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ORDINARY MEETING.*

PROFESSOR E. HULL, LL.D., F.R.S., IN THE CHAIR.

The Minutes of the last Meeting were read and confirmed, and the following Elections were announced:--

Associates:—The Right Rev. Bishop Wilson, D.D., Melanesia; Major-General A. B. Tulloch, C.B., C.M.G.; Rev. J. L. Darling, M.A., Ireland; Rev. W. H. Seddon, M.A., Middlesex; Professor H. V. Hilprecht, Ph.D., D.D., United States.

The following paper was read by the author:-

PASSAGE OF THE RED SEA BY THE ISRAELITES. By Major-General Tulloch, C.B., C.M.G. (With Map.)

MILITARY operations even in remote ages, provided fairly authentic accounts of them are available, are always interesting. I therefore venture to submit for critical consideration a march which took place some three thousand years ago, and although the narrative of it has been constantly read for many hundred years, the truth of that statement has always been received either with doubt or else conveniently placed beyond criticism by labelling the whole affair as inexplicable: I refer to the Exodus of the Israelites from Egypt.

My notes on the subject would hardly be worth consideration from a military point of view, but the matter has lately been referred to, and as there are now many thoroughly professional soldiers in Egypt, some of whom might be glad of an opportunity for further examination of the country where the march took place, this study of the Exodus may

not be thought unworthy of consideration.

Some years ago (January and February, 1882) I was engaged in making a military report on the Suez Canal, in which it was necessary to investigate the possibility of the

^{* 12}th of 30th Session.

traffic being wilfully interrupted by obstacles sunk in the I had also to examine not only the banks but the country on each side of the Canal for a considerable distance. One day, when so employed between Port Said and Kantarah, a gale of wind from the eastward set in and became so strong that I had to cease work. Next morning on going out I found that Lake Menzaleh, which is situated on the west side of the Canal, had totally disappeared, the effect of the high wind on the shallow water having actually driven it away beyond the horizon, and the natives were walking about on the mud where the day before the fishing-boats, now aground, had been floating. When noticing this extraordinary dynamical effect of wind on shallow water, it suddenly flashed across my mind that I was witnessing a similar event to what had taken place between three and four thousand years ago, at the time of the passage of the so-called Red Sea by the Israelites. Subsequently, when working at the southern part of the Canal, I came very decidedly to the conclusion that not only was the present Bitter Lake in ancient days a continuation of the Red Sea, but that the northern end of the Bitter Lake extended much further upward than it does now, possibly into Lake Timsah, and that the eastern side of the Bitter Lake also formerly extended very much further in that direction, the ancient shore line being evidently several miles to the eastward of its present position. Lake Menzaleh, of course, may be said to be of comparatively modern origin.

In the time of the Pharaohs the now extinguished Pelusiac branch of the Nile extended across the site of the Canal about midway between Kantarah and Port Said. place where the Pelusiac branch of the Nile crosses the modern Suez Canal can be distinctly recognised by the dark colour of the banks. The Tanitic branch, now also closed, came out somewhere in the vicinity of Port Said. lagoons at the mouths of the above-named branches, and the swampy nature of the country near them, must in ancient times have effectually prevented any roads being made north of Kantarah. The Modern Lake Ballah, which is now simply a swamp, in the ancient times doubtless occupied a very much more extensive tract of country and must have been filled. at each high Nile by infiltration from the Pelusiac branch. The swampy land most probably extended almost as far as Lake Timsah, viz., to El Guisr. Consequently it will be seen that there was only one regular place of passage between

Egypt and Asia, namely, that of Kantara. This has been the recognised gateway to Egypt from remote ages, by which invading armies of Assyrians, Persians, Greeks, Romans, and Arabs have all passed into Egypt. There might have been a by-way between Lakes Ballah and Timsah, namely, the small sandy plateau of El Guisr; but if that existed it would be well guarded by defensive works. It is possible that Ethain, "on the edge of the wilderness," the second stage of the Exodus, may have been close on the Egyptian side of this plateau.

On referring to ancient Egyptian records it appears that there was a fresh water canal from the Nile near Bubastis (Zagazig) to some place in the vicinity of the head of the present Bitter Lake, where apparently there was a port for ships coming to Egypt viâ the Red Sea; consequently from this point southwards there could have been no road out of

Egypt.

It has been suggested that the point of passage may have been at the southern or sea end of the Bitter Lake by Chalouf, where the channel would be narrow, and that at low tide it might have been fordable. If such were the case then it would not have been possible for Pharaoh to say, "They are entangled in the land, the wilderness has shut them in." The northern part of the frontier line was unquestionably fortified, and made as secure as possible against attack from the eastward, and it would be contrary to reason to suppose that the Egyptians would leave a gap in their defence practicable to an enemy at every low spring tide, or that such was unknown to their military authorities responsible for the safety of the country. Again, considering the north and south direction of the channel referred to, an east wind would have no effect on the water there, even if it varied a point or two north or south.

Several winter visitors to Egypt have lately given their ideas as to the route of the Exodus, but apparently few, if any, have actually traversed the ground they describe; as an instance I may mention one writer, who attributes deeply planned strategic schemes to Moses which would have puzzled even Von Moltke to understand. This gentleman finally brings the Israelites to a point on the Bitter Lake by the South Lightship, where even now there is a depth of 30 feet of water, and where no hurricane that ever blew would make the place fordable. With some the narrows between the two Bitter Lakes is considered a possible place

of crossing; but a glance at the Admiralty chart will show that at the present time the depth of water is 12 to 15 feet, and formerly must have been much more; but putting this great depth on one side, from the direction of the narrows, an east wind would have little or no effect on the water there.

All things considered, the broad shallows at the then head of the Red Sea, viz., the north end of the Bitter Lake, where, as now, there would be no tidal influence. is the only place where the position of the water and its depth could be affected by an east wind in the manner so distinctly stated in Exodus xiv. 21. There is another reason for Pharaoh's conclusion on hearing that the Israelites were moving south, and that consequently "the wilderness had shut them in," viz., the want of water. The fresh water canal already referred to terminated at some port at the then head of the Red Sea, and up to this point water would be available, but beyond that none would be forthcoming till the Israelites arrived at Marah on the other side of the Red Sea. Now, even supposing that the crossing had been made at the lower end of the Bitter Lake, that would be at least three marches from the end of the fresh water canal, to which another two marches must be added to arrive at Marah. One well-known Egyptologist, Dr. Sayce, assumes that the Red Sea at the time of the Exodus terminated as it does now at Suez, and that the remains of the ancient canal there was a fresh water one at the time referred to. The Admiralty chart and official survey of the delta are alone sufficient to show from the direction of the ruins that the canal was a salt water one connecting the Red Sea with the Bitter Lake for navigation purposes, and history states that it was made in the time of Darius, on account of the old channel silting up.

The eastern portion of the delta, formerly irrigated by the Tanitic and Pelusiac branches of the Nile, was in the time of the Exodus a very fertile district, with Tanis (Zoan) as its capital. Here, as recorded in the seventy-eighth Psalm, Moses disputed before Pharaoh with the Egyptian Magicians. Immediately south of that part of the country was the land of Goshen, inhabited by the Israelites. It may be mentioned that the first fight in the 1882 Campaign took place at Tel-Mashkuta, apparently the eastern boundary of the ancient land of Goshen, and the last fight at Tel-el-Kebîr, probably not far from the western boundary of the same

district. From the position of Tel-el-Kebîr (the great mound) it is quite possible that when excavations are made it will be found to be Rameses.

It may be asked how it is that such a fertile part of Egypt as that referred to is now a swamp or a desert? There were two causes which eventually brought about this result, viz., bad government which neglected the defence of Egypt and allowed it to be conquered by eastern nations; and then in time of war and hostile occupation there would be no money forthcoming to maintain the great public irrigation and drainage works necessary to keep clear the Pelusiac and Tanitic Nile branches. Consequently these would gradually silt up, and then the fertile land would become a desert or a swamp according to its elevation. Another cause would also operate to close the Nile branches, viz., the strong easterly gales in winter which brought such masses of drift sand from the desert, and which have helped to fill up not only the ancient eastern branches of the Nile, but have also closed the channel of communication between the former northern extension of the ancient Red Sea (now the Bitter Lakes) and the present limit of the Red Sea at Suez. This, as already stated, was reopened by Darius, but the passage was subsequently again closed by drift sand. A vague statement that there must have been a modern upheaval of the land near Suez has found favour with some travellers, but a careful examination of the ground will undoubtedly prove that drift sand, and drift sand only, has raised the level of the ground. The cuttings now being made to increase the width of the south end of the Canal just below Lake Timsah show curious strata which are well worth examining.

Very little is yet known of the history of Egypt at the time the Israelites first arrived, excepting that the delta was occupied by the Hyksos or shepherds, who, coming from the eastward, had conquered the Egyptians. A Hyksos Pharaoh ruled in Lower Egypt with probably an Egyptian Governor at Thebes. The shepherd race naturally gave a cordial welcome to a handful of distressed people, evidently their kinsfolk, who followed the same occupation, viz., that of shepherds (Genesis xlvi, 32), but when the Egyptians succeeded in throwing off the yoke of the Hyksos, the new Pharaoh would naturally be no friend of the Israelites.

Turning now to Bible history, it is recorded that the

Pharaoh of Joseph gave the Israelites some of the best land in Egypt, that in Rameses the land of Goshen (now known to have been in the eastern part of the delta). Some four hundred years afterwards the then Pharaoh (Exodus i, 10), fearing that the half million men of Israel on the eastern border would in time of war join their Semetic kinsfolk who were so close to them in Palestine, decided to take harsh measures with the Israelites, probably with the intention of reducing them to a state of slavery, and destroying their existence as an independent race. ingly, in pursuance of this policy, the Egyptians set over them "task-masters to afflict them with their burdens," and compelled them to build the treasure cities of Pithom and Rameses, it being specially stated that the Egyptians "made their lives bitter with hard bondage in mortar and When Moses subsequently complained of their treatment to Pharaoh, the Israelites were still further oppressed by being made to find their own straw, which was necessary for making thoroughly serviceable sun-dried bricks.

The events which finally induced Pharaoh to let the Israelites go are so fully recorded that it is unnecessary to enlarge upon the subject, but the actual route has not yet been definitely settled. According to Bible narrative they journeyed from Rameses to Succoth, thence to Etham on the edge of the wilderness, and then to Pi-hahiroth, which was on the sea-coast (Exodus xiv, 9). From this it is apparent that the Israelites moved from Rameses to the sea in three stages; but Succoth seems to have been the first place from which the regular marches were commenced, because here, as stated in chapter xii, 39, they evidently halted and baked the unleavened bread for use during the first part of the journey. Now, as there was a vast multitude all on foot with flocks and herds, ten miles a day would be the utmost they could accomplish, and as they reached the sea in two marches the crossing place could not have been more than twenty miles from Succoth. The first march brought them to Etham. Here they made a turn and must have kept along the edge of the desert making for the intended crossing place: this is so stated in chapter xiv, 2, "Speak unto the children of Israel that they turn and encamp before Pi-hahiroth." The route was probably by the Sweet Water Canal, already mentioned, which extended to the port at the then head of the Red Sea.

For some time it was believed that Tel-Mashkuta was the site of Rameses, and it was so marked on all maps for many years. On the supposition that such was correct, I wrote to the Standard in 1883, under the signature of "Nemo," giving a short account of my observations the previous year, but my letter was more particularly written in order to draw attention to the wonderful dynamic effect of strong wind on large expanses of shallow water, in the hope that some person, capable of doing so, would make further investigations in regard to its bearing upon the passage of the Red Sea as mentioned in Exodus; the effect of the letter is unknown, except that it was referred to in some so-called religious publications, not always in complimentary terms.

In 1883, however, the Egyptian Exploration Fund was established, especially to examine the mounds in the delta, and in the district of the old land of Goshen. explorer sent out by the Society was Monsieur Naville, who commenced at Tel-Mashkuta on the supposed site of Rameses, and found that the mound was not the remains of Rameses but those of Pithom, which was also Succoth. Unfortunately, being abroad at the time M. Naville's book on the subject was published, and busily engaged professionally, I have not yet seen it; however, a short time ago I came across Miss Edwards' work on Egypt, and there found some most interesting accounts of M. Naville's discoveries at Tel-Mahouta, or Mashkuta as it is now spelt. She states as follows: "M. Naville found under the mounds a great enclosing wall 24 feet thick containing the site of a temple, and a space of 55,000 square yards filled with a series of most curious subterranean structures entirely unlike any architectural remains ever discovered in Egypt or elsewhere. These subterranean store chambers, magazines, or granaries, are solidly built square chambers of various sizes, divided by massive partition walls about 10 feet in thickness, without doors or any kind of communication; evidently destined to be filled and emptied from the top by means of trap doors and ladders. Excepting the corner occupied by the temple, the whole area of the great walled inclosure is honey-combed with these cellars. The bricks are large and are made of Nile mud pressed in a wooden mould and dried in the sun; also, they are bedded in with mortar, which is not common, the ordinary method being to bed them with mud, which dries immediately and holds almost as tenaciously as

mortar. Now, it is a very curious and interesting fact that the Pithom bricks are of three qualities: in the lower courses of these massive cellar walls they are mixed with chopped straw; higher up, where the straw may be supposed to have run short, the clay is found to be mixed with reeds, doubtless translated as 'stubble' in the Bible narrative: the bricks of the uppermost courses consist of mere Nile mud with no

binding substance whatever.

"The temple was dedicated to Tum, the patron deity of the town and surrounding district. Now, as this place was not only a store fort, but also a sanctuary, so also it had a secular name and a sacred name. Its secular name proved to be Thukut or Sukut, and its sacred name Pa Tum. These particulars we learn from inscriptions found upon the spot. For instance, engraved on a black granite statue of a deceased prince and high priest named Aak, we find a prayer in which he implores 'all the priests who go into the abode of Tum, the great god of Sukut, to pronounce a certain funerary formula for his benefit; whilst a fragment of another statue is inscribed with the names and titles of one Pames Isis, who was an 'official of Tum of Sukut and Governor of the storehouse.' In these two inscriptions (to say nothing, of several others) three important facts are recorded, viz. that the place was a storehouse, and that its sacred name was Pa Tum, and its secular name, also the name of the surrounding district, was Sukut. Both temple and town were proved by inscriptions to have been founded by Rameses II., the Pharaoh of the first chapter of the Exodus.

"Now Pa Tum of Sukut had been known to Egyptologists for many years in certain geographical lists of temples and local festivals sculptured on the walls of various temples in Upper Egypt, and Dr. Brugsch had long ago identified these names with Pithom or Succoth, but till M. Naville excavated Tel-Mashkuta, Pithom of Succoth was but a name and a theory."

The preceding are extracts from Miss Edwards' book, doubtless taken almost verbatim from M. Naville's account; they are given in full in order to show that, although the site of Rameses is not yet found, unquestionably Succoth, the second halting-place of the Israelites, was identified, and from what has already been stated with reference to the length of a day's journey, it could not have been more than twenty miles from the crossing place, which, therefore, must

have been somewhere at the head of the present Bitter Lakes or a little higher up towards Timsah, where there would be broad shallows similar to those existing at Lake Menzaleh.

Viewing matters as they were at the time of the Exodus, the situation would be as follows: Pharaoh at Tanis, which is about twenty-five miles north-west of Kantara; the headquarters and assembling of the Israelites at Rameses some distance westwards of Ismaîlîa. The main road out of Egypt being by Kantara, with possibly a well-guarded by-route over the El Guisr plateau. Being the season of low Nile (Passover) the cultivated country would be dry and

passable everywhere.

When Moses received permission to go, it was naturally expected he would take the usual road; this, for the reasons given in Exodus xiii, 17, 18, he did not do, but turned down south as mentioned. Pharaoh was much astonished, and said, "They are entangled in the land, the wilderness hath shut them in." A glance at the map will show that in turning south the Israelites were apparently marching towards the waterless desert of Gebel Geneffeh, on the west shore of the Red Sea, from which there was no exit; but instead of continuing due south they made, as already stated, a halt at Pi-hahiroth (chapter xiv, 2). This sudden counter-march probably alarmed the Egyptians, who then possibly feared some scheme of the Israelites which would cause further trouble. A large force of mounted men was at once sent to follow, with doubtless instructions to attack and delay the Israelites, if necessary, till enough infantry arrived to overpower them. This force arrived and camped near the fugitives, just as they got to the seashore (chapter xiv, 9). During the night an easterly gale commenced, and with the slightest northing in the wind the shallows referred to would naturally be free from water by the morning. This was so. The Israelites evidently all pushed over daybreak, and the Egyptians, seeing them escaping, sent their mounted men (chariots) forward to stop them. coming to the wet mud they at once "dragged heavily," and could not get on, but by this time the Israelites would be across, and the easterly gale stopping, the water would at once flow back again and drown all those out on the mud. From chapter xiv, 10, the wind apparently went round to the west as soon as the Israelites were over; this would cause the water to return to its original place with great rapidity.

Thus, from an ordinary military examination of the actual district, and then considering what its state was in ancient times, it will be seen that the simple Bible narrative is evidently a very graphic and correct account of what really took place.

The CHAIRMAN (Professor E. HULL, LL.D., F.R.S.).—I am sure we have all listened with much interest to General Tulloch's statement of his views with regard to this wonderful event of Bible history—an event to the truth of which the whole Jewish nation is a witness at the present day. I assume that the author does not in any way intend to do away with the miraculous element in the history of the passage of the Red Sea by the Israelites. We shall all be pleased to hear any observations that may be made on the subject.

The Hon. Secretary.—Before the discussion commences I may mention that a letter has been received from the Chief Rabbi (Dr. H. Adler), in which he says, "I much regret that duties at my office render it impossible for me to attend at the lecture to be given by Major General Tulloch on the passage of the Red Sea. It would have afforded me much pleasure to be present."

Rev. A. Löwy, LL.D.—I came to be a listener rather than an instructor. The researches that have been made in this matter have certainly given new light to the ancient history of an event of historic importance, and I think we must be grateful for the excellent observations that have fallen from the author with regard to the pursuit of the Israelites. I recollect that Brugsch Pacha called attention to the locality where the Israelites might have crossed and where the Egyptians would be drowned, and he turned his attention to Lake Menzaleh. I am not in a position to say that Brugsch was correct, but it is wonderful to observe how dry land may be, from the cause stated,

suddenly turned into sea and sea into dry land. No one who has not been an eye-witness of the natural configuration referred to can give any acceptable opinion upon the matter, and I would not venture to give an opinion for or against it: but it strikes me that what we have heard to-day clears up many of the doubts which we might otherwise entertain. We must be very grateful indeed for the excellent observations that have been made by General Tulloch.

Mr. M. ROOKE.—I should like to ask the present depth of lake Menzahleh near Port Said?

The AUTHOR.—It is only about 5 feet or 6 feet.

Mr. ROOKE.—Where was the water driven to?

The AUTHOR.—It was "packed up" to the north-west.

Mr. ROOKE.—Could you see it in any way?

The AUTHOR.—It was seven miles off. It had absolutely disappeared.

Rev. T. J. GASTER, M.A.—I should like to point out that the passage of the Israelites is said to have been by night and not by day.

Captain Francis Patrie, F.G.S. (Hon. Sec.).—M. Naville in his paper* referring to this subject, cites instances of the action of wind on water at Geneva; he says, "In 1495, and again in 1645, a very strong wind drove back the Rhone into the Lake as much as a quarter of a league, and it looked like a wall of water . . . and the inhabitants could go down on dry ground between the bridges and pass from one bank to the other." †

The CHAIRMAN.—There can be no doubt whatever of the effect of wind upon water, when we consider that the great equatorial currents which circulate round the ocean (as far as the continents will permit them, and which give rise to the north and south currents branching off on either hand), are due to the

^{*} Trans., vol. xxvi, p. 12.

⁺ Another traveller—the Rev. Haskett Smith—says: "But one of the most curious and remarkable effects produced by a strong sirocco is that which I have witnessed more than once in connection with the broad and shallow expanses of water to which I have alluded. I have seen these rain deposits in the plains swept up into heaps by the winds, like dust before a broom, laying bare the land which had been covered, and piling up on one side of it a literal bank or wall of water."—ED.

prevalent trade winds. This is the greatest instance we have on the surface of the globe of the power of the wind upon water, and about that I think none of us have the slightest cause to disagree with the author of this paper. As a geologist I feel somewhat gratified with the author's views, because I have always held, with some other observers, as, for example, Sir J. W. Dawson (Modern Science in Bible Lands, p. 391), that from geological causes the waters of the Red Sea ran up higher into the isthmus than they do at present, filling the great Bitter Lake, and I think it was the great engineer Sir John Coode who first showed that there was the clearest evidence that the Isthmus of Suez had formerly been the bed of the Red Sea. What is the fact? The fact is, that that valley consists of a superficial covering of sand, to which the author has referred, which of course generally is being drifted and has been so for thousands of years; but when once you get down to the solid material below that sand, you find the floor of the isthmus to be an old sea bed, consisting partly of calcureous material with shells and corals, the same, I suppose, as those existing in the Red Sea at the present day. Therefore we have clear geological evidence that the Red Seadid extend, as the author has stated, at least as high as this comparatively high ridge (El Guisr), where he states there was a fortified road across into Palestine and Arabia. Not only is the floor of the isthmus formed of an old sea bed, but the author is doubtless aware that at the height of 220 feet-the height of the Mosque of Mehemet Ali at Cairo—there is an old sea beach, which anyone can see for himself, running along the limestone cliff. You have gravel with shells and various marine forms now living in the Red Sea and the Mediterranean. Consequently, it is quite clear that in very recent geological times the whole of Lower Egypt was covered by the waters of the sea; and, as the land gradually rose, of course the higher portions emerged before the lower portions, and these would be the last to rise. Is there, therefore, any reason to doubt that more than three thousand years ago, at the time of the Exodus, the elevation of that portion had not gone on to the extent it has at the present day, and that there was a considerable arm of water running up by the Gulf of Suez at least as far as the ridge of El Guisr?

It is only on geological grounds that you can come to a clear understanding of the passage of the Israelites. I maintain, therefore, that the arm of the Red Sea was the Red Sea itself—not merely a swamp or a Bitter Lake, but an arm of the Red Sea. The phraseology of the Exodus (I do not profess to be a Hebrew scholar), or rather the phraseology of our translation, is very clear indeed that it was the Red Sea, and not merely a slight swamp covered by a few feet of water, but was of considerable depth. And, therefore, when Pharaoh was pursuing from the north-west, and the Israelites were making their way by the high road into Arabia and Palestine, they "turned" as described (Ex. xiv, 2) at that point southwards according to the commandment of the Lord through Moses: they were then in a cul-de-sac. They had the arm of the Red Sea on the east, and they had the lofty range of Gebel Attaka towards the south, and therefore it required something more than an accidental east wind to clear a passage for them across this arm of the Red Sea. I have given my views on this subject more fully in a work entitled Mount Seir, published by the Committee of the Palestine Exploration Fund. I believe there was a very considerable arm of the Red Sea, and that it was through a miraculous interposition that the Israelites were obliged to have a passage hewn for them through the waters. I have listened with great interest to the paper.

The AUTHOR.—Allow me to answer a few questions, beginning with the last one. I made no statement that the Bitter Lakes were shallow. I distinctly stated that the Bitter Lakes at that time must have had a depth of 30 feet.

The CHAIRMAN.—I thought you said 5 feet or 6 feet.

The AUTHOR.—No, my statement just read was as follows: "This gentleman finally brings the Israelites to a point on the Bitter Lake by the south light-ship, where even now there is a depth of 30 feet of water, and where no hurricane that ever blew would make the place fordable." Anyone with even a very elementary knowledge of geology must see at once that the Mediterranean and Red Seas were at one time in communication across what is now the isthmus of Suez; later on one of the branches of the Nile evidently discharged its muddy waters into the then head of the Red Sea, layers of hardened mud may even now be seen in cuttings, lately enlarged about Shaloof; these layers are apparently pretty regularly sandwiched in amongst beds of drift sand. It was this steady supply of drift sand from the eastward, which I believe first of all cut off the old head of the Red Sea, at the southern shallows from the parent ocean, and

eventually made the old deeper northern sea bed the morass of the Bitter Lakes as found by de Lesseps.

I trust I have now proved to all reasonable satisfaction that the simple Bible narrative is true to the very letter. For ages past very eminent theologians and Bible critics have been content with the Sunday School picture idea of a crowd of Israelites running through a narrow opening with upright walls of water 40 or 50 feet high, precisely similar to a railway cutting in very stiff soil; for the future it is to be hoped they will know better.

With reference to the passage by night, it was Passover, and therefore full-moon; and unquestionably, as soon as the wind produced enough effect, I see no reason why they should not have begun their passage.

The Meeting was then adjourned.