# DISCOVERIES DURING THE CONSTRUCTION OF THE ACRE-DAMASCUS RAILWAY.

By G. Schumacher, C.E.

A few discoveries made in a side cutting of the new railway works near the monument erected in memory of their inauguration, 1 kil. and 200 metres from the Haifa Station, may be noted.

An irregular-shaped depression in the rock ; its eastern end rounded, 5 feet across, and containing a round hole 1 foot 3 inches deep and 1 foot 11 inches in diameter. This portion is about 7 or 8 inches deep, and the western portion about 2 feet deep. The whole is carefully plastered, also the circular hole, and seems to represent a wine or olive press.

Adjacent to this is a square depression in the same soft sandstone rock measuring 5 feet by 3 feet 3 inches, apparently connected with the above-described basin by a canal 11 inches to 13 inches wide, partly plastered ; 40 feet eastwards a third rounded depression, 5 feet 6 inches by 2 feet 6 inches and 3 feet deep, with a canal running towards the last mentioned depression is found. This latter contains no signs of plastering. To the right is a circular basin, 3 feet 2 inches in diameter, 2 feet 6 inches deep, cut out of the rock, without plastering. Other square and round holes are traceable in the neighbourhood, in fact it seems as if one consecutive lot of basins of all shapes originally existed, all having the same object as wine presses and basins ; their surface was covered with a layer of soil 6 inches to 1 foot 6 inches thick.

Near kil. 0 + 600 from Haifa, an old rock-cut destroyed water canal was struck.

Haifa, *July*, 1893.

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# METEOROLOGICAL REPORT FROM JERUSALEM FOR YEAR 1883.

By James Glaisher, 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 appear in the winter, and the lowest in the summer months ; the maximum for the year is 27·613 inches, in December ; in 1882 the maximum was in January. In column 2 the lowest in each month is shown ; the minimum, 27·122 inches, occurred in both January and February ; in 1882 the minimum was in April. The range of readings in the year was 0·491 inch ; in 1882 it was 0·613 inch. The numbers in the 3rd column show the extreme range of readings in each month ; the smallest, 0·144 inch, is in June,

and the largest, 0·452 inch, is in February. The numbers in the 4th column show the mean monthly pressure of the atmosphere; the highest, 27·490 inches, is in October, and the lowest, 27·282 inches, is in July; in the year 1882 the largest was in January, and the smallest was in July. The mean pressure for the year was 27·384 inches; at Sarona the mean pressure for the year was 29·818 inches.

The highest temperature of the air in each month is shown in column 5. The highest in the year was 98°·5, on June 2nd, on which day the maximum temperature at Sarona was 80°; the first day in the year the temperature reached 90° was on May 1st, and only on one other day in this month did the temperature reach 90°. In June there were 6 days when the temperature reached or exceeded 90°; in July, on 7 days; in August, on 10 days; in September, on 7 days; and in October, on 4 days. Therefore the temperature reached or exceeded 90° on 36 days in the year. At Sarona the temperature reached 90° as early as March 30th, and reached or exceeded 90° on only 16 days in the year; the highest in the year at Sarona, viz. 106°, took place on September 30th; on this day the maximum temperature at Jerusalem was 94°·5.

The lowest temperature of the air in each month is shown in column 6. The lowest in the year was 31°, on March 1st; the temperature was below 40°, in January, on 9 nights; in February, on 10 nights; in March, on 5 nights; and in December on 5 nights. Therefore the temperature was below 40° on 29 nights in the year. The yearly range of temperature was 67°·5. At Sarona the temperature was below 40° on only 2 nights; the lowest in the year was 35°, on March 17th. The yearly range at Sarona was 71°.

The range of temperature in each month is shown in column 7, and these numbers vary from 23° in February, to 55° in March. At Sarona the range of temperature in each month varied from 25° in July, to 62° in March.

The mean of all the highest 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, 51°·8, is in January, and the highest, 87°·2, is in August. At Sarona, of the high day temperatures, the lowest was 62°·8 in February, and the highest, 88°·2, in July. Of the low night temperatures, the coldest, 40°·2, is in February, and the warmest, 65°·1, is in August. At Sarona, of the low night temperatures, the coldest was 45°·6 in February, and the warmest, 69°·4, in August.

The average daily range of temperature, as shown in column 10, the smallest, 9°·3, is in January, and the largest, 23°·4, in May. At Sarona, of the average daily range, the smallest, 15°·7, was in January, and the largest, 27°·7, in September.

In column 11, the mean temperature of each month, as found from observations of the maximum and minimum thermometers only are hown; the month of the lowest temperature is February, 46°·1, and the month of the highest, August, 76°·1. The mean for the year is 62°·3.

At Sarona, of the mean temperature of each month, the lowest is December, 51°·1, and that of the highest, August, 78°·8. The mean for the year at Sarona is 65°·7.

The numbers in columns 12 and 13 are the monthly means of a dry and wet bulb thermometer, taken daily, at 9 a.m., and in column 14 the monthly temperature of the dew-point, or that of the temperature at which dew would have been deposited. The elastic force of vapour is shown in column 15, and in column 16 the water present in a cubic foot of air, in January and February, was as small as 3 grains, and in August as large as $5\frac{1}{2}$ grains. The numbers in column 18 show the degree of humidity, saturation being considered as 100, the smallest number in this column is, in September, 42, and the largest in January, 85. 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.W., and the least prevalent was N. In February the most prevalent was S.W., and the least were N., N.E., and S. In March the most prevalent was S.E., and the least prevalent was N.E. In April the most prevalent were W. and E., and the least were N. and N.E. In May the most prevalent was N.W., and the least was N.E. In June the most prevalent were N.W. and W., and the least were N.E., S., and S.W. In July the most prevalent was N.W., and the least were N. and its compounds. In August the most prevalent was N.W., and the least prevalent were E., S.E., and S. In September the most prevalent were N. and N.W., and the least were S. and S.W. In October the most prevalent was E., and the least prevalent was S.W. In November the most prevalent were E. and W., and the least were N., N.E., and S. In December the most prevalent was W., and the least prevalent were the N.E. and N.W. winds.

The most prevalent wind for the year was N.W., which occurred on 97 times, of which 23 were in July, and 17 in August, and the least prevalent wind for the year was N.E., which occurred on only 20 times. At Sarona the most prevalent wind for the year was S.W., which occurred on 76 times, and the least prevalent was E., which occurred on only 7 times in the year.

The numbers in column 28 show the mean amount of cloud in each month; the month with the smallest amount is September, and the largest, January. Of the cumulus, or fine weather cloud, there were 68 instances in the year; of these, 16 were in August, and 11 in both June and July, and none in either January or December. Of the nimbus, or rain cloud, there were 46 instances in the year, of which 13 were in January and 7 in both March and November, and only 8 instances from April to October. Of the cirrus there were 5 instances; of the stratus, 8 instances; of the cirro stratus, 40 instances; of the cumulus stratus, 46 instances; of the cirro cumulus, 41 instances; and there were 111 instances of cloudless skies, of which 20 were in September, 18 in June, and 17 in July, and 3 only in each of the months of January, February

and December. At Sarona there were 84 instances of cloudless skies, of which 14 were in June, 13 in May, and 11 in March.

The largest fall of rain for the month in the year was in January, 10·93 inches, of which 1·62 inch fell on the 3rd, 1·52 inch on the 17th, and 1·30 inch on the 23rd. The next largest fall for the month was 7·59 inches in November, of which 3·15 inches fell on the 4th, and 1·55 inch on the 3rd, and the next in order was 5·74 inches in March, of which 3·20 inches fell on the 2nd. No rain fell from April 25th till October 11th, making a period of 168 consecutive days without rain. The total fall of rain for the year was 31·92 inches, which fell on 70 days during the year. At Sarona the largest fall for the month in the year was 11·32 inches in January, and the next in order was 8·14 inches in November. No rain fell from April 25th till October 10th, making a period of 167 consecutive days without rain. The total fall of rain for the year at Sarona was 30·06 inches, which fell on 71 days during the year.

(*To face p.* 334.)

# MONTHLY METEOROLOGICAL TABLE

Deduced from observations taken at Jerusalem, by Joseph Gamel, in a garden 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 in month. | | | | Temperature of the air in month, at 9 a.m. | | | | | | | Mean readings. | | | Vapour. | | | Degree of humidity. | Weight of a cubic foot of air. | Direction of wind. Relative proportion of. | | | | | | | 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 of vapour in a cubic foot of air. | Additional weight required for saturation. | | | N. | N.E. | E. | S.E. | S. | S.W. | W. | N.W. | | Number of days on which it fell. | Amount collected. |
| 1883. | in. | in. | in. | in. | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | grs. | grs. | grs. | ° | grs. | | | | | | | | | | in. |
| January ... ... | 27·542 | 27·122 | 0·420 | 27·380 | 60·5 | 36·5 | 24·0 | 51·8 | 42·5 | 9·3 | 47·2 | 47·8 | 45·5 | 43·0 | ·277 | 3·1 | 0·6 | 85 | 500 | 0 | 3 | 1 | 1 | 1 | 15 | 6 | 4 | 7·2 | 19 | 10·93 |
| February ... ... | 27·574 | 27·122 | 0·452 | 27·419 | 58·5 | 35·5 | 23·0 | 52·0 | 40·2 | 11·8 | 46·1 | 47·5 | 44·7 | 41·6 | ·263 | 3·0 | 0·7 | 81 | 501 | 2 | 3 | 3 | 2 | 2 | 8 | 4 | 4 | 6·2 | 13 | 3·79 |
| March ... ... | 27·609 | 27·198 | 0·411 | 27·406 | 86·0 | 31·0 | 55·0 | 63·5 | 46·2 | 17·3 | 54·9 | 56·1 | 49·5 | 43·3 | ·283 | 3·2 | 1·8 | 62 | 492 | 2 | 1 | 2 | 10 | 5 | 4 | 5 | 2 | 5·8 | 9 | 5·74 |
| April ... ... ... | 27·527 | 27·172 | 0·355 | 27·336 | 83·0 | 40·0 | 43·0 | 68·9 | 49·8 | 19·1 | 59·8 | 62·2 | 53·3 | 45·7 | ·303 | 3·5 | 2·8 | 55 | 485 | 1 | 1 | 6 | 4 | 3 | 3 | 7 | 5 | 4·8 | 3 | 0·35 |
| May ... ... ... | 27·467 | 27·198 | 0·269 | 27·354 | 93·5 | 47·5 | 46·0 | 78·4 | 55·0 | 23·4 | 66·7 | 69·7 | 59·4 | 51·4 | ·380 | 4·1 | 3·8 | 52 | 478 | 2 | 0 | 4 | 7 | 1 | 1 | 4 | 12 | 2·9 | 0 | 0·00 |
| June ... ... ... | 27·403 | 27·259 | 0·144 | 27·321 | 98·5 | 56·0 | 42·5 | 85·0 | 61·8 | 23·2 | 73·4 | 77·7 | 64·2 | 54·8 | ·430 | 4·6 | 5·6 | 46 | 470 | 5 | 0 | 1 | 2 | 0 | 0 | 10 | 12 | 1·3 | 0 | 0·00 |
| July ... ... ... | 27·346 | 27·189 | 0·157 | 27·282 | 96·5 | 58·0 | 38·5 | 85·5 | 64·3 | 21·2 | 74·9 | 78·7 | 65·0 | 55·6 | ·442 | 4·7 | 5·8 | 45 | 468 | 0 | 0 | 0 | 0 | 1 | 2 | 5 | 23 | 1·9 | 0 | 0·00 |
| August ... ... | 27·409 | 27·260 | 0·149 | 27·314 | 98·0 | 60·5 | 37·5 | 87·2 | 65·1 | 22·1 | 76·1 | 78·3 | 66·7 | 58·7 | ·496 | 5·4 | 5·0 | 51 | 469 | 5 | 1 | 0 | 0 | 0 | 1 | 7 | 17 | 2·9 | 0 | 0·00 |
| September ... ... | 27·533 | 27·236 | 0·297 | 27·413 | 94·5 | 59·5 | 35·0 | 86·3 | 63·2 | 23·1 | 74·8 | 78·5 | 64·0 | 54·0 | ·418 | 4·4 | 6·0 | 42 | 470 | 8 | 3 | 3 | 2 | 0 | 0 | 3 | 11 | 0·8 | 0 | 0·00 |
| October ... ... | 27·530 | 27·370 | 0·160 | 27·490 | 96·5 | 54·5 | 42·0 | 79·7 | 60·2 | 19·5 | 67·0 | 71·9 | 61·3 | 53·3 | ·408 | 4·4 | 4·1 | 51 | 478 | 6 | 4 | 8 | 2 | 2 | 1 | 5 | 3 | 4·0 | 3 | 0·31 |
| November ... ... | 27·580 | 27·217 | 0·363 | 27·448 | 70·5 | 45·3 | 25·2 | 64·0 | 51·9 | 12·1 | 58·0 | 58·5 | 54·1 | 50·1 | ·363 | 4·0 | 1·5 | 74 | 490 | 0 | 3 | 10 | 1 | 1 | 5 | 7 | 3 | 3·0 | 11 | 7·59 |
| December ... ... | 27·613 | 27·238 | 0·375 | 27·442 | 66·0 | 36·0 | 30·0 | 55·0 | 43·1 | 11·9 | 49·1 | 50·1 | 46·7 | 43·1 | ·278 | 3·2 | 0·9 | 77 | 498 | 3 | 1 | 4 | 5 | 5 | 4 | 8 | 1 | 5·9 | 12 | 3·21 |
| Means ... ... | 27·511 | 27·215 | 0·296 | 27·384 | 83·5 | 46·7 | 36·8 | 71·4 | 53·6 | 17·8 | 62·3 | 63·1 | 56·2 | 48·7 | ·362 | 4·0 | 3·2 | 60 | 483 | sum. 34 | sum. 20 | sum. 42 | sum. 36 | sum. 21 | sum. 44 | sum. 71 | sum. 97 | 3·9 | sum. 70 | sum. 31·92 |
| | 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 |