

when circumstances led to my making a prolonged residence at Jaffa (from 1893-1900), that my notice was again drawn to the subject, and it dawned upon me that the tradition after all might not be altogether as worthless as I had supposed; and when on the occasion of Sir Charles Wilson's last visit to Palestine he did me the honour of calling upon me, I mentioned this to him. He suggested that it might be useful if I gathered all the information I could obtain on the subject and communicated the same to the *Quarterly Statement*. I now venture, therefore, to submit the following notes pending the time when more expert investigators and the results of excavation throw more certain light on the matter.

The very heavy rains of 1892-3 again caused the formation of a lake on the spot described. During the ensuing summer there was a great epidemic of malignant fever which carried off many people at Jaffa, and was attributed to the malaria caused by the evaporation from this large sheet of stagnant water. A ditch was dug to drain it off. I have marked this ditch on the map. Starting from the junction of the two roads coming from Selami, it runs for about 100 metres alongside the road to Jaffa and then turns northwards and westwards, reaching the sea by following the apparently natural hollow or groove that exists between the Moslem cemetery and the Saknet Rashid. I may remark in passing that during the last decade a large suburb has sprung up just north and in continuation of this "Saknet," and that when the foundations for the new houses were being prepared many remains of oil-mills were uncovered, corroborating the information given to Professor Clermont-Ganneau and noted in his *Archaeological Researches*.

The rains of the following season (1893-4) were again very heavy. The lake once more appeared, and the ditch above described proved for some time inadequate for drainage and therefore had to be dug deeper and wider later on in the year. The water stood for a couple of days fully 2 feet deep for a good way all along and on either side of both of the roads leading to Selami, and one day I was obliged to wade through the flood in order to ascertain whether a fellow-worker whose dwelling was surrounded needed provisions, &c. In doing so I was up to my knees in water on the road itself. In order to obtain a good view and gain an idea of the extent of the inundation (which I

have marked with the dotted line upon the map) I went a few days later, after the water had somewhat subsided, to the top of the Russian church, and was immediately struck by the configuration of the land. Below me, in a great, long, broad, and shallow hollow, lay the swamp with reaches of its waters gleaming through open spaces amongst the orange groves, whilst to the west the buildings of Jaffa stood out boldly on a low hill and at the end of a ridge that ran, well sustained, with marked elevations or small heights, from the city southwards. Only to the north-west and north-north-west was the view seawards clear and unobstructed by higher ground. The lake lay in a sort of valley-basin or *thal-kessel*, which sloped northwards and slightly westwards to the sea. The (American) German colony lay on higher ground just beyond the northern edge of the submerged tract.

This survey of the general situation placed the question before me in a new and interesting light, and inquiries amongst natives and old residents elicited the information that a great many years ago old people had related that they had heard of boat anchors having been dug up in the "Bassah," as the lowest part of the hollow is called, and further, that some years ago when the owners of the land wanted to sink a well, they had at various points struck upon portions of what was supposed to have been a massive sea wall built with somewhat of a curve as if intended to surround or limit a large pool or sheet of water. In sinking shafts in different places through the rich water-deposited soil which forms the bed of the swamp, they went down to a great depth (11 metres, say 35 feet 9 inches) without reaching sand, which in other places near Jaffa is always at a short distance below the surface, and finally they were compelled to give up the search because the sides of the shafts, which were not cased with mining frames and were very narrow, seemed dangerous and liable to fall. The present surface of the tract on which the lake formed is, as I was told by the German colony surveyor, Herr Frank, and also by Mr. Serapion Murad, to whose family the property belongs, only 2 metres 60 centimetres (about 8 feet 6 inches) above sea level. It follows, therefore, that the original bed was considerably below the level of the sea, and it seems, therefore, not impossible that there may have been here, at some period or other, perhaps in prehistoric times, an inland lagoon or swamp, perhaps connected with the sea by a narrow channel, up which small vessels may have passed to find shelter in stormy

weather, just as at the present day fishing-boats seek for shelter in the Anjeh, about three miles to the northward.

The mention of the Anjeh leads me to the remark that an examination of the general features of the seaboard of Palestine shows us a configuration repeated frequently, sometimes on a very large and bold scale, at others on a smaller one. Thus the Anjeh itself drains a large depression like that I have described, and that this depression was at one time covered with swamps or a lake is proved by the fact that Dr. Chaplin discovered the remains of a great rock-hewn tunnel that was in ancient times constructed in order to draw off the water. Then a short distance north of Arsûf we have the same thing, as also at Hadherah, south-east of Cæsarea, and so on further north. The salient features are ridges or promontories more or less emphasised, with a plain or valley running behind them and sloping seaward. Examples are: Beirût, with the plain behind and a river draining the latter; and, on a gigantic scale, the Carmel range, with the plain of Esdraelon and the Kishon. Sometimes the promontory or ridge is continued seaward by one or more islands, or, where these have disappeared, by a line of rocks more or less submerged. As examples I may cite Tripolis and Tyre, and, as I hope to be able to show, also Jaffa.

I can now go a step further. In the foregoing remarks I have used the term prehistoric with reference to the traditional harbour at Jaffa, my reason being that I know of no old record in which its existence is mentioned. We have very early descriptions of Jaffa and its surrounding sand-dunes and gardens. Surely if there had been an inland harbour we should have expected to find it mentioned. On the other hand the descriptions that have come down to us seem in most respects to tally with present conditions, though indeed we may infer from allusions here and there that during the lapse of centuries certain changes must have taken place in the state of the shore line. One of the best of these descriptions is that of Josephus (*Wars*, III, ch. ix, § 3), who gives a striking account of the taking of the pirates' nest by Vespasian, and the destruction of their vessels by a storm. The narrative is so graphic that it would serve for the report of shipwrecks at Jaffa at the present day, *except in one detail*, a very significant and important one, which will not fit into the present state of things. Josephus states that the vessels were destroyed by the north wind, which was so dreaded and dangerous that it was called

"the black north wind." This is not the case nowadays. The north wind is indeed feared at Jaffa, not because it endangers shipping, but because of its poisonous qualities, it having been often noticed that a general outbreak of fever is sure to follow whenever it blows, the supposed reason being that it sweeps the malaria and exhalations from the northerly marshes down to Jaffa. At the present day it is not the north, but the west, and more particularly the south-west wind which is so dangerous to ships that they prefer to go past or to cruise in the open sea rather than approach the shore. This observation, which I have frequently made, led me to suspect that since the time of Josephus some change must have taken place in the direction of the shore line, and I was led to examine it more closely than I should otherwise have done. The following are notes I made on this point:—

Being an inland sea open only to the west, there is no tide to speak of, if, indeed, any at all in the Mediterranean, but, nevertheless, there is often a very marked difference in sea-level both within and outside the present harbour. It occurs always, as others beside myself have noticed (*see Z.D.P.V.*, vol. iii, p. 44), after the east wind has blown for several days, and then there is a difference of from 4 to 6 feet in the level of the water-surface, and the whole top of the reef enclosing the harbour is laid bare and dry, so that stepping on to it from the spot where it touches the shore at the southern end of the bathing place south of the town, it is possible to walk dry-shod, and even, by now and then jumping over narrow water channels, to reach and examine its outer edge for a great part of its extent. I have done this several times, and was surprised to find that there were several artificial rock-cuttings on its surface, which leads one to think that at one time there must either have been a quarry there, or that it had been purposely hewn in order to have huge stones fitted firmly into it. Further up the coast, when riding from Cæsarea to Jaffa, I noticed something of the same kind in one or two other places, where the rocks, now generally covered by the waves, look, when exposed, as if at one time or other tombs had been cut in them. If so, they must, at some period or other, have been considerably higher above sea-level than they are at present.

On the other hand, at a very little distance south of Jaffa, at a spot between the bathing place and Bir el-Helweh, it appears

that where part of the shore is now several feet higher than the sea it must at one time have been submerged beneath it, as there are distinct remains, not only of the common sandy tufa rock mixed with shells, but of a stratum of solid shell-bed (*muschelbank*). It seems justifiable, therefore, to suppose that changes must have taken place at one time or another in the conditions of the shore owing to volcanic or other agencies. Earthquakes are not infrequent in the East. During the eleventh century of our era many devastated Egypt and Syria, and about 1068, as we are informed by the Arab historians (*see* Besant and Palmer, *History of Jerusalem*, p. 119), "the sea suddenly receded for the distance of a day's journey, but on the inhabitants of the neighbourhood taking possession of the reclaimed land, it suddenly returned and overwhelmed them, so that an immense destruction of life ensued."

Besides the above we have at least one other historical allusion which we can quote as proving that a change must, even during so recent a period as the last 700 years, have taken place in the appearance of the coast at Jaffa.

In reading the accounts by contemporary writers of different sieges and occupations of the place during the Crusading period, first by the forces of Godfrey in 1099 A.D., then by Richard and Saladin in 1192, and lastly by the army of St. Louis of France in 1253, we cannot overlook the important fact that the chroniclers clearly distinguish between "the town" and "the citadel" (compare William of Tyre, viii, 9, as quoted in Smith's *Bible Dictionary* [1863], vol. i, p. 1125; Vinisauf, in Bohn's *Chronicles of the Crusades*, pp. 312, 313; and Bohaeddin, *Life of Saladin, Pal. Pilgrims' Text Society*, chapters 164 and 165, pp. 365-370. Now the importance of this distinction, which the casual reader is apt to overlook, lies in the circumstance that the citadel was not a part of the town itself, and did not occupy, as one might suppose, the site of the former *kul'a* on the top of the hill where the Franciscan church now stands commanding the present harbour, but in a different and isolated position. It is thus described by one who saw it: "It resembled a well-defended town, and was situated on an island"—the italics are my own—"near the sea-shore. . . . Adjacent to the castle was a village which the king (St. Louis) began to fortify and enclose wherever the shore would permit it. He did this at great cost, enclosing the town from one side of the sea to the other," &c. Of this island, which must have been of a fair size, there is now not

a trace left, unless the isolated rock on the northern side of the well-known narrow passage through the reef into the present harbour be a vestige of it. I have marked the place where I suppose the island to have stood on the map.

NOTES ON SOME RUINS AND A ROCK-CUT AQUEDUCT IN THE WÂDY KUMRÂN.

By Dr. E. W. G. MASTERMAN.

IN traversing the Wâdy Kumrân on my road to 'Ain Feshkhal in March last I passed two points of interest—

1. *Khurbet Abu Tabak*.¹—In the plain called *El Buqia* near to the important and well-worn road that traverses the plain from north to south I came to a place called *Abu Tabak*. My guide called it *Umm Tabak*, but afterwards when I told him the name in the map was *Abu Tabak*, he acknowledged that this was the usual form.

Here there are (1) a small cemetery evidently of antiquity, the appearance of the graves being very similar to those at *Khurbet Kumrân*, (2) a cave, and (3) some ruins. The cave, known as *Mugharet Abu* (or *Umm) Tabak*, lies on the north side of a low hill; it runs north to south, and is largely, if not entirely, artificial. It is 116 feet long, 17½ feet wide at its widest, that is about half-way in, and probably is about 20 feet high throughout. The floor is piled up with goats' dung to the height of several feet, so it is difficult to say how far the floor has been levelled throughout, but the general shape is regular. At the extreme inner end there is a hole at the top of the accumulated dirt which may lead into an inner part. My man put his gun in as far as he could without touching rock. The right side of the cave shows tool-marks where the walls have been smoothed, and at two places there are recesses for lamps. Close to the entrance on this side of the cave there is a place where my Bedawin guide declared the Arabs had cut away an inscription—or what they took for an inscription. There are signs that something has been cut away, and beside this place are two marks—not letters—consisting of parallel lines each 4 inches long, ¼ inch deep, and 1½ inches apart, evidently artificial, but also probably modern; the rock is too soft to make it a likely place for the long preservation of any cutting.

On the top of the isolated hill in which the cave lies, there are the foundations of a wall 4 feet thick, made of large stones, and standing in places to the height of three courses above the ground. They completely

¹ Apparently the *Kurm Abu Tubk* of *The Memoirs*, vol. iii, p. 213.