

THE SURVEY OF PALESTINE.

LIEUT. CLAUDE R. CONDER'S REPORTS.

XI.

WINTER WORK.

R. E. STATION, HAIFA, *Jan. 20, 1873.*

Survey.—In sending home another instalment of our survey, I find a good opportunity for a review of the work which we have done since last July, when first I became personally concerned in the Expedition.

The Ordnance Survey of Palestine now extends over rather more than 1,250 square miles, the work of little more than a year, and representing about one-seventh of the total amount which it is proposed to include. Viewed in the light of work accomplished by a most insufficient party (as far as numbers are concerned), this will, I imagine, be considered a result more satisfactory than could have been expected; but, on the other hand, the fact that at the present rate six more years would be required to complete the undertaking, points to the extreme desirability of increasing the number of men to be employed in the work.

It is calculated that during the first period up to Nablus the monthly rate of progress was about 110 square miles. From Nablus to Haifa it has been slightly over 140 square miles. Thus, up to July, 1872, when the first tracings were sent home, 560 square miles were completed with the exception of the hill-shading. The present tracings contain, roughly speaking, 700 square miles, and are complete, the hill-shading being included.

The main reason for this increase of thirty-six per cent. in the rate of work I take to be the increased size of the sides of triangles in the triangulation, which is rendered possible by the less mountainous character of the country. The detail has been almost as close in the plains as in the hills; the number of ruins visited and examined has been greater, but as it is possible to ride faster, and therefore farther, in the plains, the possible distance apart of trigonometrical stations has been greatly increased. Thus in the Judæan hills the average length of the side of a triangle was five miles; in the Plain of

Esdraelon it may be taken as about ten ; and in the country between Nazareth, Cæsarea, and Akka, at fifteen. Nor has the accuracy of the work in any way suffered, as is proved by the calculations for latitude, which agree within two or three seconds with those of the Admiralty Chart for Akka and Cæsarea, and agree also as nearly as can be plotted with the triangulation. Finally, as commanding points have always been chosen, the detail also has, during the clear autumn weather, been observed from the stations with as much exactness as was obtained with smaller triangles.

I have already reported on the satisfactory manner in which the second base was measured and checked. Haifa is for another purpose as important a station as the Plain of Esdraelon was for checking the plan or azimuth measurements of the triangulation. The heights of the trigonometrical stations are fixed by a chain of vertical angles starting from Jaffa and running up the country to Nazareth, and down to the sea-coast at Haifa. The most direct line observed is carried from one to another over eleven points, whilst other lines, which serve as checks, include even a greater number of successive operations. The error, if there is any, will therefore have increased gradually ; and to test this the actual height of the last point (the Convent on Carmel) has been ascertained by another method to be 556.25 feet above sea level. We are not able, as in the case of the base line, to report on the result of this check, which must await calculations to be made in England, but there is no reason to suppose that the result of these observations will turn out to be at all less satisfactory than that of the measurement of the second base.

There is only one other point in the technical part of the work which is likely to be interesting to subscribers generally: this is the representation of the hills, which has not been previously added to the map. One of our late visitors complained that in no map which he had ever seen of Palestine was there any idea given of the character of the surface of the country, which is certainly a very peculiar one, as the almost equal heights of most of the hills, and the frequent deep and stony valleys which are often concealed until close at hand, and in many cases extremely tortuous, are features very different from any in at least English scenery.

The large scale of our map allows of these features being well shown. The method employed is that commonly used in the Ordnance Surveys of showing the slopes of the hills, not as though a light fell upon them from a corner of the paper, but simply with regard to the comparative steepness of the gradients. Thus the darker shades represent the steeper slopes according to a definite scale, and although on a larger map the accidents of the ground would be even more minutely distinguished, still for its scale the one-inch survey of Palestine would form a perfect military map, as the practicability of the gradients for the passage of infantry, artillery, or cavalry, could be at once obtained by use of the scale of shade. A commander would

indeed be unprepared for the extreme stoniness of the country, which would render military movements very tedious, and for the condition of the roads, but these are not details which it is possible to show on a map.

Archæology.—The return which accompanies the maps will, I hope, give a distinct idea of the character and conditions of ruined sites in Palestine, an idea which it is difficult to convey vividly in a short report. A few words may therefore be added in explanation of the return. The number of ruins is approximately 200, of which, however, twenty-one per cent. are evidently modern and of no interest, being merely inserted because they are marked as ruins on the map; these include the small towers of drystone walls with a roof of mud, which are placed in conspicuous positions above the fig, olive, and vine plantations, and from the top of which the watchman looks out to guard the fruit from thieves. By reason of their hasty construction they fall readily into ruins, but are easily distinguished from more ancient and interesting remains.

No less a proportion than thirty-five per cent. of the ruins are, it will be observed, marked "Indistinguishable" or "No indication of date." The state of preservation of the ruins seems to preclude the possibility of assigning a date. The "indistinguishable" ruins consist of heaps of broken stones, worn by the heavy winter rains, until all idea of their original form, finish, or purpose is lost; often the only indication is the grey colour of the mound, to which the name of Khirbeh is attached, or a few scattered stones; rarely indeed is a shaft, base, or capital discovered lying without indication of its position in the original building, and none yet found can date before the Herodian period. In fact, the site of a true Jewish town may be expected generally to give no further indication than the dusty mounds described, except, indeed, such as is derived from the vicinity of rock-cut tombs and reservoirs or channels which, as at Anin (identified by Mr. Drake with a Jewish town), exist close to the accumulation of powdered masonry of some two thousand years ago.

In some cases the old materials have been used in newer constructions, and these again have fallen into ruins almost untraceable; still more frequently pillars and stones have been rolled down hill or carried away for use at a distance.

Thus, for instance, at Nablus the granite shafts, belonging possibly to the Samaritan temple on Gerizim, are to be found amidst the ruins of a Roman villa in the plain, and again in another site of same date at a little distance, whilst even to the present day the habit is continued by the natives, and of the fine blocks once strewed round Tell el Semak, near Haifa, no trace but the holes dug in excavating them is left.

In an archæological point of view, such ruins, though not more effaced than would be expected, considering their great age and the violent action of the weather upon them, are of course wholly without

interest; but when their presence confirms the arguments to be deduced from comparison of names, from incidental references in ancient writers, or from similar sources of information, their true value becomes apparent. Hence even the most unpromising are carefully noted, and already in many instances their discovery has proved of greater importance than could at first be expected.

Turning from these, which form the majority of the remains tabulated, to others in a more perfect condition, the first in interest are perhaps the *tells*, of which eighteen principal examples are scattered over the great Plain of Esdraelon and that of Akka. Their artificial nature is plainly shown by their position, though the name is also given to natural hillocks, such as the Túlúl el Jah'ash, which are volcanic outbreaks. In the great plain they appear towards the foot of the hills, on the west and north, generally at the mouth of wadys. No doubt they were originally intended as military posts, perhaps thus guarding the principal inlets by which incursions from wild mountain tribes were to be feared. Their shape is roughly oval, or circular, with sides sloping at between thirty and forty degrees; in size they vary from that of Tell Mutasellim, large enough to be the site of a considerable town, to that of such small mounds as Tell el Súbát, which is merely a low mound; in height they must in some instances be over thirty feet. They are covered with coarse grass, and with thistles, which often attain a height of seven or eight feet, and during a part of the year present a formidable barrier. The ruins on these *tells* are in many instances far more modern, as at Tell Kaymun, mentioned later, but the original builders may have belonged to the Canaanitish period. Unlike those mentioned by Captain Warren in the Jordan Valley, it would seem probable that they are formed of, or cased with, stone such as that of the surrounding hills; but none of them gave any indication of a favourable spot for excavation, as much time and money might probably be expended with but small result.

Next in interest to the tells come the rock-cut tombs and water-channels, of which we have found twenty-six groups. The water-channels were found at Anin, Lejjun, Kireh, and near Saffuriyeh. In the first three cases they are passages resembling the famous one at Jerusalem, between the Virgin's Fountain and Siloam, just broad and high enough for a man to walk in, and terminating suddenly. At Lejjun and Kireh there was a stream of water ankle deep flowing through the passage, and a sound of trickling water at the end, which, in the three cases, was at a distance of some twenty feet from the entrance. The reservoirs near Saffuriyeh are, however, on a far larger scale. They were kindly shown to us by Mr. Zeller, who also, I believe, took Captain Wilson to the place, and a couple of days were spent in planning them, and in tracing the aqueduct which brought water to them. Mr. Drake has already referred to them, so I will merely add that the passage at the western end is choked, and is one of the places where excavation would be desirable, as the ultimate destination of the

large quantity of water thus collected is not at present clear. In each of these four cases a rock-cut cemetery exists in the immediate neighbourhood of the water-channels, and no doubt an ancient town, of which both tombs and aqueducts are the only remains, was also situate near to them.

The groups of tombs may be divided into three classes in the table: those with the well-known *loculus* running perpendicularly in from the walls of the chamber; those with *loculi* in arched recesses, or some other arrangement, counting with them such as are blocked up or broken away, so that it is impossible to say that they have had perpendicular *loculi*; finally, tombs like those at Iksal, already described in a former report, which appear to be of Christian origin. Of the last class there are but two other examples; of the first, or indisputably Jewish tombs, there are ten groups, and the remaining fourteen are included in the second class. The most important of these groups is that at Shaykh Abrayk, where I examined and measured fourteen separate tombs besides the great system of chambers, of which I have already sent home a plan, as well as two others called Magharet el Jehannum and Magharet el Siah, the latter being on a gigantic scale, the side recesses fifteen feet long, and the height of the farther portion of the cavern about twenty feet.

A few remarks on the principal deductions to be made from a comparison of these tombs, will not be out of place here.

It is generally supposed that the perpendicular *loculus* is distinctive of Jewish tombs, and M. De Vogüé lays much stress on the fact of its non-appearance in other countries. At Shaykh Abrayk, however, as well as at Haifa, the perpendicular *loculus* is found associated with two other arrangements of what may be called *attached sarcophagi* standing in arched recesses at the sides of the chamber. In these cases the perpendicular *loculus* appears nevertheless to be the oldest; it is always found in the outer, never in the inner or subsequently excavated chambers. In one case three such *loculi* have been destroyed in subsequently enlarging the chamber; in others they exist on the level of the floor, and below *loculi* raised some three feet, and of different character. It appears just possible that this peculiar arrangement may have been for some special purpose or class of corpses, as distinguished from those of the parallel *loculi*. In one tomb at Shaykh Abrayk, in which these *loculi* occur, a single word is written in Greek letters with red paint in the inner or newer portion of the tomb. At Haifa a rough representation of the seven-branched candlestick appears outside a sepulchre containing both kinds of *loculi*. Neither of these indications of date are, however, conclusive. The Greek-writing nation may have enlarged an ancient Jewish tomb, as indeed the destruction of three of the perpendicular *loculi* would seem to point out; whilst, on the other hand, at Haifa the tomb is in the present Jewish cemetery, and *may* have been re-used by the Jews, and the sculpture be thus later than the tomb.

On the whole, however, there seems to be nothing in these discoveries

to contradict the opinion that where we find tombs with the perpendicular loculus we have a trustworthy indication of true Jewish handiwork.

M. De Saulcy mentions a tradition in connection with his discovery at the so-called Tombs of the Kings at Jerusalem, that the roofs of sepulchral chambers intended for women were formed of two planes meeting in the centre, which was the highest part, whilst those of the chambers for men were either flat or arched. Of the former construction I have found one example at Shaykh Abrayk, in a tomb consisting of one chamber, with places for eighteen bodies, and an unique arrangement. In one of these loculi I found a perfect but very ancient skull.

In conclusion, it appears that not unfrequently two tiers of chambers existed above one another, and often a hole broken in the recess behind one of the loculi leads to another system of chambers, which in some cases *seem* to have no other entrance. Many loculi are so small that they must have been intended for children.

So curious and interesting are these tombs that I might fill many pages with descriptions and notes upon them, which, however, I must reserve for a future report. It is to be hoped that a perfect, or almost perfect, collection of plans from every part of Palestine will in time materially increase our information as to their date and history.

We can only point to three ruins besides the tombs and water-channels with any certainty as being Jewish. These are, the terraces and ruins of Kh. Jafa, the ancient wells and indications of ruins at Tell Dothan, and the curious cairn at El Mintar. Of the indistinguishable remains, however, a large proportion may most probably be previous to the Herodian period.

Next in order come the Roman ruins, of which we have found twenty-three indisputable examples; they are not, however, of any great importance, with one or two exceptions. The reservoirs near Saffuriyeh just mentioned are, from the cement, Roman in all probability, as well as the aqueduct leading to them, which we traced for a considerable distance, and found that it was possible for it to come, as it is said to have done, from the Ain el Jinán. It is partly built in rustic masonry and mortar, but during the greater part of its length seems to have been merely a small rock-cut channel, as described by Mr. Drake. The temple (as we suppose it to be) at Kh. Abu 'Amir is also no doubt Roman. I have already mentioned it in a report, and sent home a plan and drawings of the details, such as still remain. It is quite possible that a little excavation here might bring to light something of interest, possibly an inscription. The floor is covered with some four feet of rubbish, so that mining would be out of the question. We did not, however, at the time think it advisable to stay for such a task, as the discovery was made in September, when we were at Jenin, and most anxious to move from a temperature of 108° Fah. in the plain to the cooler atmosphere of the hills.

There can be little doubt that Shaykh Abrayk was a place of some importance in Roman times. Capitals, foundations of walls, and the extensive cemeteries which seem to me to show two periods of sepulture—the Jewish on the eastern, the Roman on the more western hills, all point to this fact. The place has been curiously overlooked before, and its identification will be one of interest. A small building, possibly a temple, exists near the town at a spring, and is known as El Is-hakiyeh.

One other point remains where excavation would be desirable, as well as at Abu 'Amir, and in the reservoirs at Saffuriyeh: this is the ruin of El Jireh, near Nazareth. Report X. gives an account of the tombs, which I thoroughly explored and measured; but the ruin on the tell we were unable to examine. I understand from Mr. Zeller that vaults of megalithic masonry (drafted, I believe) support the mound in part, and we employed a native for one day to excavate a passage from above, where the sinking of the surface indicated that the vaulting had given way. His attempts were unsuccessful, and I found that some half-dozen men would be required, and several days would no doubt elapse before we could get through the surface rubbish. Should the Committee consider it worth while, we could easily devote a little time to this exploration when camped in the neighbourhood again, as El Jireh is near the edge of our work. Cement-lined cisterns, scattered stones, a pillar shaft, a bit of plain cornice, and a couple of caves, with traces of the old road to the place, are the only remains to be found on the exterior of the tell; the spot is, however, very well known to the natives, and may prove a site of some interest.

The fine structural tomb of M'alul, first visited by Captain Wilson, the remains of a probable Roman villa at Nablus, which we excavated partially, the Herodian colonnade at Samaria, the altar and sarcophagus at Kh. Khasneh, the ruined building at Lejjun, have all been mentioned in previous reports, and I have taken such plans and sketches as were rendered possible by the condition of the ruins.

To pass on to later times, the Byzantine and early Christian ruins are next in chronological order. These include the two churches of Justinian at Nablus already visited and explored by Captain Wilson, the interesting but almost untraceable little church newly discovered by Corporal Armstrong on Tell Kaymun, of which I have a plan, and the two small convents at the 'Ain Umm el Faruj, mentioned by Mr. Drake in his last report.

Of Crusading, or early Saracenic ruins (for it is not always easy to distinguish between the two), the list enumerates twelve, including the tower of Saffuriyeh, the Burg-Fara'a in the wady of the same name, the tower near Jenin, and the small forts or Khans (in both cases with tower attached) at Rushmia, near Haifa, and on Tell Kaymun, the tower at Iksal, the church of St. John at Samaria (already well known), and the remains of the fosse round the once important town of El Fuleh.

Although the earlier Crusading buildings, when the rounded arch of the Italian Gothic was still retained, are easy to distinguish, those structures which were built *after* the first half of the twelfth century are nearly connected with the early pointed Saracenic style. The use of a draft also was common to both styles, the centre being left with a rustic bow projecting on the average six inches; the draft being three inches broad, and sunk about the same amount; the stones, well proportioned, but of no great size, being on the average five to six feet in length. To this style the tower near Umm el Fahm, which has been called a *vineyard tower* by Mr. Drake, as well as two which I discovered and sketched on the hills east of Jenin, belong. In one of these I found the remains of a door and the shafts of two small pillars, much worn. The object of these small towers, the largest of which is only some thirty feet in length and breadth, is not to me at all clear; they occupy positions at some elevation. Near one (the Kasr at R'aba) no less than five rock-cut cisterns or wells, near the other no water at all, is found; they are not placed in specially commanding situations, as in the case of the Rushmia fort or the building at Tell Kaymun, and altogether they are puzzling both in style and in locality.

Such is a brief account of the archæological explorations which have been carried out during the last six months. More detailed notes, plans, and sketches, await a time when our work shall leave leisure to put them into a connected form, and are carefully stored in order in my note-book.

To sum up, we find 35 per cent. of the ruins "indistinguishable." Of Jewish remains, the rock-cut tombs and reservoirs, the tells, and a few ancient wells and cisterns, are the principal; tombs, reservoirs, temples, and traces of a town, are amongst the Roman remains. Churches and towers represent the works of Christian architects. Adding together Jewish and Roman remains, we find some 35 per cent. to be of interest in illustration of the Bible and Josephus. Were *all* the "indistinguishable" ruins Jewish, we should have 70 per cent., the value of which future examination of the literature of the subject would show, but this proportion cannot be reasonably expected. It seems probable, however, that we have now collected in the country between Nablus and Haifa alone, at least one hundred ruins, which may some day serve to throw light on the Biblical topography of Palestine.

Geology.—The later portion of the geological map has proved more interesting than that mentioned in former reports, and I now send home a tracing of the part already complete. It extends from Nablus, where I first commenced it, to Haifa, covering the same ground shown in the traces (700 square miles) and is on a scale of four miles to one inch, sufficient to show all details of importance. The various surface formations are shown by different colours, and a short explanation only will be required.

The blue represents the hard limestone, which includes the following varieties, following apparently in the order given :

1. *Hard dark-grey dolomitic limestone*, the lowest formation of all, generally thinly bedded and splitting into cubes, which gives the appearance of an ancient pavement; it is, however, often in the lowest valleys found to be bedded in thick steps like the "scala" limestone. It is crystalline, and coloured with salts of iron. It is full of natural caverns, the formation of which is a matter for discussion. It contains no fossils, and generally exists where the basalt appears, whence it may be thought to be metamorphic. It belongs to the Neocomian period, that of our own greensand.
2. *Hard, compact, fine-grained limestone*, very crystalline, and breaking with an almost conchoidal fracture, a sort of yellowish grey colour, and bedded more thickly than the former.
3. *Similar to the last*, but thinly bedded, very white in colour, and containing numerous layers of large flints.
4. *Grey, hard, crystalline limestone*, containing *Gryphæa Capuloides*, *Corbula Syriaca*, and other species belonging to the period of the English lower chalk formation.

The next series of formations found at Nablus, immediately overlying the uptilted dolomite, is coloured with yellow ochre, and contains only two varieties—the soft, cheese-like marl, which can be cut with a knife, and which does not seem to harden on exposure; and a very thinly bedded (laminated, one might almost say) but harder chalk, which contains a few flints, and which I observed on the summit of Carmel, where it appears suited to the growth of the *Pinus Aleppensis*, here found in abundance.

The distinction between this group and the upper beds is not well marked, as I have already had occasion to notice, but the principal distinction is the external appearance, for the more recent chalky limestone does harden, externally at least, on exposure to the air, and is found to be softer and softer the farther from the surface one goes, though very often hard veins, almost crystalline, run through the soft.

The principal varieties of this series, which is coloured green, are as follows :

1. White calcareous limestone, containing a few fossils, and soft when quarried, but hard and dark-coloured on the exterior. It contains no flints.
2. Hard, semi-crystalline limestone, ringing like a bell when struck, very white. Interstratified with former.
3. Beds of flint conglomerate (as near Nablus), ten to fifteen feet thick, very hard and compact.
4. Limestone in beds ten feet thick, soft internally and full of very large flints.

The Nummulitic limestone, common in the south of Palestine, does

not appear in the part of the map now completed, in the Jebel Nablus and Galilee.

The German colony at Haifa have carried extensive quarries into the sides of Carmel, and here I had a better opportunity of studying the last-mentioned formation, and obtained, partly through the kindness of Mr. Shūmaker, the American consul here, partly by our own observations, the first fossils which we have been able to collect.

These beds are, I believe, generally supposed to be contemporary with the earliest Eocene period; but an inspection of the fossils seems, as far as my limited experience goes, to point to their being earlier, or of the chalk period. They include some specimens of Ammonites resembling the *A. Rotomagensis* found by Captain Wilson at Jerusalem, two kinds of Echinus, a fossil somewhat resembling the Perylla (one of the Dibranchiata—a sub-division of Cephalopods), and some very small shells, apparently of Acephalous mollusks, which must await examination and description by some one more competent to pronounce an opinion.

The beds in which they occur are uptilted at various angles, often almost perpendicular. They show the interstratification of the harder layers, and the side of the hill which they form has a slope of thirty-five to thirty-seven degrees, the dip being nearly coincident with the north-east declivity of the mountain.

Turning to more recent geological features, the outbreaks of basalt which, with one exception, are new discoveries, are first in importance. They are in all thirty in number, occurring in the Plain of Esdraelon, the largest being on the side of Mount Gilboa. My last report gives the principal points of interest with regard to them.

The Plain of Esdraelon is coloured with a purplish tint to distinguish it from the other small plains, because of the difference of its soil, consisting of basaltic *débris* of a rich dark colour, which occurs to a certain extent in the Merj Arrabeh, but differs from the more argillaceous topsoil of the other smaller plains.

The only remaining formations to consider are those found at Haifa, near the sea-shore, and which are quite local, and formed originally a sea beach farther inland than the present line. There are six varieties, found as follows, all being represented by a wash of light red on the map.

No. 1. A fine shelly conglomerate, formed (as it is still forming in places along the beach) by the consolidation of small shells and water-worn fragments of shell and flint, cemented with lime, and forming a building stone of brownish colour far harder than the white limestone. Quarried near Carmel.

No. 2. Coarser conglomerate of broken shells found on the beach.

No. 3. Third quality, still coarser, on the beach.

No. 4. A plum-pudding stone of flints and rolled pebbles, so hard as to be used for mill-stones by the Germans; there are

two qualities, the softer being of reddish colour from infiltration of iron in the cement. This is not found to stand the wear and tear of the upper millstone quarries near Carmel.

No. 5. A coarse breccia of limestone and flints of large size, forming a bed extending along the coast south of Tell el Semak, evidently the old shore-line.

No. 6. A sandstone consolidated by pressure, but not very crystalline. In this the tombs west of Haifa are cut.

These littoral deposits are probably not of one date, the first-mentioned being the oldest. In some of the finer, shells which are but half fossilised, retaining their white colour from the lime in their composition, appear. In other cases the shells are completely changed, and of the same colour with the stone.

The same process which now carries the light pebbles and *débris* into the bay, leaving the coarse and hard near the promontory, can be traced in this earlier formation.

The coarse conglomerate on the south-west side of Carmel denotes a period when the waves came up nearly to the foot of the mountain, and covered the sunken limestone rocks now far inland with *débris* of their own kind, forming a conglomerate now found above the lower limestone to a depth of some thirty feet; but where the force of the wind was broken by the hill, the gentle current brought in the small shelly *débris* and sand, which gradually consolidated, makes now a hard building-stone and a harder mill-stone, and which, in Jewish times, was preferred for the excavation of tombs to the broken and crystalline limestone on the sea-shore. The sandstone is in places found immediately upon a bed of limestone, which has at some time been water-worn, showing that a sandy beach was founded on hard rocks covered some five to ten feet deep.

I cannot conclude this report better than by a few words on the scenery round Haifa, the most picturesque part of the country which we have yet traversed, and an account of which may interest those who care little for the details of geology or triangulation.

We have for the last two months been living literally under the shadow of Carmel, for the long shades creep down the sides of the great flat ridge which extends for fourteen miles from the cliff on which the convent stands to the land end, where it dips down with equal abruptness, and stretch themselves over the plain of Akka at its base, so that Haifa is enveloped in shadow long before the sunset light appears on the brown walls of Akka, and the deep red flush, suddenly followed by a cold blue colour, spreads over the chain, which rises gradually into a high ridge above Safed.

The rugged sides of the ridge of hard dark stone, always steep, often precipitous, are covered thickly with a wilderness of shrubs of dark and rich green. They stream like the torrents which in a heavy winter follow the same course down the narrow wady beds; in parts the bare

rock appears, only covered with a thorny herbage; in other places all is one soft surface of thick vegetation, but hardly ever does any tree even inconsiderable size break the even outline, with the exception of the pines of small size which straggle along the watershed.

The shrubs are principally a kind of pistachio, with red berries, the sponge laurel, the hawthorn, and the arbutus, whose berries are now ripe. The barer parts are covered with the *Poterium Spinosum* (one of the *Rosacæ*), with the cisti, or rock roses, and with flowers, of which the white-striped asphodel, the jonquil, cyclamen, red and purple anemone, hawkweed, and daisy are now in bloom. Often, too, the horses' feet press out a sweet smell of the thyme and mint which cover the chalky soil. Round Asfia and Dalyeh there are a few plantations of olives, but with this exception the only signs of life are the herds of goats climbing the sides, or a group of gazelles seen up a steep wady, bounding through the shrubs. Such is "the forest of Carmel," the "fruitful field," and such perhaps it may have been in Bible times, for there is no evidence of any great change in the conditions of climate, which should account for the growth of a forest of trees which will not now live on the slopes, though the rich soil still claims superiority to that of the stony plain at the foot of the mountain.

Deep in shadow as the side of the hill always is after midday, there is no lack of picturesque points of view, including the neat white German houses, and the ruinous walls and dirty tumbledown buildings of Haifa itself. A lover of colour and effect could not indeed wish for anything brighter than the red flush on the hills, and the blue and purple shadows towards sunset, whilst the ever-beautiful sea, the dim hills and line of palms on the sand-dunes, give sunrise effects most Turneresque in their appearance.

Not less striking is the view of the Kishon, backed by Carmel, which has never, I believe, appeared in any book of travels. I saw it first on a day when huge piles of silvery cumulous cloud shaded plain and mountain. The ridge of Carmel formed a dark background, the grey and silver river flowed through a flat, marshy middle distance of reeds and brown earth, and red and coppery shrubs. A single palm-tree with an old boat formed an appropriate foreground, and on the opposite side, scarce sixty yards distant, a row of solemn herons stood in contemplation, a couple of white egrets were stepping daintily about, and an osprey flew overhead with a fish in his talons.

There are several pools or streams banked up at the mouth by the sand-dunes between Haifa and the Kishon, and on the opposite side. Hither come the duck in stormy weather, and a few snipe and red-shanks can be obtained. Round one, the palms grow in profusion, and make a truly Oriental sketch. On the shore the dotterel and gulls, in the bay the cormorants, and on a stormy day even an occasional Mother Cary's chicken, may be seen; but animal life is restricted to these and to the ichneumons, which seem to exist in numbers in the sand-hills and amongst the broken tombs.

Thus I may close the report of our winter's work in Haifa. Little remains for us to finish there, and in another week or fortnight we shall be able to leave the comfortable little house in the German colony, where we have been stationed during the rough weather (what little there has been of it this year), and have met with every kindness and hospitality from the worthy and energetic little society who have here gained a footing in Palestine. We shall return to tent-life and outdoor work, and endeavour, if all goes well, during the spring to fill in the country between our former districts and the sea-shore, and attentively to examine the ruins of Cæsarea, Antipatris, Tantura, Castellum Peregrinorum, and other sites in this hitherto little visited and almost unexplored part of the Holy Land.

CLAUDE R. CONDER, Lt. R.E.,

Commanding Survey Party, Palestine.

MR. C. F. TYRWHITT DRAKE'S REPORTS.

XI.

SHAYKH ABRĀYK, Dec. 9, 1872.

Vineyard-towers (ancient).—In reply to a question about the watch-towers mentioned in my last report as existing in the thickets near Umm el Fahm, I may say that they have all the appearance of vineyard-towers or garden-houses, but of more solid construction than those now used in Palestine. The old buildings are usually about 20ft.—25ft. square, and constructed of roughly-squared stones, measuring from 3ft. to 4ft. in length, by 18in.—20in. in depth and breadth. These are occasionally drafted with rustic boss. The door is usually very small; the roof of lower chamber, which in one instance remains, is made of blocks laid over a rude arch, which forms their central support. In no case was any trace of mortar or rubble visible. The walls were probably dry, and the crevices would allow a free circulation of air, a great desideratum in buildings such as these, intended only for habitation during the hottest part of summer. Not only amongst the brushwood here, but also in the thickets of Mount Carmel, terraces are frequently met with, showing that once cultivation extended over even the highest parts of the hills, which are now the haunt of the panther and wild boar, the fox, jackal, and wolf, which with the partridge and woodcock are seldom disturbed even by a passing goatherd.

Aqueduct.—Lieut. Conder made mention in his last report of an aqueduct near Saffūriyeh, of which we made a survey. A few remarks on this work may not prove uninteresting. In Jebel el Siah (collection of water) are three shallow pits which give an unfailing supply, and are