.

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 $56^{\circ}4$ in February; the next in order were $56^{\circ}5$ in January, and $59^{\circ}6$ in March; the highest was 89° in July; the next in order were $87^{\circ}7$ in August, and $84^{\circ}5$ in September. At Jerusalem the lowest were $46^{\circ}3$ in February, $46^{\circ}5$ in January, and $47^{\circ}5$ in December; the highest were $79^{\circ}3$ in July, $75^{\circ}4$ in June, and 74° in August. At both Tiberias and Jerusalem the mean temperature increased month by month from the minimum in February to the maximum in July, then decreased month by month to the end of the year. At Tiberias the yearly value was $72^{\circ}4$; at Jerusalem, $61^{\circ}7$.

The numbers 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 and April, and a little lower in all other months. The mean for the year was $71^{\circ}7$, differing by $0^{\circ}7$ from the mean of the year as determined by the use of the maximum and minimum thermometers; should this be the case in future years, the mean temperature 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 $6^{\circ}6$ in January; from April to November the smallest difference was $11^{\circ}1$ in April, and the largest, $17^{\circ}1$, 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 0.345 inch, in February, and the largest, 0.759 inch, in August.

In column 19 the weight in grains of the water in a cubic foot of air

is shown ; it was less than 4 grains in February, and as large as 8 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 one grain in January, and as large as 6 grains in July.

The numbers in column 21 show the degree of humidity of the air, saturation being represented by 100 ; the largest numbers appear from December to March, and the smallest from April to November, the smallest of all was 56 in September.

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, and then increasing to December.

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 January the increase was only $3^{\circ}9$, and in June it was as much as $10^{\circ}9$.

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 May was lower than at 8 a.m. by 2° , increasing to $7^{\circ}6$ lower in June, then decreasing to $2^{\circ}8$ lower in October. The numbers in this column were smaller than those in column 23 by $9^{\circ}4$ in January, increasing to $31^{\circ}9$ in June, then decreasing to $11^{\circ}6$ in December ; the differences between the temperature of the air and that of the dew point are very much larger than those at 8 a.m. ; in June it was more than twice as large.

On 2 or 3 days in the months of May, June, July, and September at 4 p.m. the reading of the dry-bulb thermometer exceeds that of the wet by 25° or more, and the temperature of the dew point was from 39° to 49° 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 25	96·0	70·0	54·7	41·3
26	98·0	71·0	55·4	42·6
June 5	99·0	68·0	50·0	49·0
9	99·0	72·0	56·3	42·7
July 19	102·0	77·0	63·0	39·0
20	103·0	77·0	62·4	40·6
Sept. 27	100·0	70·0	52·9	47·1
28	99·0	69·0	51·6	47·4
29	98·0	70·0	53·8	44·2

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 in May it was smaller at 4 p.m. by 0.038 inch, increasing to 0.142 inch smaller in June, and larger than at 8 a.m. in the months from January to April, and in November and December.

In column 27 the amount of water in a cubic foot of air is shown, and the amount was less than at 8 a.m. in the months from May to October.

In column 28 the amount of water required to saturate a cubic foot of air is shown; it was as large as 11.3 grains in July, and 10.1 grains in June, August, and September, and as small as 1.7 grain in January.

In column 29 the degree of humidity is shown, the driest months were from June to September, the value for these months varying from 35 in June to 40 in August.

In column 30 the weight of a cubic foot of air is shown, the smallest was 504 grains in July, and the largest, 546 grains, in both January and February.

In column 31 the mean amount of cloud in each month is shown; the month with the smallest amount was June, 0.3, and the largest, January, 6.7.

In column 32 are given the number of days of rain in each month; the largest was 16, in both January and December. The total number in the year was 65. At Jerusalem rain fell on 62 days.

In column 33 the monthly fall of rain is given. The heaviest fall of rain on one day in the months from January to April was 1.85 inch, on January 9th; the next in order were 1.70 inch on January 11th, 1.63 inch on January 26th, and 1.18 inch on April 22nd. No rain fell from May 18th till December 10th, excepting two slight falls of 0.05 inch on both September 17th and October 12th; neglecting these, no rain fell for 205 days; the fall of rain on December 17th was 2.35 inches, and on December 18th one inch fell. The heaviest monthly fall in the year was 8.85 inches, in January, and the next in order 6.18 inches, in December. The total fall for the year was 25.62 inches. At Jerusalem the total fall for the year was 30.54 inches.
