RESULTS OF METEOROLOGICAL OBSERVATIONS TAKEN AT JERUSALEM IN THE YEAR 1901.

By JAMES GLAISHER, Esq., 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 27·722 inches, in January, and the next in order 27·706 inches, in December. The highest reading in the preceding 40 years—viz., 1861 to 1900 inclusive, was 27·816 inches, in December, 1879, and the next in order 27·800 inches, in November, 1870.

In column 2 the lowest reading of the barometer in each month is shown; the minimum for the year was 27·184 inches, in January, and the next in order 27·210 inches, in July. The lowest reading in the preceding 40 years was 26·860 inches, in March, 1898, and the next in order 26·970 inches, in March, 1896.

The numbers in the 3rd column show the extreme range of readings in each month; the smallest was 0·122 inch, in September, and the next in order 0·164 inch, in August; the largest was 0·538 inch, in January, and the next in order 0·481 inch, in December. The mean monthly range for the year was 0·266 inch. The mean for the preceding 40 years was 0·312 inch.

The range of barometer readings in the year was 0·538 inch. The largest range in the preceding 40 years was 0·935 inch, in 1898, 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 27·558 inches, in December, and the next in order 27·529 inches in November; the lowest was 27·301 inches, in July, and the next in order 27·320 inches, in August. The yearly mean pressure was 27·436 inches. The highest mean yearly pressure in the preceding 40 years was 27·442 inches, in 1863, and the lowest 27·357 inches, in 1894. The mean yearly pressure for the 40 years was 27·390 inches.

The temperature of the air reached 91°·5 on March 31st. In the preceding 19 years the earliest day in the year the temperature was 90° was on March 25th, in year 1888; in April it reached or exceeded 90° on 2 days; in May, on 1 day; in June, on 7 days; in July, on 8 days; in August, on 9 days; and in September, on 1 day—viz.,

(*To face p.* 250.)

MONTHLY METEOROLOGICAL TABLE.

Deduced from observations taken at Jerusalem, by ADOLPH DATZI, 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.

Months.	Pressure of atmosphere—corrected to 32° Fahrenheit.				Temperature of the air.							9 a.m.								Wind. Relative proportions of.								Mean amount of cloud.	Rain.	
												Mean reading.			Vapour.			Degree of humidity.	Weight of a cubic foot of air.									Number of days on which it fell.	Amount collected.
	Highest.	Lowest.	Range.	Mean.	Highest.	Lowest.	Range.	Mean of all highest.	Mean of all lowest.	Mean daily range.	Mean.	Dry bulb.	Wet bulb.	Dew point.	Elastic force of.	Weight in a cubic foot of air.	Additional weight required for saturation.			N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.			
1901.	in.	in.	in.	in.	°	°	°	°	°	°	°	°	°	°	in.	grs.	grs.	°	grs.										in.
January	27·722	27·184	0·538	27·447	60·0	31·0	29·0	50·2	39·2	11·0	44·7	45·6	44·3	42·8	·276	3·1	0·4	90	503	1	5	1	5	1	6	3	9	4·5	11	7·42
February	27·668	27·355	0·313	27·526	77·5	43·0	34·5	65·1	49·3	15·8	57·2	58·8	51·5	45·0	·300	3·4	2·2	60	489	0	7	3	1	0	0	2	15	2·9	3	0·15
March	27·592	27·318	0·274	27·478	91·5	42·0	49·5	68·7	51·3	17·4	60·0	60·6	53·9	47·9	·336	3·8	2·2	63	489	0	3	1	0	0	0	10	17	3·4	4	1·24
April	27·531	27·294	0·237	27·412	93·5	44·0	49·5	72·7	53·1	19·6	62·9	65·3	55·9	48·1	·337	3·7	3·1	55	483	0	5	0	1	0	0	4	20	3·8	4	0·23
May	27·504	27·226	0·278	27·378	90·0	48·0	42·0	74·2	55·0	19·2	64·6	67·9	59·0	52·0	·388	4·2	3·3	56	480	0	1	0	1	0	2	4	23	3·6	4	0·99
June	27·507	27·326	0·181	27·390	97·5	57·0	40·5	84·9	63·3	21·6	74·4	77·7	64·9	56·2	·450	4·8	5·4	47	471	0	1	0	1	0	0	4	24	1·4	0	0·00
July	27·403	27·210	0·193	27·301	96·0	60·0	36·0	86·1	66·7	19·4	77·4	80·2	66·9	57·1	·478	5·1	5·9	46	467	0	0	0	0	0	1	9	21	1·0	0	0·00
August	27·410	27·246	0·164	27·320	98·0	62·0	36·0	86·1	65·8	20·3	76·0	79·1	70·4	64·4	·605	6·5	4·1	60	468	3	0	0	0	0	0	12	16	2·2	0	0·00
September	27·483	27·361	0·122	27·413	94·0	60·0	34·0	83·3	62·8	20·5	73·0	76·2	69·7	65·0	·611	6·6	3·1	69	472	0	0	0	0	0	0	8	22	1·7	0	0·00
October	27·579	27·393	0·186	27·484	86·5	56·0	30·5	78·0	60·5	17·5	69·2	72·3	66·7	62·5	·567	6·1	2·5	71	477	2	7	5	1	1	2	3	10	3·3	2	0·28
November	27·629	27·400	0·229	27·529	86·0	48·0	36·0	67·4	53·9	13·5	60·6	63·4	59·0	55·3	·438	4·9	1·6	75	486	0	4	2	2	0	5	4	13	5·1	8	1·69
December	27·706	27·225	0·481	27·558	70·0	39·0	31·0	60·3	47·9	12·4	54·1	55·6	51·6	47·8	·335	3·8	1·2	76	495	0	7	7	0	1	5	3	8	3·8	4	5·42
Means	27·661	27·295	0·266	27·436	86·7	49·2	37·5	73·1	55·7	17·4	64·4	66·9	59·5	53·7	·427	4·7	2·9	64	482	sum. 6	sum. 40	sum. 19	sum. 12	sum. 3	sum. 21	sum. 66	sum. 198	mean. 3·1	sum. 40	sum. 17·42
	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

the 19th—and this was the last day in the year of a temperature as high as 90°. In the preceding 19 years the latest day in the year this temperature reached 90° was on October 23rd, in both 1887 and 1898. The temperature reached or exceeded 90° on 29 days during the year. In the year 1898 the number of days of this high temperature was 12, and in 1887 was 73, the average for the 19 years was 34. The highest temperature in the year was 98° on August 30th; the highest in the preceding 19 years—viz., 1882 to 1900—was 108°·0, in June, 1894.

The temperature of the air was as low or lower than 40°, in January, on 15 nights, and in December, on 3 nights. Thus the temperature was as low or lower than 40° on only 18 nights during the year. In the year 1900 the number of nights of this low temperature was 18, and in 1894 was 113; the average of the 19 years was 53. The lowest temperature in the year was 31°, on January 18th. The lowest in the preceding 19 years was 25°, which occurred on two nights—viz., December 31st, 1897, and January 1st, 1898.

The highest temperature of the air in each month is shown in column 5. In January it was 60°·0, being 0°·1 above the mean of the 19 high day temperatures in January. The high day temperature was also above its average in February, March, April, June, August, November, and December, and below in the remaining months. The mean for the year was 86°·7, being 3°·0 above the average of 19 years.

The lowest temperature of the air in each month is shown in column 6. In January it was 31°·0, being the lowest in the year, and 0°·5 below the average of the 19 low night temperatures in January. The low night temperature was above its average in every month from February to December. The mean for the year was 49°·2, being 4°·6 above the average of 19 years.

The range of temperature in each month is shown in column 7; these numbers vary from 29°·0, in January, to 49°·5, in both March and April. The mean range for the year was 37°·0, being 2°·1 less than the average of 19 years.

The range of temperature in the year was 67°·0. The largest in the preceding 19 years was 81°·0, in 1894, and the smallest 63°·0, in 1901.

The mean of all the high day temperatures in each month is shown in column 8. The lowest was 50°·2, in January, being 0°·7

below the average; the highest was 86°·1, in both July and August, being 1°·1 below the average in July, and 2°·1 below in August. The mean for the year was 73°·1, or 1°·2 above the average of 19 years.

The mean of all the low night temperatures in each is shown in column 9. The lowest was 39°·2, in January, being 0°·7 above the average; the highest was 66°·7, in July, being 2°·3 above the average. The mean for the year was 55°·7, or 3°·0 above the average of 19 years.

In column 10 the mean daily range of temperature in each month is shown. The smallest was 11°·0, in January, and the next in order 12°·4, in December; the greatest was 21°·6, in June, and the next in order was 20°·5, in September. The mean for the year was 17°·4, being 1°·8 less than the average. The smallest ranges in the preceding 19 years were 9°·3, in January, 1883, and 9°·4, in December, 1897; the greatest were 33°·8, in August, 1886, and 30°·1, in August, 1887. The smallest mean for the year was 16°·3, in 1900, and the greatest 24°·3, in 1886.

The mean temperature of the air, as found from the mean of the maximum and minimum temperatures only, is shown in each month in column 11. The lowest was 44°·7, in January, and the next in order were 54°·1, in December, and 57°·2, in February; the highest was 77°·4, in July, and the next in order were 76°·0, in August, and 74°·4, in June. The mean for the year was 64°·4, being 2°·1 above the average of 19 years. The lowest mean temperatures in the preceding 19 years were 39°·8, in January, 1890, and 41°·1, in January, 1898; the highest were 81°·2, in August, 1890, and 81°·1, in July, 1888. The highest mean for the year was 63°·5, in both 1892 and 1900, and the lowest 60°·0, in 1894.

The numbers in column 12 are the mean readings of a dry-bulb thermometer. If the numbers 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 between the means for the year being 2°·5; the mean difference between the mean temperature of the air and that at 9 a.m. for the 19 years was 3°·1.

For a few days in the winter months the dry and wet bulb thermometers read alike, or nearly so; but in the months from March to August the difference between the readings often exceeded 15°·0, and was as large as 25°·0 on June 23rd.

The numbers in column 13 show the mean monthly readings of

the wet-bulb thermometer. The smallest differences between these and those of the dry-bulb were 1°·3, in January, 4°, in December, and 4°·4, in November; the largest were 13°·3, in July, 12°·8, in June, and 9°·4, in April. The mean for the year was 59°·5, and that of the dry-bulb 66°·9.

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 was 2°·8, in January, and the next in order were 7°·8, in December, and 8°·1, in November. The mean temperature of the dew-point for the year was 53°·7; the mean for the 19 years was 50°·1.

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 0·276 inch, in January, and the largest 0·611 inch, in September. The mean for the year was 0·427 inch; the average for the 19 years was 0·375 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 3·1 grains, in January, and as large as 6·6 grains, in September. The mean for the year was 4·7 grains; the average of the 19 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 0·4 grain, in January, and as large as 5·9 grains, in July. The mean for the year was 2·9 grains; the average for the 19 years was 3·3 grains.

The numbers in column 18 show the degree of humidity, saturation being represented by 100; the largest numbers were in January, November, and December; and the smallest were in June and July. The mean for the year was 74; that of the 19 years was 60.

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 503 grains, in January; and the smallest 467 grains, in July. The mean for the year was 482 grains; the average of the 19 years was 483 grains.

The most prevalent winds in January were N.W., N.E., and S.E., and the least prevalent were N., E., and S.; the most prevalent in February was N.W., and the least prevalent were N., S., and S.W.; in March the most prevalent were N.W. and W., and the least were N., S.E., S., and S.W.; in April the most

prevalent was N.W., and the least were N., E., S., and S.W.; in May the most prevalent was N.W., and the least were N., E., and S.; in June the most prevalent was N.W., and the least were N., E., S., and S.W.; in July the most prevalent was N.W., and the least were N., N.E., E., S.E., and S.; in August and September the most prevalent were N.W. and W., and the least were N.E., E., S.E., S., and S.W.; in October the most prevalent were N.W. and N.E., and the least were S.E. and S.; in November the most prevalent was N.W., and the least were N. and S.; and in December the most prevalent were N.W., N.E., and E., and the least were N. and S.E. The most prevalent wind in the year was N.W., which occurred on 198 times, of which 24 were in June, 23 in May, and 22 in September; and the least prevalent wind was S., which occurred on only 3 times during the year—viz., 1 in each of the months of January, October, and December.

The total number of times of each wind in the year are shown in the last line of columns 20 to 27; those winds less in number than the average of the preceding 19 years were :—

N. by 19,
N.E. „ 2,
E. „ 11,
S.E. „ 12,
S. „ 6,
S.W. „ 31,
W. „ 1,

and the N.W. wind was greater in number than the average of 19 years by 81.

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 November. Of the nimbus or rain cloud there were 8 instances; of the cirrus 2 instances; of the cirro cumulus 81 instances; of the cirro stratus 16 instances; of the cumulus stratus 112 instances; and 146 instances of cloudless skies, of which 23 were in July, 18 in June, and 16 in August.

The largest fall of rain for the month in the year was 7·42 inches, in January, of which 1·60 inch fell on the 18th, 1·50 inch on the 27th, and 1·48 inch on the 1st. The next largest fall for the month was 5·42 inches in December, of which 3·05 inches fell on the 4th, and 1·85 inch on the 3rd. No rain fell from May 18th

(*To face p. 255.*)

MONTHLY METEOROLOGICAL TABLE.

Deduced from observations taken at Tiberias, under the direction of Dr. TORRANCE, at about 652 feet below the level of the Mediterranean Sea, 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—corrected to 32° Fahrenheit.							Temperature of the air.							8 a.m.								4 p.m.								Rain.	
															Mean reading.			Vapour.					Mean reading.			Vapour.						
	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.	Dry bulb.	Wet bulb.	Dew point.	Elastic force of.	Weight in a cubic foot of air.	Additional weight required for saturation.	Degree of humidity.	Weight of a cubic foot of air.	Dry bulb.	Wet bulb.	Dew point.	Elastic force of.	Weight in a cubic foot of air.	Additional weight required for saturation.	Degree of humidity.	Weight of a cubic foot of air.	Number of days on which rain fell.	Amount collected.
1901.	in.	in.	in.	in.	in.	in.	in.	°	°	°	°	°	°	°	°	°	°	in.	grs.	grs.	°	grs.	°	°	°	in.	grs.	grs.	°	grs.		in.
January	31·170	30·514	0·656	30·800	30·738	0·062	30·769	78·0	34·0	44·0	63·4	49·1	14·3	56·2	54·8	48·5	42·5	·272	3·1	1·8	63	554	62·0	54·2	47·5	·328	3·7	2·5	59	545	8	8·43
February	30·963	30·436	0·527	30·804	30·712	0·092	30·758	84·0	50·0	34·0	75·4	56·4	19·0	65·9	64·4	56·1	49·3	·350	3·9	2·8	58	544	72·2	61·1	52·7	·400	4·4	4·1	51	534	1	0·10
March	30·926	30·435	0·491	30·729	30·649	0·080	30·689	104·0	47·0	57·0	80·6	59·2	21·4	69·9	70·2	58·9	50·2	·364	4·0	4·1	49	536	77·3	66·7	59·3	·506	5·3	4·6	54	527	3	0·39
April	30·763	30·380	0·383	30·617	30·540	0·077	30·579	102·0	54·0	48·0	83·8	62·0	21·8	72·9	71·9	61·5	53·7	·414	4·5	4·0	52	532	79·5	66·3	57·2	·467	5·0	5·7	46	522	2	0·21
May	30·762	30·230	0·532	30·548	30·467	0·081	30·507	102·0	58·0	44·0	87·6	67·0	20·6	77·3	74·8	64·3	56·7	·462	5·0	4·3	53	528	83·6	67·3	56·5	·457	4·8	7·4	39	518	2	0·90
June	30·648	30·287	0·361	30·520	30·428	0·092	30·474	108·0	68·0	40·0	96·3	73·1	23·2	84·7	81·7	71·1	64·0	·595	6·4	5·2	54	516	91·0	72·8	61·5	·544	5·7	9·6	38	510	0	0·00
July	30·494	30·175	0·319	30·337	30·306	0·081	30·347	108·0	69·0	39·0	99·5	75·7	23·8	87·6	84·3	75·3	69·4	·720	7·6	4·9	60	514	92·7	77·2	67·8	·678	7·1	8·9	44	506	0	0·00
August	30·513	30·200	0·313	30·403	30·329	0·074	30·366	107·0	75·0	32·0	99·8	78·1	21·7	89·0	85·5	76·9	71·3	·769	8·2	4·8	62	513	94·1	80·8	72·7	·806	8·3	8·4	50	504	0	0·00
September	30·602	30·385	0·217	30·550	30·440	0·110	30·495	102·0	73·0	29·0	96·6	75·7	20·9	86·2	83·0	73·5	67·1	·660	7·1	4·9	58	519	92·5	79·5	71·5	·773	8·0	7·7	50	508	0	0·00
October	30·778	30·388	0·390	30·638	30·528	0·110	30·583	104·0	67·0	37·0	91·1	71·7	19·4	81·4	78·3	66·0	57·5	·475	5·1	5·3	49	525	87·9	71·0	60·2	·523	5·5	8·4	39	514	0	0·00
November	30·889	30·489	0·400	30·727	30·623	0·104	30·675	92·0	59·0	33·0	78·9	61·3	17·6	70·1	69·2	61·9	56·2	·442	4·9	2·9	63	537	76·6	64·7	56·3	·455	4·9	4·9	49	527	6	0·61
December	30·988	30·361	0·637	30·792	30·689	0·103	30·740	77·0	51·0	26·0	72·3	57·1	15·2	64·7	61·8	54·5	48·2	·333	3·8	2·4	61	546	69·7	60·4	53·2	·407	4·4	3·5	57	536	4	4·69
Means	30·791	30·357	0·435	30·626	30·537	0·089	30·582	97·3	58·7	38·6	85·4	65·5	19·9	75·5	73·3	64·0	57·2	·488	5·3	4·0	52	530	81·4	68·5	59·7	·529	5·6	6·3	48	521	sum. 26	sum. 15·33
	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

till October 2nd, making a period of 137 consecutive days without rain. The total fall of rain for the year was 17·42 inches, being 9·66 inches below the average of 40 years—viz., 1861 to 1900 inclusive. The number of days on which rain fell was 40, being 15 less than the average.

RESULTS OF METEOROLOGICAL OBSERVATIONS TAKEN AT TIBERIAS IN THE YEAR 1901.

By JAMES GLAISHER, Esq., 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 31·170 inches, in January, and the next in order 30·988 inches, in December.

In column 2, the lowest reading in each month is shown. The minimum for the year was 30·175 inches, in July, and the next in order 30·200 inches, in August.

The range of readings in the year was 0·995 inch. The range in the morning observations was 0·886 inch, being 0·348 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 0·217 inch in September, and the next in order was 0·313 inch, in August; the largest was 0·656 inch, in January, and the next in order 0·637 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 in column 6 the amount by which the reading at 4 p.m. is lower than at 8 a.m.; the smallest difference between these two readings was 0·074 inch, in August, and the next in order 0·077 inch, in April; the largest was 0·110 inch, in both September and October, and the next in order 0·104 inch, in November. 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 0·089 inch, being about four times greater than in England.