

The Committee are always glad to receive old numbers of the *Quarterly Statement*, especially those which have been advertised as out of print.

Attention is called to the statement already advertised, that subscribers to the Fund are privileged by the publishers to receive both the "Literary Remains of the late Mr. C. F. Tyrwhitt Drake," and the "Underground Jerusalem" of Captain Warren, at reduced rates. The former book will be sent for ten shillings, the latter for sixteen shillings, postage paid. But letters asking for them must be sent to the office at 11 and 12, Charing Cross only.

Cases for binding the *Quarterly Statement* are now ready, and can be had on application to Messrs. R. Bentley and Son, 8, New Burlington Street. They are in green or brown cloth, with the stamp of the Society, uniform in appearance with "Our Work in Palestine," and are sold at the price of eighteenpence.

Lieut. Kitchener's Guinea Book of Biblical Photographs can be bought at Mr. Stanford's establishment, 55, Charing Cross. It contains twelve views, with a short account of each. They are mounted on tinted boards, and handsomely bound.



SURVEY OF GALILEE.

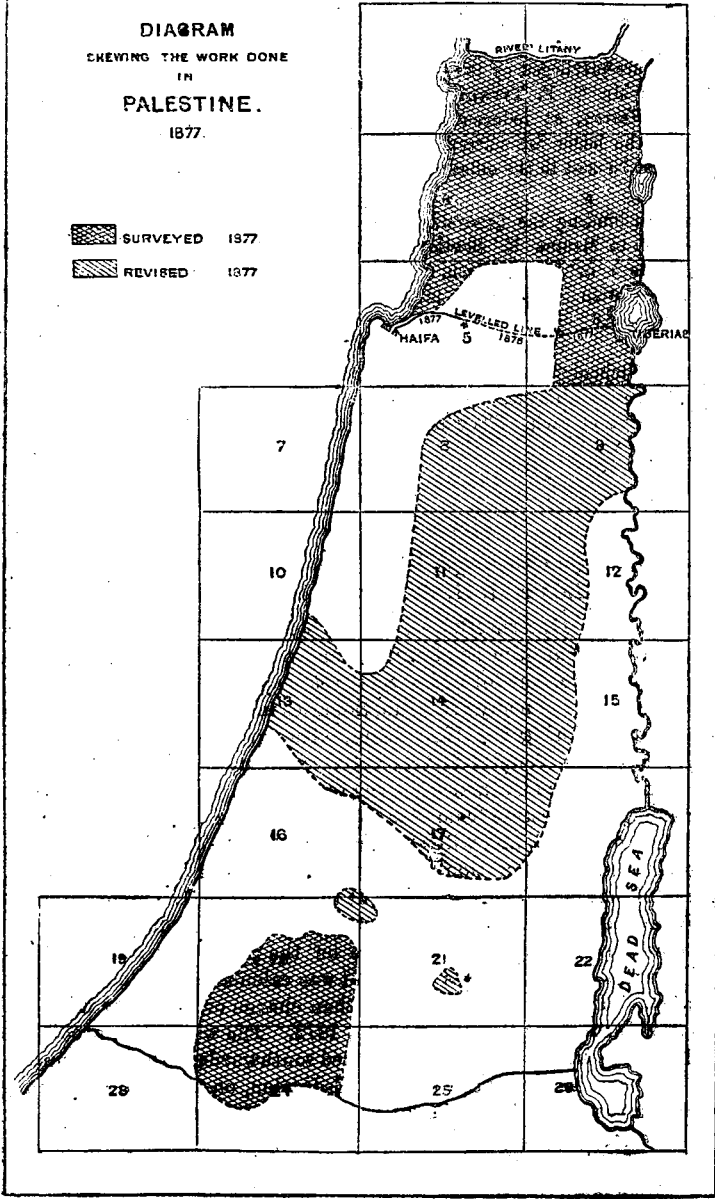
A Paper read before the Geographical Section of the British Association by
LIEUT. H. H. KITCHENER, R.E., F.R.G.S.

LADIES AND GENTLEMEN,—I appear before you to-day as the representative of the Palestine Exploration Fund, an association which, as many of you are aware, was formed several years ago under the patronage of Her Majesty, and of many great functionaries in Church and State, for the purpose of exploring the Holy Land. The great work on which the Society has been occupied for the last seven years is a map of Palestine on the model of the Ordnance Survey of England and Ireland.

This map of Palestine from Dan to Beersheba on the 1-inch scale has now been completed, and will shortly be published. It was commenced by the Palestine Exploration Fund sending out Major Stewart, R.E., and a party of noncommissioned officers at the end of 1871. Major Stewart was invalided home after a very short period of service, during which he had, however, established a base line on the plain near Ramleh; this base line was over four miles long, and was calculated with considerable accuracy. Mr. Tyrwhitt Drake had then charge of the party until the arrival of Lieutenant Conder, in July, 1872. The work then proceeded regularly, the triangulation being carried southwards to the hill country, and then north as far as the plain of Esdraelon, on which another base line was measured. The calculations and measurements of this check base agreed most satisfactorily, and proved the accuracy of the whole triangulation. In November, 1874, I joined the party, and after a year's work in the plain of Philistia, when commencing the survey of Galilee,

DIAGRAM
 SHOWING THE WORK DONE
 IN
 PALESTINE.
 1877.

 SURVEYED 1877
 REVISED 1877



we were met at Safed with a fanatical attack from the natives. As after this we all suffered severely from fever, and cholera was spreading rapidly all over the country, the party was withdrawn. After eighteen months of plotting and fair-drawing the work we had done, Lieutenant Conder's health not allowing him to return to the country, I was entrusted with the command of an expedition to finish the Survey of Galilee. My party consisted of three noncommissioned officers of the Royal Engineers, appointed from the Ordnance Survey. I left in January, 1877, and by the end of February my men had joined me at Haifa, and everything was ready for an active campaign.

On the 27th of February work was commenced. The survey of the Plain of Acre occupied one noncommissioned officer, while the other two and myself were employed in taking up the line of levels between the Mediterranean and the Sea of Galilee, for which a special grant had been received from this Association. After discovering our former bench mark at Mejdal the levelling went on swimmingly, almost too much so while crossing the swampy plain and the Kishon swollen by the winter rains. A paper on the successful completion of this line of levels was read by Major Wilson at the last meeting of this Association.

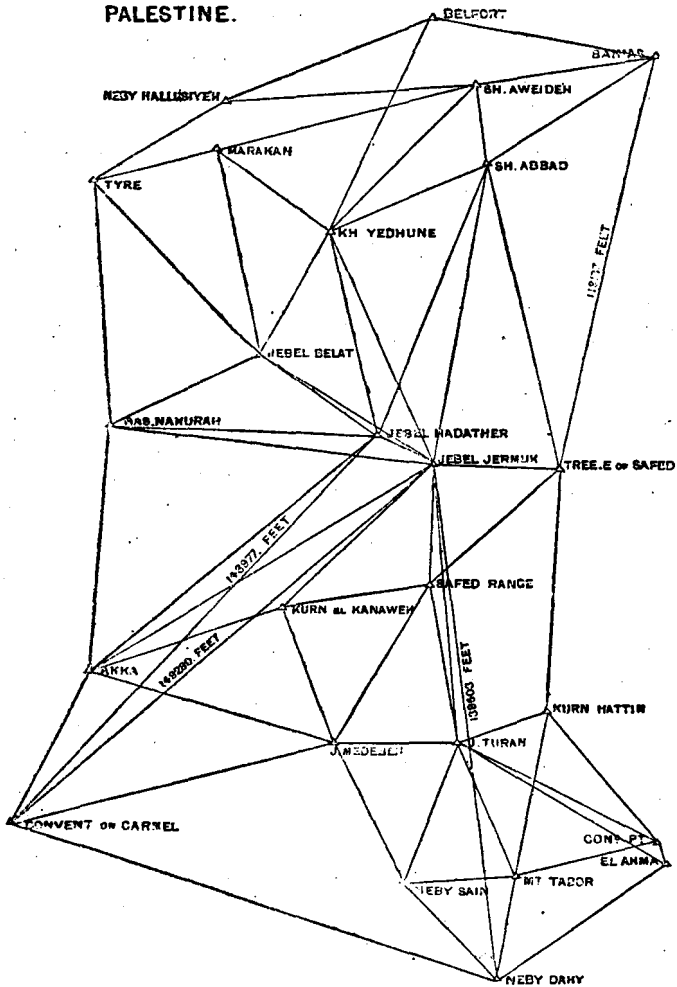
The weather was hardly settled at this time; storms of wind and rain made our tents no very pleasant abode. On the 8th of March the levelling and surveying were completed, and we marched across the country to Hattin, breaking the journey for one night at Nazareth.

Hattin is a village of some importance, well situated for our work. The natives proved civil and obliging. Our camp consisted of five Egyptian tents, seven little Arab horses, seven mules, four Europeans, ten natives, and two bashi-bazouks with their horses, attached to us by the Government.

From this camp we had to pick up the old triangulation-points which had been left on the withdrawal of the party in 1875. The cairns we had built were all destroyed, but after a careful search we found the broad arrows cut on the rock under where the cairns had been, and were thus able to carry on the triangulation from a base of 25 miles, and other calculated lines from 8 to 12 miles long; subsequently, after carrying the triangulation round the country, as will be described, the calculated length of this base was only 60 feet different from the measurement we had started with, or a little more than 2 feet in the mile of possible error. On our scale, this error in 25 miles is only the thickness of a pencil line.

The triangulation took eight days from this camp, as the old cairns had to be rebuilt, and new ones erected in the northern country. By thus doing the triangulation and survey of the ground from each camp, we were able to keep both going together; and the strength of my party was not sufficient to adopt any other method. While observing from the top of Mount Tabor I examined three chapels recently unearthed by the Roman Catholic monks; they date from Crusading times, when this was supposed to be the Mount of the Transfiguration, and the three

DIAGRAM
 OF TRIANGULATION
 OF
 NORTHERN PORTION
 OF SURVEY OF
 PALESTINE.



chapels are mentioned in old chronicles of that time. The massive fortifications on the top of the mount, enclosing these later remains, were probably those erected here by Josephus in order to resist the Roman armies under Vespasian; they consist of a solid wall built of large drafted stones, flanked at intervals by square towers enclosing a large rectangular space that occupied the whole of the top of the hill.

Looking down on the broad plain of Esdraelon stretched out from our feet, it is impossible not to remember that this is the greatest battlefield of the world, from the days of Joshua and the defeat of the mighty host of Sisera, till, almost in our own days, Napoleon the Great fought the battle of Mount Tabor; and here also is the ancient Megiddo, where the last great battle of Armageddon is to be fought.

The country surrounding our camp was formed of decomposed basalt and the ashes and *débris* thrown from the volcanoes that once occupied this region; in some places the black basalt rock crops out, but the general colour of the ground is a deep red. Immediately above our camp was one of these extinct volcanoes; it is called the Kurn Hattin, or Horns of Hattin, being two peaks on the top of a steep mountain, having between them the crater of an extinct volcano; it will ever be remembered as the scene of the final struggle of the Crusaders after the fatal battle on the plain below. On the top was the king surrounded by his nobles, with the chiefs of the great Orders of the Templars and the Hospitallers, hemmed in on all sides by the seething masses of the Saracen host under Saladin. Thrice the heights were stormed and thrice the besiegers were driven back with immense slaughter, till at last, worn out by thirst, fatigue, and the hopeless task of holding out against such odds, the brave remnant surrendered and the Christian power in the country ceased to exist. Curiously enough, we found the plain just below still retains a reminiscence of this scene; it is called the Plain of Burnus, the Arabic designation of Count Rainaud of Chatillon, Seigneur of Kerak, who had caused the war by plundering a convoy of Moslem pilgrims, among whom was the mother of Saladin; he was killed immediately after the battle by the hand of Saladin himself.

During our triangulation we found some little difficulty from the natives, who thought we were magicians, with power to find hidden treasure under the ground, and that our cairns were marks to remember the places by. It was an unfortunate idea, as the result was that in the night time our cairns often disappeared, and the natives groped through any earth to the rock below, hoping to forestall us. After making the offenders rebuild the cairns on one or two occasions these annoyances ceased.

On the completion of the triangulation, the levelling had to be taken up from the last point on the line. The bench mark was found without difficulty. It was most fatiguing work dragging the levelling staves and heavy instruments over the rough country, and when the descent below the sea-level, in a steep narrow gorge, was attained, it was extremely trying; however, in seven days' work, 16½ miles were

accomplished and the seashore was reached, giving a depression of 682 feet 6 inches below the Mediterranean.

The survey of the detail had then to be done. Our process was very well suited to this open and barren country. From the fixed triangulation-points a number of supplementary angles were taken to every village, hill-top, prominent tree, or important object in view; as this was done from every point when these lines were plotted, we had intersections fixing these objects. Practically almost every place of importance was fixed in this way.

The surveyor then started with this diagram of fixed points, and by the interpolation of the angles taken with his prismatic compass was able to fix his own position at any point on paper; he then sketched in by eye the detail that was in his close vicinity, and by going through the same process all over his work the detail was obtained with considerable accuracy. The heights of all places of importance were taken by aneroids, besides the calculated heights of all the triangulation points. These aneroids were checked morning and evening with a standard barometer kept in camp. The slopes of the hills were taken by Abney's level, and on returning to camp in the evening a report was made of all ruins, villages, and water-supply in the work of the day. The nomenclature was written down in Arabic by a well-educated scribe kept for that purpose. Each surveyor had a guide with him, who gave the names of the different places. The surveyor wrote them down as near as he could to the sound, and on returning to camp he repeated them in front of the guide and the scribe. The guide then pronounced the names correctly, and the scribe wrote it down from him. I afterwards transliterated the Arabic in accordance with Robinson's method, and the proper spelling was thus obtained and written on the map.

Every possible check on the veracity of the natives was employed by asking numbers of people independently the names.

Dishonest guides were dismissed, and as these people are peculiarly susceptible of sarcasm, the offenders were not happy when they were laughed out of camp for not knowing their own country as well as we knew it.

One of the great values of the map is the number of unknown names it has made public; thus on this part of the survey 2,770 names were collected, only about 450 of which are to be found on the best existing map of the country.

Another is the accuracy of these names, taken down from the natives in a manner never attempted before, and the result has been to throw a vast light on the ancient nomenclature of the country and the origin of the races that inhabit it.

The survey of the detail took five more days, and on the 27th March we were able to move camp to Tiberias, with the assurance of having no obstacle of a technical nature to hinder our work. Our camp was pitched along the shores of the sea, and as the Governor had already received a reprimand from the Pasha of Acre for not answering a letter of mine, we were well received by the officials.

The scenery of the lake is decidedly monotonous, but there is a great charm in that dry and thirsty land in having a vast expanse of fresh water spread out before the eyes, and at night the effect of the moon in Eastern brightness shining on the calm lake was exceedingly beautiful. During the survey of the shores we made one considerable discovery: the site of Sennabris, mentioned by Josephus as the place where Vespasian pitched his camp when marching on the insurgents of Tiberias. The name *Sinn en Nabra* still exists, and is well known to the natives; it applies to a ruin situated on a spur from the hills that close the southern end of the Sea of Galilee; it formed, therefore, the defence against an invader from the Jordan plain, and blocked the great main road in the valley.

Close beside it there is a large artificially-formed plateau, defended by a water-ditch on the south, communicating with Jordan, and by the Sea of Galilee on the north. This is called *Kh. el Kerák*, and is, I have not the slightest doubt, the remains of Vespasian's camp described by Josephus. It is just like another Roman camp found near Jenin, where an army was camped. Thus we have an example still in the country of the military precision of those irresistible conquerors. This *Kh. el Kerák* has been identified with *Tarichææ*, but, as Major Wilson has pointed out, that site must be sought to the north of Tiberias. The finding of Sennabris, the place where the Roman host encamped before marching on Tiberias and *Tarichææ*, clearly proves that the latter place could not have been anywhere near the southern end of the lake.

The next point of interest on the shore is the hot springs of the *Hammam*, three copious springs burst out of the rock, with a temperature of 140 deg., and containing a considerable quantity of sulphur. Baths have been built, and they have been famous for ages for the cures of rheumatism and other disorders. They are constantly used by the natives, who often come from long distances to benefit by them.

The ruins of ancient Tiberias with its sea-walls and scattered columns extend nearly as far south as these springs, and it may be fairly supposed that the modern site of the town is situated to the north of the ancient place.

The next point of interest is the site of *Tarichææ*, an important town on the seashore. We know that it could not have been far from Tiberias, on the northern side, also that it was strong to the south, but had a plain to the north, for Vespasian, attacking from the south, sent his cavalry under Titus round the town to attack the Jews on the open ground, where he routed them, and entered the town with the fugitives. A ruined site was found answering to all these qualifications at *Kh. Kuneitriah*, situated on the top of a steep round hill rising abruptly from the seashore. This was, in my opinion, the citadel of *Tarichææ*; the town itself was probably on the plain to the north, along the seashore, where there are traces of ruins and springs of water.

Passing the ruin and the plain beyond, the path leads along the side

of the steep slope of the hills, with rocky cliffs towering above, and the sea almost directly below; turning a corner, the Plain of Gennesareth lies spread out before us, with the cluster of ruined hovels of the village of Mejdal in the foreground. A fine stream of water irrigates this portion of the plain from Wady Hamam, the narrow gorge through which the levelling had been brought down, with cliffs 1,000 feet high on either side. In those on the southern side are the romantic caves of the brigands who were subdued by Herod the Great by letting down gangs of soldiers on platforms from above on the despairing defenders: these, sooner than be taken captive, slew one another with their swords.

I explored the caves, which consist of galleries at different heights conducted along the face of the precipice leading to different sized chambers; some appeared natural, while others were artificial; there were spacious halls, small sleeping-places, and some enormous stables, all cut out of the solid rock. Water was brought by a long aqueduct, cut in the face of the precipice, and poured down into cisterns inside the fortress. The place has been since occupied by Arab marauders, who have built walls to defend the outside of the galleries and round towers at different elevations on the face of the rock, to bring a flanking fire on the entrance, which was reached by a long flight of basalt steps. Now all is ruined, and only forms the resting-place of the eagle and the vulture; but in the bright future that seems to be about to dawn on that land, what a delightfully cool retreat this would make for the owner of the fair plain stretched out 1,000 feet below.

Beyond Mejdal on the Plain of Gennesareth, and round the northern shores of the lake, are the most interesting sites of all; Capernaum, Chorazin, and Bethsaida. The country here has been so carefully examined by Major Wilson that the survey was not able to throw much new light on the question of these sites, the solution of which must be sought underground. I am sorry I cannot agree with Major Wilson on the position of Capernaum at Tell Hum, but would rather place it at Kh. Minyeh on the plain, believing the fine remains of Tell Hum to be the relics of the known grandeur of the ancient Bethsaida. The clearing up of this intensely interesting question by means of excavation is one of the objects to be attained by the future expedition that the Palestine Exploration Fund intends sending out as soon as sufficient funds are available.

On the 4th April our camp was moved to Khân Jubb Yusef, situated on the great Damascus road, and some distance from any inhabited village. The country round is occupied by wandering tribes of Bedouin Arabs with their goat flocks; to the east it is a mass of basalt which has flowed over the country, and down to the shores of the lake; to the west we had the limestone hills of Safed.

I visited the extensive ruins of Kerázeh, the ancient Chorazin, and was struck with the precision and minuteness of the ornamentation of the niches of the ruined synagogue cut out of the hardest basalt, and remaining as fresh and sharp as they were when new.

On the 10th we marched to Safed, the scene of our conflict with the natives on a former occasion. Mr. Eldridge, the British Consul-General for Syria, had kindly arranged that I should be well received, and the arrival of H.M.S. Torch at Acre, of which I was informed by telegram, made it certain that I should not be molested on this occasion. The governor of Safed, with a score of soldiers and followers, came out half way to my camp to meet me, and we rode into the town in a triumphal procession. I remained six days, and was much annoyed by the continual visitors I had to receive. The most interesting of these was Aly Agha, the cause of our former unpleasantness. Now he came as a ruined, humble man, after undergoing his term of imprisonment, to beg for forgiveness. I was glad to be able to remit a small portion of the fine, some £60, that had not been paid, on account of their good behaviour on this occasion. Unfortunately our standard barometer was broken on the journey to Safed. I had to send to our store at Haifa for a duplicate one to be brought on foot.

The country was naturally very much excited about whether there would be war or not. and I was very pleased to learn on the very best Turkish authority that peace was assured, Bismarck having been dismissed. Unfortunately, next day a cipher telegram from Mr. Eldridge warned me that war was declared and advised a retreat.

I visited a Mohammedan sacred place in the town called the Mukâm Benât Yakûb, or the sacred place of the daughters of Jacob. Many legends were attached to the place. I was shown without difficulty into the little mosque and then into a large square cave, which had originally been a tomb of some importance. Two rows of recesses for sarcophagi lined the walls. Here tradition relates that Jacob and his children lived, and that when he was old and blind they brought him Joseph's coat, and the smell of it at once cured him. On regaining the outer mosque I saw a small door with a green curtain hanging over it and incense burning in front; this I was told was the tomb of the seven daughters of Jacob. There they were said to be all as in life, their beauty unimpaired, but it was too sacred to be approached by any but a true believer. I insisted, and was then told that these beautiful and holy maids were very quick to take offence, and devoured any one who came too near their place of rest. However, after a little persuasion I pushed the sheikh aside and squeezed through the hole, being nearly stifled with the bad incense. After a drop of some feet I found myself on the floor of a cave that opened into another. I explored the caves, one of which had been a tomb; the roof had fallen in, probably in the earthquake of 1838. No recumbent semitic beauties awaited me, and I was very glad to get out into the fresh air again.

Our next camp was at Meiron, where we were received very cordially, owing to the governor of the district, who accompanied us thus far, informing the villagers that if we were not well treated in everything he would come next day and burn the village down.

From this camp the triangulation required a considerable amount of attention. The Jebel Jermúk, the highest peak in Galilee, reaching an altitude 3,930 feet, had been observed from the south, but now it was necessary to ascend and observe from it; this was accomplished, and the triangulation was thrown well forward to the north, but I clearly foresaw that the triangulation would not allow of our descending to the low, unhealthy Huleh marshes as early in the year as I had hoped to do, and another two or three camps must intervene before we got that critical portion of the survey accomplished.

The village of Meiron is a famous Jewish place of pilgrimage, for there Rabbi Shamai and Hillel and the great Simeon Ben Jochai lie buried. The rocks around are honeycombed with ancient tombs, and there still remains an almost perfect *façade* of an ancient synagogue, dating probably from the second century after Christ.

The great pilgrimage of the year came off while we were there, on the 30th April, and lasted three days. The Jews arrived in thousands on foot, on donkeys, camels, or mules; some came from great distances—it was said some even came from England; and yet it was a very bad year, owing to the disturbed state of the country. The governor arrived to keep order, and a guard of soldiers protected the roads. This was no unnecessary precaution, as the first day they brought in an Arab they had shot while rifling some stragglers on the line. In the evening the ceremonies began in the large modern building that contains the tomb of Rabbi Simeon Ben Jochai. The whole place was turned into a fair—feasting, dancing, and singing went on all night; great torches were lighted over the tomb and lit up the motley crowd; into these torches, or rather braziers, the devotees cast embroidered scarves, silks, and dresses. The chief rabbi sells by auction the right to light up these fires, and is said to clear £200 in one night.

The men kept up an incessant din with rude instruments and singing; they ran round and round in circles, holding each other's hands and occasionally throwing up their arms; they were all dressed in dirty long dressing-gowns and huge felt hats. Lit up by the blazing torches they had the most grotesque appearance. The contrast between all these intensely-excited Jews, some of them apparently intoxicated, and the solemn, unmoved serenity of the Turkish Governor and officials, sitting on their mats smoking, was very striking.

The women occupied the upper chambers of the building, and seemed more devout; some of them were engaged in prayer. They have a firm conviction that these pilgrimages insure their having children.

The principal results of the survey of this district were the discovery of three dolmens. During the course of the survey eight dolmens were discovered, and as these are the first that have been noted in Palestine, it adds a new district to those already known to possess these rude stone monuments, and may be a connecting link between the ancient inhabitants of Europe and India.

The remains of two synagogues, unobserved hitherto, were discovered,

one at Süfsäf and the other at el Jish. These add considerably to our knowledge of these interesting buildings, and the discovery of the Roman eagle engraved in relief in the synagogue of el Jish adds new proof that these buildings are due to Roman influence over a subjugated people. The eleven specimens that remain to us of these buildings were carefully examined and planned during the course of the survey where it was possible to trace the original work.

On the 3rd of May I moved camp to Dibl, a Christian village. I had received a telegram from the Society directing me to take steps for the safety of the party, and I therefore attached four bashi-bazouks to the expedition as guards. We thus formed a large party, quite capable of resisting any small fanatical rising; and as most of the young men had been drafted away in the conscription, I had no fear of a general massacre of the Christians.

The inhabitants of Dibl were packing their few portable articles, and preparing for flight to Tyre, when we arrived.

Our greeting was most enthusiastic, as they at once determined not to desert their village and crops, and to remain under our protection. There are a good many Christian villages in this part of the country quite distinct from the Moslems. A Christian village can be known from a distance by the greenness of its vineyards and fields, in striking contrast to the barren desolation surrounding most Moslem villages. The terrible fatalism of their religion destroys the country. "If God wills that fruit trees or vineyards should grow they will grow," says the Moslem, as he sits and smokes.

These Christians are perfectly distinct from the Levantine mongrel race of Greeks who inhabit the towns on the seacoast. They are poor, honest, and very religious, though not very intelligent; their creed is either Maronite or Greek, generally a mixture. The Maronite priests marry, and are looked up to as the father of their flock, and their director and representative in all cases of difficulty. It was soon spread through the neighbouring Christian villages that we had arrived, and a deputation of the priests came to me for advice. I recommended them to remain quietly at their villages, and to warn their people not to get into any dispute with the Moslems.

They were very anxious to buy arms and defend themselves, but that course might have led to what they most dreaded. I am glad to say that our influence in the country at this crisis caused these poor Christians to remain in their villages, which if they had deserted would have been seized by the Moslems, and would undoubtedly have led to a grave disturbance.

I must also bear testimony to the stringent orders sent from Constantinople to the Turkish governors and officials to protect these Christians, and to put down any attempt to drive them out of the country. There was more cause to fear this, as the ignorance of the people led them to believe the war was one of religion—Moslem against Christian, instead of Turk against Russian.

Every evening after sunset a bell was beaten in the village, and all the male population went to the poor chapel, where there was a short service; after this they came and sang and danced in front of our tents, sometimes for hours together.

One evening about eighty Bedouin Arabs with their wives and families arrived. Their chief's son had been ill, and they had taken him three days' journey to the tomb of the famous prophet Joshua; this was supposed to have cured him, and they were now returning joyful after their pilgrimage. I had a goat killed in their honour, which made us the best friends, and they kept up dancing and singing round fires in front of our tents all night. The men went through the usual war dance, imitating the attack and defeat of an enemy, to the accompaniment of clapping hands; but what was more curious was later in the evening; when two of the prettiest women were called out by their husbands, and went through a peculiar and very graceful dance with swords; they were unveiled, and looked quite handsome by the fire-light. Having rewarded them with lumps of sugar, I left them singing songs in our honour. Next morning they were all gone, having left pressing invitations for us to visit them. Two days later the chief came to thank me for the medicine I had given his boy.

The triangulation and survey of the country took twelve days; a number of curious ruins were visited, and special plans and photographs were made.

The country to the west was rugged and rocky, covered with brushwood, and occupied by Arab tribes. Deep ravines and gorges carried the winter rains down to the sea, and in many parts of this wild country a European had never been seen before.

To the east the country was more open and cultivated; there are not many springs, but numbers of rock-cut cisterns and large pools for collecting the winter rains at almost every village.

On the 16th camp was moved east to Kades, and from the camp a good deal of the plain of the Huleh and the low country was surveyed. The ruins of the Temple of the Sun were planned and photographed. On the plain below our camp the Arab tents stood exactly as those of Heber the Kenite did on the eventful day when Jael, his wife, slew Sisera, the captain of Jabin's host.

On the 24th we were again marching northwards, and having pitched our camp at Taiyebah the triangulation was carried to our most northern point, the great Crusading Castle of Beaufort. We were here in the neighbourhood of the four Crusading castles which defended the northern frontier of the kingdom, Beaufort, Toron, Hunin, and Banias. From a study of the masonry of these buildings, and after comparison with others in different parts of the country, I am led to suppose that they are none of them older than Crusading times, except a portion of Banias, which appears to be slightly older work; and, therefore, that none of them date, as most travellers assert, from Phœnician or even Roman times.

At Toron, or Tibnin, as it is now called, the governor of the district

still resides, in the castle which has been rebuilt by the Saracens on the old foundations.

On the 2nd of June camp was moved to Baniās, the ancient Cæsarea Philippi of the New Testament, and the Panium of Josephus.

Our triangulation was here successfully closed on this side by observing from the castle.

This was the ancient acknowledged source of the Jordan springing out of the cave of Pan in the face of a precipitous rock, and rushing at once in a strong stream through the tangled groves of luxuriant vegetation to the plain below, there to be joined by its rivals in modern writings, the Leddan and the Hasbany.

I think our map will bring back the wavering allegiance to this ancient source.

The Hasbany has a less flow of water than either of the other two streams, and joins them after their junction, when they form a mighty stream. How, then, can it be followed as a source of the Jordan? When the other two divide into almost equal streams, the longest course leads to this fountain of Baniās, the true source of the Jordan.

This leads us to a consideration of the most interesting geographical feature in Palestine, the great depression of the Jordan valley, which is merely a continuation of the great valley extending through Syria, dividing the Lebanon from the Anti-Lebanon, and down which the Leontes and Jordan rivers flow. I approach this portion of my subject with considerable diffidence, as advancing what, as far as I know, is a new theory for the solution of the physical geography of that region. Should it receive the support of geographical scholars it will be an additional scientific result of the Survey of Galilee.

There is little doubt that, as Canon Tristram has pointed out before this Association on a former occasion, the great depression of the valley was caused by a fault, and the sliding down of the strata, and that it was once an immense lake. This is proved by the ancient shore-lines found at different elevations along its course.

The general supposition is, that it has been a continuation of the Gulf of Akaba, and that the gentle rising of 130 miles has cut off the Dead Sea from the ocean. It is curious that on this raised land there is still a well-defined valley having a fall, and showing the channel of a water-course, as far as we know, the whole way. Considerable volcanic action was observed in the north, and a volcanic outbreak was found exactly in the bed of the valley of the Leontes, at that bend of the river; it has been mentioned previously by Canon Tristram, who noted the way the basalt had flowed down the western side of the Hasbany. We know that these volcanic outbreaks belong to a late period of geological time. What then would have been the effect before this outbreak in the bed of the river? The Leontes, instead of being forcibly turned off at right angles to its course in that most extraordinary bend which makes it cleave through the rocks to the sea, would have flowed into the mighty lake which then covered the plain,

and over the southern boundary along the Arraba, which still shows signs of its presence, to the Gulf of Akaba. The only supposition required in this theory is a more abundant supply of water, and of that the country gives striking proof. The extraordinary evidences of the action of glaciers on the rocks, the deep water-courses cut through hundreds of feet of solid limestone, now dry, speak of a former age of rushing torrents.

Thus this volcanic outbreak in the Merj Ayun is the key to the present formation of the valley; a very slight cutting through it would again turn the Leontes into its former course down the Jordan valley and into the Dead Sea. The saltness of the Dead Sea may be accounted for by the great natural cliffs of rock-salt found at its southern extremity, and by the many salt springs that are found in that region continually pouring brine into its waters. These cliffs of rock-salt at the Khashm Usdun are a natural crystalline formation, and cannot, therefore, have been deposited by an evaporating sea.

The formation of the lakes is accounted for by the silting up of the plain by the *débris* brought down from the hills in the winter torrents. The great river, the Yarmûk, which drains the whole of the Hauran, joins the Jordan immediately south of the Sea of Galilee, and formed the southern shore of that sea by the *débris* it brought down. There are a succession of streams south of this, bringing down *débris* from both sides of the valley, some large as the Zerka and the Farah, and thus a continuous plain was formed down to the Dead Sea; but along the shores of the Sea of Galilee there are no watercourses of importance, except where the Hamam and Rubadiyah streams form the Plain of Gennesareth.

The northern shore of the sea is formed by a volcanic outbreak, which nearly blocks the valley. This is the only part in the course of the Jordan where it is shut in between rocky banks. To the north of this, another broad plain is formed by the *débris* washed down in the great valleys from the west, driving the little lake of the Huleh into the north-east corner, where no streams, except those from the north, can reach it. Thus protected, the marsh and lake of the Huleh is only being filled up from the north by the *débris* brought down by the Jordan itself, which is gradually forming a plain out of these beds of Papyrus.

Banias was extremely hot and unhealthy at this time of year, and though our camp was most delightfully situated under broad spreading olives, with water running from the source of the Jordan between our tents, still I was not sorry when, on June 10th, the work was finished, and we were able to leave without any ill health. The eastern portion of the survey being thus finished, we had to march across the country and carry the survey south, along the seashore. On the first day we marched to Taiyebah, and the next arrived at our new camp at Marakah. The country round was very difficult, and proved a very severe piece of work. First the triangulation was well

completed along the northern boundary; the stations being permanent objects, so that in future, perhaps not very distant now, we may extend it over the northern almost unknown country east of Sidon. When, however, the survey of the detail began, we found what an unpleasant country we were in; very deep wadies cut through the soft white chalky limestone, and the banks were so steep that when travelling north or south it was a continual case of sliding down one side of a valley to scramble up the other, a very fatiguing process. The country was crowded with villages and ruins.

On the 22nd camp was moved to Nakurah; here we suffered considerably from the heat, particularly at nights, and the mosquitoes added to the unpleasantness.

From the Ràs en Nakurah I took the last round of observation angles which closed the triangulation of the whole of Palestine: these joined very well on our base, and the check calculations have proved its accuracy.

On the 2nd of July camp was moved to Yanùh, our last station; here we were completely surrounded by the work already done, and were able to make rapid progress.

On the 11th July we all arrived at Haiffa once more, safe and well, after completing the survey of 1,000 square miles of country. The whole expenditure was £900, and taking £100 as the cost of the fair drawing, we may claim to have produced a 1-inch survey at the cost of £1 a square mile.

After four weeks' rest in the Lebanon, the field was taken again on the 23rd August with a reduced party, as my sergeant had been obliged to return to England on account of ill health. A long march led to the South country, and we surveyed 340 square miles in the desert round Beersheba. This completed the survey of Palestine, but the early portion required revision, and from 10th October to 22nd November we revised 1,700 square miles. The party, having completed all it was sent to perform, then returned to England.

I have now told you what has been done. Let me say a very few words on what it is proposed to do next.

As soon as funds are available, an expedition will start to explore the sites of the most sacred scenes of the New Testament history: the northern shores of the Sea of Galilee, where undoubtedly Capernaum, our Lord's own city, Chorazin, and Bethsaida still exist.

In addition to this the expedition will make a thorough survey of the unknown country forming the eastern shores of that sea on the same scale and with the same accuracy as the present Survey.

If this great Association considers that what we have accomplished has added largely to the scientific knowledge of an ancient country, let me hope they will show their satisfaction in the results we have obtained by helping us in the renewed efforts in the same direction.

Let me add one more result we hope to obtain. We hope to rescue from the hands of that ruthless destroyer, the uneducated Arab, one of the most interesting ruins in Palestine, hallowed by the footprints of

our Lord. I allude to the synagogue of Capernaum, which is rapidly disappearing owing to the stones being burnt for lime.

Ought we not to preserve for ourselves and our children buildings so hallowed, so unique? Let us hope that if this expedition succeeds it may be the means of leaving some footprints in the sand of time—

“Footprints that perhaps another
Sailing o'er life's solemn main,
A forlorn and shipwrecked brother,
Seeing, may take heart again.”

Major Wilson, C.B., F.R.S., observed that Lieutenant Kitchener had omitted to mention, through modesty, the difficulties he had to surmount owing to the country being at war. From private information he had received from the consuls in Palestine he could assure the meeting that the tact and energy displayed by Lieutenant Kitchener in protecting the Christian population had greatly tended to the preservation of peace in that country.

Canon Tristram pointed out the great value the map displayed would have on the Biblical knowledge of the future, and hoped that not only this Association, but all who took an interest in the work, would help in the renewed efforts that were about to be made by the Society.

The Chairman, Sir Wyville Thompson, said that he felt sure that such a project would not fail for want of funds. He hoped that the Association would be able to assist the work by a grant, and he felt sure that the meeting would unanimously pass a vote of thanks to Lieutenant Kitchener for his interesting paper.

REPORT ON THE COMPLETION OF THE WORK.

MR. CHAIRMAN AND GENTLEMEN,—It is with great regret that I leave the service of the Palestine Exploration Fund after a period of four years' work. I beg to tender to you and to the other members of the Committee who are not present on this occasion my best thanks for the universally kind and indulgent way in which I have been treated, particularly during the time I was in command of the Survey of Palestine in that country. During that very critical period when Turkey was at war the confidence placed in me by the Committee enabled me to carry out the survey in my own way, when, had it been necessary to apply home for detailed directions, I should very probably not have succeeded in the enterprise.

I strongly recommend to the Committee to adopt the same course with any brother officer who may be sent out in a similar position, and I feel sure that the Committee will not find their confidence misplaced in any officers of the corps of Royal Engineers who may hereafter carry on their work.