

MONTHLY METEOROLOGICAL TABLE DEDUCED FROM OBSERVATIONS TAKEN AT SARONA BY HERR J. DREHER IMMEDIATELY NORTH OF THE GREAT ORANGE GROVES OF JAFFA, SYRIA, 1½ MILE FROM THE SEA SHORE, ON SANDY SOIL, AND ABOUT 50 FEET ABOVE SEA-LEVEL. LATITUDE 32° 4' N., LONGITUDE 34° 47' E.

By JAMES GLAISHER, F.R.S.

Months, 1884.	Pressure of Atmosphere in Month. Corrected to 32° Fahrenheit.				Temperature of the Air in Month.								Mean Reading at 9 a.m.			Vapour, 9 a.m.			Degree of Humidity.	Weight of a Cubic Foot of Air.	Wind.								Mean Amount of Cloud.	Rain.	
	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 Vapour.	Weight in a Cubic Foot of Air.	Additional Weight required for Saturation.	Relative Proportion of								Calm, or nearly Calm.	Number of Days on which it fell.	Amount Collected.			
																		N.			N.E.	E.	S.E.	S.	S.W.					W.	N.W.
January .. ..	in. 30·262	in. 29·678	in. 0·584	in. 30·010	71·0	32·0	39·0	60·2	40·9	19·3	50·5	51·3	49·0	46·6	grs. 319	grs. 3·6	grs. 0·7	84	grs. 543	0	1	1	5	14	1	1	1	7	6·6	14	ins. 6·69
February .. ..	30·230	29·700	0·530	29·945	65·0	41·0	24·0	60·3	46·2	14·1	53·3	53·6	51·7	49·9	358	3·7	0·6	87	540	2	3	0	3	13	0	1	1	6	7·3	18	6·09
March .. ..	30·133	29·597	0·536	29·892	79·0	42·0	37·0	66·5	48·3	18·2	57·4	61·3	57·2	53·7	412	4·6	1·5	76	530	1	1	2	5	7	5	4	1	5	5·3	10	1·49
April .. ..	30·013	29·505	0·500	29·723	97·0	46·0	51·0	77·8	53·4	24·4	65·6	71·7	62·2	55·0	435	4·7	3·7	56	517	0	4	3	1	3	7	4	2	6	5·7	4	1·02
May.. ..	29·946	29·670	0·276	29·841	98·0	49·0	49·0	77·2	57·0	20·2	67·1	72·6	65·8	60·7	533	5·7	2·9	66	517	3	0	0	0	1	10	5	10	2	5·0	2	0·49
June .. ..	29·930	29·703	0·227	29·828	97·0	58·0	39·0	84·4	63·7	20·7	74·0	80·1	69·6	62·4	564	6·0	5·0	55	510	1	1	0	0	0	6	14	5	3	1·9	1	0·02
July.. ..	29·899	29·600	0·299	29·717	96·0	61·0	35·0	85·0	66·0	19·0	75·5	81·2	72·4	66·5	649	7·0	4·4	61	507	0	0	0	0	0	11	18	0	2	3·4	0	0·00
August .. ..	29·849	29·582	0·267	29·707	90·0	63·0	27·0	86·0	68·9	17·1	77·4	82·5	73·8	68·0	685	7·3	4·6	62	505	0	0	0	0	1	13	8	4	5	3·0	0	0·00
September .. ..	30·015	29·665	0·350	29·817	86·0	61·0	25·0	83·7	64·3	19·4	74·3	79·8	70·6	64·3	603	6·4	4·5	59	510	2	1	0	0	3	13	4	2	5	3·8	0	0·00
October .. ..	30·002	29·783	0·219	29·900	100·0	55·0	45·0	81·8	60·5	21·3	71·2	78·6	67·2	59·3	508	5·5	4·9	52	513	1	1	0	3	5	6	0	2	13	4·0	5	1·16
November .. ..	30·063	29·832	0·231	29·952	79·0	47·0	32·0	72·8	52·9	19·9	62·8	59·8	58·1	56·6	458	5·2	0·7	90	533	1	0	0	5	6	0	1	4	13	4·2	8	1·32
December .. ..	30·143	29·846	0·297	29·980	82·0	38·0	44·0	70·9	48·6	22·3	59·8	59·9	55·4	51·5	381	4·2	1·6	73	533	0	7	2	4	1	0	0	1	16	3·7	3	0·45
Means .. ..	30·040	29·680	0·360	29·859	86·7	49·3	37·3	75·6	55·9	19·7	65·7	69·4	62·8	57·9	491	5·3	2·9	68	521	Sum. 11	Sum. 19	Sum. 8	Sum. 26	Sum. 54	Sum. 72	Sum. 60	Sum. 33	Sum. 83	4·5	Sum. 65	Sum. 18·73

Number of Column .. 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

of the hill over Jeremiah's Grotto, one of which was regarded by the late General Gordon as the tomb of our Lord, also some rock-cuttings, a quarry, and several of the rock-hewn cisterns. To the Byzantine period he attributes the church above alluded to, some walls and thresholds of doors, a group of three tombs partly hewn in the rock, some fragments of pillars and pieces of mosaic pavement, and adds that the flooring of the Crusading buildings lay about 4 feet 6 inches higher than that of the Byzantine structures, so that the rock-hewn channel and mosaic pavements were covered by it. "A characteristic feature of Crusading work," Mr. Schick writes, "is presented in the long vaults, four of which are in great part still standing north of the Byzantine church. They were originally more than 75 feet long and are only 23 feet wide. Such vaults are always found on the settlements of the Crusaders, some larger, some smaller, and either only one or more in number. They get light only from the two ends and from the door and windows over the door. The vaulting is always something more than a semicircle, and more or less pointed. There are a few air-holes, like chimneys, in the roof. They appear to have been used as magazines for various kinds of goods, sleeping places for pilgrims, and even as stables. A long narrow pit, formerly, as it seems, a cistern, or rather channel for rain water, was arched over by the Crusaders and made the main sewer of their establishment." (*See Quarterly Statement*, 1883, p. 241.)

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## METEOROLOGICAL OBSERVATIONS.

SARONA, 1884.

THE numbers in column 1 of this table show the highest reading of the barometer in each month; the maximum for the year was 30·262 ins., in January. In the years 1880 and 1881 the maximum was in January, as in this year, in 1882 in February, and in 1883 in December; the mean of the four preceding highest pressures was 30·215 ins.

In column 2, the lowest reading in each month is shown; the minimum for the year was 29·505 ins., in April. In the year 1880 the minimum was in April, in 1881 in February, in 1882 in July, and in 1883 in January; the mean of the four preceding lowest pressures was 29·521 ins.

The range of barometric readings in the year was 0·757 inch; the mean of the four preceding years being 0·694 inch.

The numbers in the 3rd column show the range of readings in each month; the smallest, 0·219 inch, was in October, and the largest, 0·584 inch, in January.

The numbers in the 4th column show the mean monthly pressure of the atmosphere; the greatest, 30·010 ins., was in January. In the years 1880, 1881, and 1882, the greatest was in January as in this year, and in 1883 was in February; the smallest, 29·707 ins., was in August. In the years 1880, 1882, and 1883, the smallest was in July, and in 1881 in August.

The highest temperature of the air in each month is shown in column 5 ; the highest in the year was  $100^{\circ}$ , in October. In the four preceding years, viz., 1880, 1881, 1882, and 1883, the highest temperatures were  $103^{\circ}$ ,  $106^{\circ}$ ,  $93^{\circ}$ , and  $106^{\circ}$  respectively. The next in order was  $98^{\circ}$  in May, and  $97^{\circ}$  in both April and June. The first day in the year the temperature reached  $90^{\circ}$  was on April 13, and it exceeded  $90^{\circ}$  on three other days in this month : in May on one day ; in June on four days ; in July on one day ; in August on one day, and in October it reached or exceeded  $90^{\circ}$  on three days ; the highest in the year,  $100^{\circ}$ , took place on the 16th ; therefore the temperature reached or exceeded  $90^{\circ}$  on 14 days ; in the year 1880 on 36 days ; in 1881 on 27 days ; in 1882 on 8 days, and in 1883 on 16 days in the year.

The numbers in column 6 show the lowest temperature in each month. The lowest in the year was  $32^{\circ}$  in January ; the next in order was  $38^{\circ}$  in December, and  $41^{\circ}$  in February. In January the temperature was as low as  $32^{\circ}$  on two nights, and below  $40^{\circ}$  on six other nights in this month, and on one night in December ; therefore the temperature was below  $40^{\circ}$  on 9 nights in the year ; in 1880 it was below  $40^{\circ}$  on 13 nights ; in 1881 on 2 nights ; in 1882 on 13 nights, and in 1883 on 2 nights.

The yearly range of temperature was  $68^{\circ}$  ; in the four preceding years viz., 1880, 1881, 1882, and 1883 the yearly ranges of temperature were  $71^{\circ}$ ,  $67^{\circ}$ ,  $59^{\circ}$ , and  $71^{\circ}$  respectively.

The range of temperature in each month is shown in column 7, and these numbers vary from  $24^{\circ}$  in February to  $51^{\circ}$  in March.

The mean of all the highest temperatures by day, of the lowest by night, and of the average daily ranges of temperature are shown in columns 8, 9, and 10 respectively. Of the high day temperature the lowest,  $60^{\circ}\cdot 2$ , is in January, and the highest,  $86^{\circ}$ , in August ; of the low night temperature the coldest,  $40^{\circ}\cdot 9$ , is in January, and the warmest,  $68^{\circ}\cdot 9$ , in August ; the average daily range of temperature, as shown in column 10, in February  $14^{\circ}\cdot 1$  is the smallest, and in April  $24^{\circ}\cdot 4$  is the largest.

In column 11 the mean temperature of each month is shown, as found from observations of the maximum and minimum thermometers only. The month of the lowest temperature was January,  $50^{\circ}\cdot 5$ , and that of the highest was August,  $77^{\circ}\cdot 4$ . The mean temperature for the year was  $65^{\circ}\cdot 7$ , and of the four preceding years, viz., 1880, 1881, 1882, and 1883 were  $66^{\circ}\cdot 4$ ,  $66^{\circ}\cdot 7$ ,  $65^{\circ}\cdot 5$ ,  $65^{\circ}\cdot 7$  respectively.

The numbers in columns 12 and 13 are the monthly means of a dry and wet bulb thermometer taken daily at 9 a.m. In column 14 the monthly temperature of the dew point, or that temperature at which dew would have been deposited at the same hour is shown ; the elastic force of vapour is shown in column 15. In column 16 the water present in a cubic foot of air is shown ; in January it was as small as 3·6 grains, and in August was as large as 7·3 grains. The numbers in column 18 show the degree of humidity, moisture being considered 100 ; the smallest number is in October, 52, and the largest in November, 90 ; the weight of a cubic

foot of air under its pressure, temperature, and humidity at 9 a.m., is shown in column 19.

The most prevalent wind in January was S., and the least prevalent was N. In February the most prevalent was S., and the least were E. and S.W. In March the most prevalent was S., and the least were N. and its compounds. In April the most prevalent wind was S.W., and the least was N. In May the most prevalent were S.W. and N.W., and the least were E. and its compounds. In June the most prevalent was W. and the least were E., S.E. and S. In July and August the most prevalent were W. and S.W., and the least were E., S.E., S., N. and its compounds. In September the most prevalent was S.W., and the least were E. and S.E. In October the most prevalent were S. and S.W., and the least were E. and W. In November the most prevalent were S. and S.E., and the least were N.E., E., and S.W. In December the most prevalent wind was N.E., and the least were N., S.W., and W. The most prevalent wind for the year was S.W., which occurred on 72 times during the year, of which 13 were in both August and September, and 11 in July; and the least prevalent wind was E., which occurred on only 8 times during the year, of which three were in April, two in both March and December, and one in January.

The numbers in column 29 show the mean amount of cloud at 9 a.m.; the month with the smallest amount is June, and the largest February. Of the cumulus, or fine weather cloud, there were 143 instances in the year; of these there were 24 in July, 20 in August, 19 in September, and 4 only in December. Of the nimbus, or rain cloud, there were 39 instances, of which 13 were in February, 10 in January, and 5 only from May to October. Of the cirrus there were 39 instances. Of the cirro-stratus there were 17 instances. Of the stratus there were 13 instances, and 74 instances of cloudless skies; of these there were 16 in June, 12 in December, and 11 in November.

The largest fall of rain for the month in the year was 6.69 ins. in January, of which 2.09 ins. fell on the 22nd, 1.56 inch on the 23rd, and 0.74 inch on the 20th. The next largest fall for the month was 6.09 ins. in February, of which 0.76 inch fell on the 25th, 0.66 inch on the 24th, and 0.64 inch on the 16th. No rain fell from June 23rd till the 20th of October, making a period of 118 consecutive days without rain. In 1880 there were 168 consecutive days without rain; in 1881, 189 consecutive days without rain; in 1882 there were two periods of 76 and 70 consecutive days without rain; and in 1883, 167 consecutive days without rain. The fall of rain for the year was 18.73 ins. being 9.95 ins., 3.36 ins., and 11.33 ins. less than 1880, 1882, and 1883 respectively, and 1.24 inch larger than in 1881. The number of days on which rain fell was 65. In 1880 rain fell on 66 days, in 1881 on 48 days, in 1882 on 62 days and in 1883 on 71 days.

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