



## Meteorological Observations Taken at Beyrout, Syria

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To cite this article: JAMES GLAISHER & G. J. ELDRIDGE (1869) Meteorological Observations Taken at Beyrout, Syria, Palestine Exploration Quarterly, 2:3, 103-107, DOI: [10.1179/peq.1869.024](https://doi.org/10.1179/peq.1869.024)

To link to this article: <http://dx.doi.org/10.1179/peq.1869.024>



Published online: 02 Jan 2014.



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nominal description, but which has united in its operations the efforts of the Jew, the Mahomedan, and the Christian, can be on an occasion like the present presided over and commended to our sympathies by an Archbishop of the Church of England. (Cheers.) I shall say no more in asking you cordially to adopt the resolution which I have the honour to propose to you. (Cheers.)

The resolution was seconded by Mr. FRESHFIELD, and unanimously carried.

The CHAIRMAN: I have only, ladies and gentlemen, in the name of the Archbishop, to return you the thanks which he of course would have returned you for this compliment.

The meeting then adjourned.

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### METEOROLOGICAL OBSERVATIONS TAKEN AT BEYROUT, SYRIA.

(Latitude 33° 54' N.; longitude 35° 29' E. Height above sea level, 160ft.)

BY JAMES GLAISHER, ESQ., F.R.S., FROM THE OBSERVATIONS OF  
G. J. ELDRIDGE, ESQ., H.B.M.'S CONSUL.

THE observations at Beyrout, in Syria, distant from the sea about a quarter of a mile, with standard instruments, which have been examined by Mr. Glaisher, consisting of observations of a standard barometer, its attached thermometer, the dry and wet bulb thermometers, the direction and estimated strength of the wind, and general state of the weather, were made twice a day, viz., at 9 A.M. and at 10 P.M., together with readings of a maximum thermometer, a minimum thermometer, and a rain gauge, read daily. The following are the monthly values of the several elements:—

The numbers in column 1 of this table show the highest readings of the barometer in each month; of these, the highest appear in the winter, and the lowest in the summer months. Of the lowest readings in column 2, there does not seem to be any change due to seasons; the minimum is in December, and the next in order in June, whilst that in May is nearly of the same value. The numbers in the 3rd column show the extreme range of readings in each month, the smallest is in July, being less than a quarter of an inch, whilst the largest is in December, being nearly three-quarters of an inch, or three times as large as that in July. The numbers in the 4th column, showing the monthly average pressure of the atmosphere, are smaller in the summer and larger in the winter months, the difference between them being as much as a quarter of an inch.

The highest temperature of each month is shown in column 5; of these January has the lowest, 63°, and July the highest, 95°. The numbers in the next column show the lowest temperature of each month; in January and February the values are as low as 44°, whilst in June the minimum is 72°. The extreme range of temperature in

Name of Station.	Year and Month.	Barometer.				Temperature of Air in month.						Mean temp. at 9 a.m. & 10 p.m.			Vapour.			Mean weight of a cubic foot of air.	Wind.				Rain.					
		Highest reading.	Lowest reading.	Range.	Mean reduced to 32°.	Highest.	Lowest.	Range.	Mean.			Dry bulb.	Wet bulb.	Dew point.	Elastic force.	In a cubic foot of air.			Estimated strength.	Relative proportion of.								
									Of all highest.	Of all lowest.	Daily range.					North.	East.			South.	West.							
Beyrout, Syria.	1868.	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	
	Nov.	30-160	29-730	430	29-873	72-0	58-5	13-5	68-9	62-0	6-9	65-4	62-6	60-3	52-4	5-8	1-1	8-4	52-5	1-1	1	5	8	8	15	9-22	9-22	
	Dec.	30-260	29-530	730	29-901	66-0	52-0	14-0	64-0	56-3	7-7	60-1	58-9	55-8	53-0	4-3	1-1	8-1	53-4	1-5	4	3	13	11	22	12-48	12-48	
Beyrout, Syria.	1869.	30-300	29-640	660	29-860	63-0	44-5	18-5	58-7	52-6	6-1	55-6	52-3	49-2	38-1	3-9	1-0	8-0	53-8	1-4	4	4	9	9	19	9-21	9-21	
	Jan.	30-300	29-640	660	29-860	63-0	44-5	18-5	58-7	52-6	6-1	55-6	52-3	49-2	38-1	3-9	1-0	8-0	53-8	1-4	4	4	9	9	19	9-21	9-21	
	Feb.	30-230	29-580	650	29-915	66-0	43-5	22-5	50-3	52-1	7-2	55-7	56-6	52-7	49-1	3-8	4-0	0-9	7-6	53-6	0-8	6	5	3	10	14	5-19	5-19
	March.	30-170	29-550	620	29-817	85-0	55-0	30-0	69-0	60-0	9-0	64-5	64-4	60-0	56-4	4-6	5-0	1-6	7-5	52-8	1-6	8	2	6	12	8	1-31	1-31
	April.	30-060	29-690	370	29-753	82-0	61-0	21-0	74-9	68-2	6-7	71-6	67-9	64-9	61-5	6-7	1-8	7-9	51-6	1-0	8	2	5	9	3	0-29	0-29	
	May.	30-070	29-540	630	29-689	92-5	72-0	20-5	83-8	75-9	7-9	79-7	80-0	74-1	70-0	7-33	7-9	3-1	7-1	50-6	1-1	8	1	7	13	..	..	
	June.	29-860	29-640	210	29-621	95-0	69-5	35-5	84-5	75-8	8-7	80-2	80-6	75-0	71-2	7-64	8-2	3-0	7-3	50-5	1-0	3	0	7	11	..	..	
	July.	29-860	29-640	210	29-621	95-0	69-5	35-5	84-5	75-8	8-7	80-2	80-6	75-0	71-2	7-64	8-2	3-0	7-3	50-5	1-0	3	0	7	11	..	..	

each month is shown in column 7, and these numbers vary from about  $14^{\circ}$  in November and December, to  $35\frac{1}{2}^{\circ}$  in July.

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 temperatures, the lowest are in January and February (about  $59^{\circ}$ ), and the highest are in June and July (about  $84^{\circ}$ ). Of the low night temperatures, the lowest (about  $52^{\circ}$ ) took place in January and February, whilst the highest (about  $76^{\circ}$ ) occurred in June and July. The average daily range of temperature, as shown in column 10, is small, varying from  $6^{\circ}$  to  $9^{\circ}$ .

In column 11 the mean temperature of each month, as adduced from observations of the maximum and minimum thermometers only, is given, and these, with so small a range of temperature as shown in column 10, must be near the truth. The months of lowest mean temperature are January and February (about  $56^{\circ}$ ), and of the highest June and July (about  $80^{\circ}$ ), the difference being about  $24^{\circ}$ .

The numbers in column 12 are those found by the simple mean of observations of a dry-bulb thermometer, taken daily at the hours of 9 A.M. and 10 P.M.; their agreement with those in the preceding columns is so close that it may safely be considered that the true mean values of meteorological elements can be adduced from observations taken in this climate at those hours, and therefore the numbers in columns 13 to 19, containing the hygrometrical states of the air, represent the mean values of each element for the whole day, and not merely those of the hours of observation.

The difference between the numbers in columns 12 and 14 show the average monthly temperature of the dew-point below that of the air, or that temperature at which dew was deposited; it is at about  $5^{\circ}$  below that of the air in winter, and at about  $10^{\circ}$  in summer.

The elastic force of vapour in January, as shown in column 15, is about the half of that in June and July. The water present in the air in the coldest months is about 4 grains, and in the hottest months about 8 grains, per cubic foot. The numbers in column 18 show that the air is dry, but not particularly so; it is most humid in November, and least so in June. The weight of a cubic foot of air under its mean pressure, mean temperature, and mean humidity, has varied about 33 grains in a cubic foot from January to July; about 24 grains is due to the expansion of air by the higher temperatures of June and July, and about 9 grains to the less pressure of the atmosphere in those months, both causes operating the same way.

Upon the whole period :—

The strength of the wind was somewhat greater in the months of December, January, and April, than in the other months.

The east wind was the least frequent, and the west the most frequent.

In the months of November, December, January, and April, the wind was mostly from south and west, and in the other months from north and west.

The largest amount of rain fell in the three months November, December, and January; at times falls to the amount of lin., 2in., and to 2½in. per day, have taken place. On the 1st, 2nd, and 3rd days of November, the fall of rain amounted to nearl 7in.; in the months of November, December, and January, the falls amounted to 30in. nearly, rain falling on every two out of three days nearly, whilst none fell in the months of June and July.

*Thunderstorms* occurred on the night of the 1st-2nd of December; 10th of December; the night of the 8th-9th of January; 22nd of January; the night of the 27th-28th of January; 16th of April; the night of 26th-27th of April; and 29th of May.

*Thunder was heard* on the 28th of February; 5th and 9th of April.

*Lightning was seen* on the 18th of November, 18th and 19th of December, 18th of January, 27th of February, and 11th, 28th and 29th of May.

*Lunar Halos were seen* on the 25th and 28th of December.

*Hail fell* on the 29th of November.

*Khamsin, or Hot Wind* prevailed on the 4th, 19th, 20th, and 21st of April.

The following observations were made at OLIEH, MOUNT LEBANON, about eight miles S.W. of Beyrout, about 2,700ft. above the level of, and five miles distant from, the sea.

The observations include readings of the barometer and dry and wet bulb thermometers, taken four times a day, viz., between 8h. and 9h. A.M., at noon; between 5h. and 6h. P.M.; and between 10h. and 11h. P.M. The means correspond to these times, and for the want of night observations will be higher than the true mean values for this station; the barometric readings have been reduced to the constant temperature of 32°. The results are as follows:—

Name of Station.	Year and Month.	Barometer.				Mean temp.			Vapour.			Mean degree of Humidity. (Saturation = 100)	Mean weight of a cubic foot of air.
		Highest Reading.	Lowest Reading.	Range.	Mean unreduced.	Dry Bulb.	Wet Bulb.	Dew point.	Elastic force.	In a cubic foot of air.			
										Mean.	Short of saturation.		
Olieh, Mount Lebanon.	1868.	In.	In.	In.	In.	Deg.	Deg.	Deg.					
	July.	27.165	26.935	0.230	27.063	70.8	66.1	62.5	.567	6.2	2.1	75	470
	Aug.	27.540	27.005	.535	27.112	77.7	68.0	61.3	.542	5.8	4.4	57	466
	Sept.	27.260	27.095	.165	27.174	70.5	66.7	63.8	.594	6.5	1.7	79	473
	Oct.	27.370	27.135	.235	27.240	74.8	63.7	55.7	.456	4.8	4.5	52	471

From the thermometrical observations the temperature appears to be high, and the air dry, much dryer than at Beyrout. The wind in the

months of July, August, and September, was mostly from the S.W., and in October from the east and north. On the 4th day of July the air was so clear that the mountains of Cyprus, distant about 135 miles, were distinctly visible at sunset.

Showers of rain fell on August 13th and 19th, and September 18th and 21st.

The following results were deduced from observations taken at the JEWISH COLLEGE, GHAZIR, MOUNT LEBANON, at about 1300ft. above the level of the sea. The barometer observations were taken with two Aneroid barometers, the reading of which agreed well together, and those of temperature with French instruments (whose characters are unknown) in the months of March and April, and with English in the months of May and June. The headings of each column will give sufficient explanation; but the returns are too few to be able to speak with any confidence as to their value:

Name of Station.	Year and Month.	Barometer.				Temp. of the Air.			Amount of rainfall.
		Highest reading.	Lowest reading.	Range.	Mean unreduced.	Maximum.	Minimum.	Range.	
Jewish College	1869.	in.	in.	in.	in.	deg.	deg.	deg.	in.
	March.	28·610	28·100	·510	28·390	73·8	46·4	27·4	4·33
	April.	28·760	28·310	·450	28·490	84·2	50·4	33·8	3·22
	May.	28·580	28·250	·330	24·440	82·4	58·1	24·3	1·37
	June.	28·650	28·250	·400	24·430	93·2	65·5	27·7	—

JAMES GLAISHER.

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