

and 177 instances of cloudless skies, of which 27 were in June, and 23 in both July and August, and 6 only in both February and March.

The largest fall of rain for the month in the year was 8·70 inches in December, of which 4·70 inches fell on the 1st, and 2·18 inches on the 2nd. The next largest fall for the month was 7·42 inches, in January, of which 1·10 inch fell on both the 1st and 31st, 1·09 inch on the 23rd, and 1·03 inch on the 19th. No rain fell from May 19th till October 31st, making a period of 164 consecutive days without rain. The total fall of rain for the year was 31·23 inches, being 6·00 inches above the average for 32 years, viz., 1861 to 1892. The number of days on which rain fell was 63, being 8 more than the average.

RESULTS OF METEOROLOGICAL OBSERVATIONS TAKEN AT TIBERIAS IN THE YEAR 1892.

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 31·118 inches, in January, and the next in order 31·070 inches, in February.

In column 2 the lowest reading in each month is shown; the minimum for the year was 30·318 inches, in May; and the next in order 30·321 inches, in July.

The range of readings in the year was 0·800 inch, being 0·283 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 0·189 inch, in August, and the next in order 0·216 inch, in July. The largest was 0·687 inch, in January, and the next in order 0·645 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 0·032 inch, in November, and the next in order 0·043 inch, in February; the largest is 0·107 inch, in October, and the next in order 0·104 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 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 30·823 inches, in December, and the next in order 30·812 inches, in January; the lowest was 30·404 inches, in

MONTHLY METEOROLOGICAL TABLE

Deduced from observations taken at Tiberias, by NAJUB NASSAR, 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.	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.				
1892.	in.	in.	in.	in.	in.	in.	in.	°	°	°	°	°	°	°	°	°	°	in.	grs.	grs.	°	grs.	°	°	°	in.	grs.	grs.	°	grs.	in.	in.
January ...	31.118	30.431	0.687	30.828	30.785	0.053	30.812	74.0	44.0	30.0	69.4	48.9	20.5	69.1	55.7	52.4	49.3	.253	4.0	1.0	60	553	61.8	55.8	50.7	.369	4.2	2.0	68	548	11	3.93
February ...	31.070	30.425	0.645	30.759	30.716	0.043	30.738	80.0	44.0	36.0	71.2	50.6	20.6	60.9	60.2	54.9	50.2	.364	4.0	1.8	69	547	64.2	57.3	51.6	.382	4.3	2.4	63	542	10	1.65
March ...	30.921	30.398	0.523	30.742	30.670	0.072	30.706	92.0	44.0	48.0	75.8	52.5	23.3	64.2	64.5	59.3	55.0	.431	4.8	1.9	72	541	69.2	61.8	56.0	.449	4.9	2.9	62	536	5	2.57
April ...	30.840	30.372	0.468	30.629	30.542	0.087	30.586	97.0	50.0	47.0	84.4	58.9	25.5	71.7	71.8	65.1	60.0	.520	5.8	2.8	66	531	79.4	67.0	58.5	.490	5.3	5.5	49	523	3	0.87
May ...	30.865	30.318	0.547	30.589	30.492	0.097	30.540	106.0	59.0	47.0	91.7	66.6	25.1	79.2	80.5	69.9	62.7	.569	6.0	5.1	54	522	—	—	—	—	—	—	—	—	2	0.12
June ...	30.687	30.438	0.249	30.542	30.438	0.104	30.490	108.0	67.0	41.0	98.4	71.7	26.7	85.0	85.8	74.9	67.8	.701	7.2	6.0	55	516	—	—	—	—	—	—	—	—	0	0.00
July ...	30.537	30.321	0.216	30.452	30.356	0.096	30.404	109.0	68.0	41.0	100.7	74.3	26.4	87.5	90.4	77.2	68.9	.707	7.4	7.6	50	510	—	—	—	—	—	—	—	—	0	0.00
August ...	30.595	30.466	0.129	30.482	30.462	0.020	30.442	106.0	73.0	33.0	100.4	75.7	24.7	88.0	89.0	77.7	70.6	.741	7.8	6.6	54	512	—	—	—	—	—	—	—	—	0	0.00
September ...	30.749	30.384	0.365	30.393	30.496	0.097	30.544	111.0	70.0	41.0	99.8	73.8	26.0	86.8	89.0	76.0	67.8	.677	7.1	7.3	49	514	—	—	—	—	—	—	—	—	0	0.00
October ...	30.830	30.498	0.332	30.490	30.583	0.107	30.637	97.0	61.0	36.0	92.1	68.3	23.8	80.2	83.3	71.3	63.3	.584	6.2	6.0	51	521	—	—	—	—	—	—	—	—	4	0.67
November ...	30.897	30.488	0.399	30.717	30.685	0.032	30.701	89.0	52.0	37.0	78.7	59.5	19.2	69.1	68.4	62.5	57.9	.480	5.3	2.3	68	537	72.0	64.9	59.5	.510	5.6	2.9	65	533	12	6.67
December ...	31.032	30.509	0.523	30.859	30.786	0.073	30.823	88.0	43.0	45.0	70.8	50.6	20.2	60.7	59.0	54.6	50.6	.370	4.2	1.4	74	550	61.4	58.9	54.3	.423	4.7	2.0	70	543	9	2.94
Means ...	30.844	30.416	0.428	30.658	30.579	0.079	30.619	96.4	56.2	40.2	86.1	62.6	23.5	74.4	74.8	66.3	60.3	.741	5.8	4.2	62	530	—	—	—	—	—	—	—	—	sum. 56	sum. 19.42
	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	31	32

July, and the next in order 30·442 inches, in August. The mean for the year was 30·619 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 March 9th; in April the temperature reached or exceeded 90° on 6 days; in May on 17 days; in June, July, August, and September it reached or exceeded 90° on every day; and in October on 28 days; thus the temperature reached or exceeded 90° on 174 days during the year. At Jerusalem the temperature did not reach 90° till May 14th, and there were only 23 days in the year on which the temperature was as high as 90°. At Tiberias the temperature was as high as 101° on May 6th, and reached or exceeded 100° on 2 other days in this month; in June it reached or exceeded 100° on 10 days; in July on 20 days; in August on 21 days; and in September on 13 days; thus on 67 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 111°, on September 15th and 16th; at Jerusalem the highest in the year was 101°, on September 17th.

The lowest temperature of the air in each month is shown in column 9. The lowest in the year was 43°·0, on December 19th. The next lowest was 44°, on January 26th, February 29th, and March 1st, and there was no temperature so low as 44° on any other night, the nearest approach was 45° on January 24th. At Jerusalem the lowest in the year was 36° on 3 nights, viz., January 26th, and December 19th and 20th; and there were 19 nights in the year when the temperature was as low or lower than 40°.

The yearly range of temperature was 68°; at Jerusalem it was 65°.

The range of temperature in each month is shown in column 10; and these numbers vary from 30° in January, to 48° in March. At Jerusalem the range varied from 26° in January to 43° in April.

In column 11 the mean of all the high day temperatures in each month is shown. The lowest was 69°·4 in January, being 17° higher than at Jerusalem; the next in order were 70°·8 in December, and 71°·2 in February; the highest was 100°·7 in July, and the next in order were 100°·4 in August, and 99°·8 in September. At Jerusalem the lowest were 52°·4 in January, 56°·0 in December, and 56°·7 in February; the highest were 88° in September, 87°·1 in August, and 85°·6 in July. The mean for the year at Tiberias was 86°·1; at Jerusalem it was 72°·4.

In column 12 the mean of all the low night temperatures in each month is shown; the lowest was 48°·9 in January, and the next in order 50°·6, in both February and December; the highest was 75°·7 in August; the next in order were 74°·3 in July, and 73°·8 in September. At Jerusalem the lowest were 41°·3 in January, 43°·2 in February, and 44°·3 in December; the highest were 65°·9 in September, 64°·6 in August, and 63°·7 in July. At Tiberias the yearly value was 62°·6; at Jerusalem it was 54°·5.

In column 13 the mean daily range of temperature is shown in each

month; the smallest was $19^{\circ}2$ in November, and the next in order were $20^{\circ}2$ in December, and $20^{\circ}5$ in January; the greatest was $26^{\circ}7$ in June, and the next in order $26^{\circ}4$ in July, and $26^{\circ}0$ in September. At Jerusalem the smallest were $11^{\circ}1$ in January, $11^{\circ}7$ in December, and $12^{\circ}8$ in November; the greatest were $22^{\circ}5$ in August; $22^{\circ}1$ in September, and $22^{\circ}0$ in June. The mean daily range for the year at Tiberias was $23^{\circ}5$; at Jerusalem it was $17^{\circ}9$.

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 $59^{\circ}1$ in January, and the next in order were $60^{\circ}7$ in December, and $60^{\circ}9$ in February; the highest was 88° in August, the next in order were $87^{\circ}5$ in July, and $86^{\circ}8$ in September. At Jerusalem the lowest were $46^{\circ}8$ in January, $50^{\circ}0$ in February, and $50^{\circ}2$ in December; the highest were $77^{\circ}0$ in September, $75^{\circ}8$ in August, and $74^{\circ}7$ in July. At Tiberias the mean temperature increased month by month from the minimum in January to the maximum in August, then decreased month by month to the end of the year. At Tiberias the yearly value was $74^{\circ}4$; at Jerusalem it was $63^{\circ}5$.

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 lower in January, February, November, and December, and a little higher in all other months. The mean for the year was $74^{\circ}8$, differing by $0^{\circ}4$ 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 column 17 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 $6^{\circ}4$ in January; from April to November the smallest difference was $10^{\circ}5$ in November, and the largest, $21^{\circ}5$, in July.

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 0.353 inch, in January, and the largest, 0.741 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 4 grains in both January and February, and as large as $7\frac{3}{4}$ 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 $7\frac{1}{2}$ 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 November to March, and the smallest from April to October, the smallest of all was 49 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 January, decreasing to the smallest in July, then increasing to December.

In column 31 are given the numbers of days of rain in each month; the largest was 12 in November, and the next in order 11 in January. The total number in the year was 56. At Jerusalem rain fell on 63 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 1.45 inch, on January 1st; the next in order were 0.90 inch and 0.72 inch on March 22nd and 23rd respectively. No rain fell from May 3rd till October 29th, making a period of 178 consecutive days without rain; the fall of rain on November 26th was 1.62 inch, and on November 30th and December 1st 1.30 inch and 1.42 inch fell respectively. The heaviest monthly fall in the year was 6.67 inches, in November, and the next in order 3.93 inches, in January. The total fall for the year was 19.42 inches. At Jerusalem the total fall for the year was 31.23 inches.

A NEW TREATISE ON THE GEOLOGY OF THE HOLY LAND AND THE DEAD SEA.¹

By EDWARD HULL, LL.D., F.R.S., F.G.S.

WE welcome the treatise of Dr. Blanckenkorn on a subject which can never fail to interest those who make a study of the physical features of the globe, especially when represented by a region confessedly unique in its geological structure, and one which must necessarily afford fresh objects of investigation, and new methods of treatment, from successive observers. The Palestine Exploration Society of this country has its counterpart in Germany; and with both societies the investigation of the geological structure of the Holy Land, and the mode of formation of the Dead Sea and of the Jordan-Arabah depression, has been undertaken as an essential part of the objects for which each society was founded.

The treatise of Dr. Blanckenkorn deals with those physical changes of which the Dead Sea depression, and the deeply furrowed ridge of Western Palestine, together with the tablelands of Edom and Moab are the outcome. Those who are familiar with the work of previous observers will not find in the essay of Dr. Blanckenkorn much that is new; but it is gratifying to know that there is very little in which he

¹ "Entstehung und Geschichte des Todten Meeres," Von D. M. Blanckenkorn; "Zeit. d. Deutsch. Palestina-Vereins," ed. by Professor D. Hermann Guthe (Leipsig, 1896).