

# NARRATIVE OF AN EXPEDITION THROUGH ARABIA PETRÆA, THE VALLEY OF THE ARABAH, AND WESTERN PALESTINE.

By Professor HULL, LL.D., F.R.S.

(Geologist-in-Chief.)

THE work of the Palestine Survey, which had been partly completed in Moab by Captain Conder, R.E., having been interrupted through the opposition of the Turkish Government, the Executive Committee of the Palestine Exploration Fund determined to undertake a geological reconnaissance of Western Palestine and the Jordan Valley, in accordance with the programme of work to be done under the auspices of this admirable Society. The Topographical Survey of Western Palestine had now been completed and published, so that the time seemed ripe for investigating the physical phenomena of Western Palestine, the Valley of the Jordan, and of the deep depression in which lies the Salt Sea.<sup>1</sup> An offer to undertake this exploration having been made to me by Colonel Sir Charles W. Wilson, on the part of the Executive Committee of the Palestine Exploration Fund, I consulted with some friends regarding the nature of the countries to be traversed, climate and other matters; and having received sufficiently encouraging replies, I gladly accepted the offer, and began preparations for carrying it out:—the Lords of the Committee of Council having been so good as to grant me three months' special leave of absence from my official duties in Ireland.

I had long taken a deep interest in the physical history of Palestine. I had read nearly everything that had been written on the subject, including the great work of M. Lartet, the geologist attached to the expedition of the Duc de Luynes, and had even gone so far as to deliver a public lecture on the physical history of the Jordan Valley and the Salt Sea in the theatre of the Royal Dublin Society.<sup>2</sup> Little did I think, when delivering that lecture, that I should have an opportunity in a few months' time of testing the correctness of my views by actual observation on the spot! Such, however, was the case; and within a few weeks I was busily engaged in my preparations for departure for the Holy Land.

It was of first importance to choose suitable companions. The Committee kindly allowed me to select an assistant; and I gladly accepted the

<sup>1</sup> I prefer this name to that of the "Dead Sea," a name of much later origin, and originating in a misconception. The name "Salt Sea" (Gen. xiv, 3) is peculiarly appropriate to an inland lake of such intense salinity, and was in use at the time when the Pentateuch was written. The Arabic name for this lake is "El Bahr Lut," the Sea of Lot.

<sup>2</sup> An abstract of this lecture appeared in *Nature*, March, 1883.

offer of my son, Dr. E. Gordon Hull, to accompany me in that capacity, and also as honorary medical officer to the party. Captain Kitchener, R.E., then in Egypt, was nominated by the Committee to undertake the topographical survey of the Wâdy-el-Arabah, and northwards as far as the shores of the Salt Sea, so as to join up the triangulation with that of the Ordnance Survey of Palestine;<sup>1</sup> and Mr. Armstrong, formerly Sergeant-Major R.E., who had taken part in nearly the whole of the previous survey, was appointed his assistant. It is scarcely necessary for me to say with what pleasure I received the tidings of the appointment of Captain Kitchener as my colleague. I was aware of his great experience in the work of the Palestine Survey, of his knowledge of the character and customs of the Arab tribes amongst whom we were to travel, and of his ability to converse in their language. All this inspired an amount of confidence of ultimate success I should not otherwise have felt, and the result proved that my confidence was well founded. In matters connected with our dealing with the Arabs I readily deferred to his judgment, which I always found to be judicious, while he often acted as spokesman in our negotiations with the Sheikhs.

It was a matter of first importance to the safety of the party, and towards the attainment of our objects, that great prudence should be exercised in dealing with the Bedawins;—at least we supposed so. The unhappy murder of Professor Palmer, Lieutenant Gill, and their companions, by the Bedawins of the Tih, was still fresh in our memories, and sometimes caused a cold thrill when I thought thereon. Some of my more judicious friends, when speaking with me on the prospects of my journey, accompanied their congratulations and good wishes with gentle hints to beware of the treacherous Bedawin, and “to remember the fate of Palmer.” They little thought, kind souls, how they were adding to my own mental anxiety, which I trust I did not allow any one to share, or even suspect. I kept it under lock and key, along with Besant’s narrative of that horrible tragedy, and insisted, in reply to my friends, that the circumstances of Professor Palmer and myself were entirely different, which was undoubtedly the case, and that in the capture and execution of the murderers the Bedawins had received a lesson which they would not readily forget—such being the view that my friend and counsellor, Sir Charles Wilson, had endeavoured to impress upon me.<sup>2</sup>

As will be seen in the sequel, both the scope and area of the Expedition

<sup>1</sup> The Palestine Survey Map, published on a scale of  $\frac{3}{4}$  of an inch to one statute mile, takes in the western shore of the Dead Sea as far as Sebbeh; from this the southern boundary runs along Wâdy Seiyal, Wâdy-el-Milh, Wâdy-es-Seba, and the Wâdy Ghuzzeh, to the shore of the Mediterranean Sea, south of Gaza.

<sup>2</sup> The matter is very fully gone into in Besant’s “Life of Professor Palmer.” There can be no doubt, as we afterwards learned on the spot, that Palmer’s death was planned by the agents of Arabi Pasha, and that the Arabs, who were to a man on Arabi’s side, were only carrying out the orders they had received from Egypt.

were considerably enlarged as time went on. In the letter<sup>1</sup> of Mr. Glaisher, F.R.S., Chairman of the Executive Committee, in which the route and objects to be kept in view were definitely settled, it was stated that we were to proceed overland to Egypt, where we should be joined by Captain Kitchener, and from thence strike into the Desert of Sinai, which we were to traverse as far as the head of the Gulf of Akabah. From thence we were to proceed northwards along the whole length of the Wâdy-el-Arabah, to the southern end of the Salt Sea, and proceeding along the western shore as far as Ain Jidi (Engedi), turn up into the tableland of Judea to Hebron, from whence the officers of the Engineers were to return to Egypt, while the other members of the expedition were to proceed to Jerusalem, and organise another expedition into the Jordan Valley, Moab, and Northern Palestine. It will thus be seen that a tour of unusual extent and interest was placed within our reach, including countries and places second to none in importance from their sacred associations, their historical antecedents, and the physical conditions under which they are placed. The Committee also took care that everything should be done for the comfort and safety of the travellers. The Egyptian Government, through the Foreign Office, offered an escort as far as Akabah, the limit of Egyptian territory; but as we had no reason for apprehension from the Arabs in the Sinaitic peninsula, we did not think it necessary to avail ourselves of the kindness of Cheriff Pasha, who had offered through Kitchener to give us every assistance in his power. The district where an escort of soldiers was likely to be of use lay between Akabah and the Salt Sea, and here the Egyptian escort would be unable to accompany us.

The party as it now stood consisted of four; but it was obviously desirable that it should include a naturalist, who should make notes and collections of the representative fauna and flora of the district to be traversed; and of a meteorologist, who should also make observations on the temperature, rainfall, and aneroid determinations of the levels of special points along our route. I therefore cast about in my mind for volunteers having the necessary time and qualifications to undertake those departments of research, and was most fortunate in both instances. Mr. Henry Chichester Hart, who joined us in the former capacity, had been personally known to me for several years as an ardent investigator of the flora of Ireland, having made several reports on the botany of special districts of that country, under the auspices of the Royal Irish Academy. He had also acted as Naturalist in the expedition of Sir George (then Captain) Nares, R.N., to the Arctic regions, which had penetrated as far north as 83° 14' lat. To these antecedents Mr. Hart added uncommon powers of enduring bodily fatigue; and he proved a most agreeable addition to our party, owing to his imperturbable good humour, and the extent of his knowledge on natural history subjects. Mr. Reginald Lawrence, Associate of the Royal College of Science, Dublin, who accepted my invitation to act as Honorary Meteorologist to the Expedition, had also been my personal

<sup>1</sup> Of date 7th July, 1883.

friend for several years, and from my knowledge of his antecedents and ability I felt sure he would prove the right man to complete our quorum ; and in this I was not disappointed. Never, I feel sure, were six persons more happily associated in an undertaking of this kind. Throughout our whole tour the utmost good feeling prevailed amongst the members ; each took an interest, not only in his own department, but in those of the others, and tried to assist in them as opportunity offered. My son, having had considerable practice in photography, undertook to bring home photographs of the district through which we were to pass, and through part of which no photographer had as yet penetrated. Our expedition was thus tolerably complete in all its branches.

It had been suggested to me by my friend Dr. W. Frazer, of Dublin, that our progress might be facilitated, and our comfort increased, if the travelling arrangements were entrusted to the well-known firm of Messrs. T. Cook & Son. This suggestion I mentioned to the Secretary to the Palestine Exploration Fund, who had an interview with Mr. John M. Cook, the managing partner of the firm, at the head office, Ludgate Circus. The result of this interview was most satisfactory, as Mr. Cook offered to undertake the whole of our travelling arrangements, whether by land or sea, to provide tents, food and attendants, and to advance money when needed to the members of the party. All this was to be done "without the slightest profit, directly or indirectly, to the firm," owing to the interest which Mr. Cook personally took, not only in the Palestine Exploration Fund, but also in the Expedition which it was about to send out.

This handsome offer on the part of Mr. Cook was accepted by the Committee, whose energies were now to be restricted to providing the instruments for carrying out the scientific work of the Expedition.

Several days were spent in London by all the members of the party in making preparations. Theodolite, compasses, aneroids, thermometers, photographic apparatus, guns, revolvers, ammunition, geological hammers, maps, suitable clothes, stationery, and many other articles had to be provided, packed, labelled, and despatched. Mr. Armstrong was to follow in a few days by steamer from Marseilles, and join us in Egypt. My son and I met the Committee in Adam Street for a parting consultation and farewell, which was very warmly given us by the Chairman, Mr. Glaisher. On the day following we all dined with my brother-in-law, the Rev. H. Hall-Houghton, at the National Club,<sup>1</sup> Whitehall, and on Saturday we took our seats for Dover in the train at Ludgate Hill Station, Mr. Cook being on the platform to see us off, and wish us "a good journey." We crossed the "silver streak" during an interval of comparative tranquillity, and in a boat, fortunately, other than the "Calais-Douvres," so reached Paris in the evening, without having had to undergo the usual passage experiences.

<sup>1</sup> Mr. Hall-Houghton is a member of the General Committee of the Palestine Exploration Fund, and was present at the meeting of the Special Committee on the previous day.

We left Paris for Milan by the "through train," *vid* Bale, on Sunday evening. Our train was to have been in connection with another leaving Bale about noon, but as we approached this city our progress gradually approximated to a walking pace. With a view, doubtless, to reciprocity, as we got impatient the train slackened pace, with the not unexpected result that we were late for the train into Italy. The day was wet and cold, and in order to pass a part of it in motion we took the next train to Lucerne, hoping for a change. But this beautiful city was draped in sombre garb. A canopy of cloud shrouded from our view the mountains, while a ceaseless drizzle damped our desire for sight-seeing. Some of the party, however, visited the remarkable "glacier garden" near the city; and after dinner at the hotel we were glad to find ourselves again in the train, notwithstanding the disappointment of being obliged to cross the Alps at night. But though night, all was not dark. As we ascended the mountains towards the St. Gothard Tunnel the canopy of cloud melted away, and about midnight the moon and stars shone forth, illuminating the snowclad heights on the one hand, and throwing into still deeper shade the ravines and frowning precipices along which we threaded our way. On issuing forth from the tunnel on the Italian side, and as break of day approached, we found the sky clear, and we descended into the plains of Lombardy amidst a blaze of sunshine, which cheered our spirits; and under such circumstances we drove through Milan, visited the Cathedral, and in the afternoon took our seats in the train for Venice, which we reached after dark. It was a new experience for all of our party but myself to find ourselves seated in a gondola, and piloted along through the canals—under numerous archways, and alongside the dark, mysterious walls of houses, churches, and palaces, to the steps of Victoria Hotel, where we were soon comfortably housed, to await the departure of the P. and O. steamship "Tanjore" for Egypt on the following Thursday.

We endeavoured to put our time to good account, and see as much of the "Queen of the Adriatic" as possible. I found that my former visit had in no way lessened the pleasure of a second visit, and I saw and heard much that had escaped me previously. Engaging the services of a very efficient guide, who informed us that he had accompanied Mr. Ruskin when collecting his materials for "The Stones of Venice," we made a very full examination of the Palace of the Doges, the Duomo of St. Mark, and other sights of this wonderful city; and in the evenings we sipped our coffee under the colonnade of the Piazza, listening to the music of a very fine military band, or gazing with wistful eyes into the brilliantly lighted shops, so eminently calculated to elicit the last lira from the pocket of the beholder. Though we made some purchases, I fear our stay in Vienna did not add materially to the wealth of the city. We recollected there were bazaars in the Eastern cities we hoped to visit with objects of still greater novelty than those even of Venice.

Owing to the quarantine regulations, the "Tanjore," Captain Briscoe, was unable to come up to the Grand Canal, so we left Venice in a steam launch, in which we were conveyed down through the lagoons to the place

in the bay where our good ship rode at anchor. We passed several islands and forts, amongst others one built by the Genoese in the fourteenth century. Several others, rising from the lagoons, were erected by the Austrians in 1859-60. These lagoon islands are in some cases of vast extent, and are covered by the waters of the Adriatic when the wind blows strongly from the south. In 1875, on the 5th January, a south wind banked up the waters till they overflowed most of the islands, and for two days the Piazza of St. Mark was submerged to the depth of from 4 to 5 feet.

We found the "Tanjore" crowded with passengers when our contingent had come on board. These included General Sir Evelyn Wood and party returning to Egypt, and several persons bound for that country, as well as for Cyprus and India, whose company we enjoyed till we reached Port Saïd. In the evening we weighed anchor, and steamed down the nearly smooth waters of the Adriatic, often out of sight of land, but sometimes with distant views of the coasts and islands of Italy on the one hand, and of Dalmatia on the other. One of the islands, called "The Half-way Rock," rose as a sharp ridge, apparently of limestone, from deep water.

Early on Saturday morning, we steamed into the harbour of Brindisi as far as the coaling depôt of the P. and O. Company, and we had all to turn out of our berths pretty early, in order to pass muster before the medical officer, who was pleased to give us "a clean bill of health," without a very strict *diagnosis* of each case. On this and a subsequent occasion I had an opportunity of observing the absurd nature of quarantine regulations. Like the passport system, that of quarantine only seems to give to travellers gratuitous trouble and expense, without accomplishing the object for which it is supposed to be instituted. How this was illustrated in our own case will be noticed in the sequel. In the case of the "Tanjore," it was so long since she had left Egypt (from which the cholera had almost disappeared) that any case on board would have manifested itself long ere she had entered the Venetian waters; yet she was not permitted to enter the harbour, and her passengers coming from the west and north of Europe, where cholera had never entered, were subjected to inspection on reaching Brindisi!<sup>1</sup>

We spent Saturday and Sunday in this port, awaiting the arrival of passengers and mails for Egypt and India. The time was agreeably occupied in visiting the town and surrounding country in company with one or two friends, amongst whom I may be allowed to mention the name of Mr. Sinclair, R.E., Secretary to the Governor of Cyprus, Sir R. Biddulph. Both the plants and animals of this neighbourhood indicate

<sup>1</sup> That Egyptian cholera comes, not from India, but from Mecca and Mina, and is generated amongst the thousands of pilgrims who annually are collected for several days within an exceedingly limited area, where they are subjected to the effects of breathing foul air, drinking corrupted water, and living in filth and privation, will be conceded upon reading the "Rapport sur la dernière épidémie de Choléra à la Mecque," in the *Gazette Médicale d'Orient*, September, 1883, by M. le Dr. Abdur-Rassack.

an approach towards those with which we were afterwards to become familiar in Egypt. The low cliffs of the shore, formed of yellow tufaceous limestone, abound in shells of late Tertiary age,<sup>1</sup> some identical with those of the adjoining waters, while the ground swarmed with bright green lizards, beetles, and ants; butterflies, wasps, and flies also floated about in the air, giving abundant occupation to Mr. Hart in collecting specimens and noting their habits. One peculiar species of wasp here lays its eggs in little balls of mud, in which the larvæ may generally be found.

The sub-tropical vegetation of the district is remarkably rich. Here the graceful date-palm waves its plumes aloft, amidst groves and gardens of olive, figs, oranges, vines, mulberries, and stone-pines. The eucalyptus has been introduced and planted extensively along the roads, while the hedgerows are formed of the bristling lines of the large cactus (prickly pear) and aloes. The cotton-plant is cultivated in ground which can be flooded, while oleanders, myrtles, and other foreign plants adorn the gardens.

The town itself, the ancient Brundisium, visited but scarcely seen by thousands of travellers annually, is of much interest, from its position and history. It stands on an inlet of the Adriatic, and the harbour, of great importance in Roman times, is capable of holding large ships. The harbour is connected by a causeway with a fortification, or castle, standing on the summit of a cliff to the south of the town, and in a commanding position. This is now used as a prison, and the inmates are usefully employed in a variety of reproductive works, such as carpentry, smiths' work, tailoring, &c., at which we found them busy when visiting the place on the afternoon of our arrival. There is a ditch and wall, with towers and gates, erected by the Emperor Frederick Barbarosa, probably on the site of more ancient structures, and amongst the remains of Roman work are two marble pillars, one broken, at the end of the Appian Way.

The country inland consists of an extensive plain, about 200 feet above the sea, richly cultivated in crops of maize, wheat, and cotton, with farmsteads surrounded by gardens of olives, figs, and vineyards. This plain is traversed by the high roads to Rome and Naples, and several ancient fountains, doubtless coming down from Roman times, still afford water for thirsty men and animals by the wayside. The plain, formed of shelly limestone, beds of marl, clay, and sand, was at a very recent geological period the bed of the sea, and its uprising has added thousands of square miles to Italian territory.

On Sunday morning Captain Briscoe held Divine Service in the cabin, and read the prayers and lessons with that solemnity and effectiveness sometimes wanting in the more regular services of the Church; and at 3 o'clock on Monday morning we steamed out of the harbour.

We soon passed from the deep indigo-blue waters of the Adriatic to those of the Mediterranean, which are of a greener tinge, not unlike those of the Atlantic. The voyage was very agreeable, and we only once came

<sup>1</sup> Pliocene according to Collegno's map.

in for a gale, which did not last very long. The view from the deck of the "Tanjore" on Monday towards the north-east was always striking, even at the distance from the land at which we sailed. The bold and rocky mountains of Albania stretched away for miles from left to right, beyond which, at a distance of over thirty miles, might be seen the mountains of Greece, the sun lighting up the peaks and lines of escarpment of white limestone of Epirus, with the island of Corfu in the foreground. Towards evening the coast of Cephalonia and Zante came in sight.

Awaking next morning, we found ourselves approaching Crete (Candia) and now a stiff gale was blowing from the north-east. Rain also was falling, and we began to feel tolerably miserable. The breakfast table was not quite as fully occupied as usual, and some of us found it convenient to retire to our cabins before we had had time to partake of a hearty meal. However, about tiffin the gale moderated, and we returned to the deck to watch the scenery of the island, along whose coast we were sailing at a distance of about twenty miles. This island (as is well known) is mountainous, the peaks of Mount Ida rising to 7,674 feet, and on this day cloud-capped; the sides being cut into deep ravines, clothed with a slight forest vegetation. The sunshine effects were sometimes very beautiful, the higher elevations being so brightly white as to resemble the snow-clad summits of the Alps. Towards evening the sky presented a grand spectacle. Overhead the stars shone forth from the dark blue sky, but from time to time the clouds which hung over Crete were illumined by brilliant sheets of lightning often bursting forth from behind the mountains like the flames of a volcano in active eruption. This scene lasted several hours, while brilliant meteors from time to time streamed across the heavens. The beauties of the sky were so enticing, and the air so balmy, that it was with regret we turned into our berths late at night.

Land now disappeared from view, and we bid farewell to Europe; the blue ring of the horizon was unbroken during the next day. After sunset I went to the bow of the ship to watch the effect produced by the medusæ when tossed up in the foam of the ship's prow. It is a sight full of beauty. Each sheet of white foam, as it was cast aside by the ship's side, was lighted by a thousand silver sparks caused by the phosphorescence of these pretty little creatures, quite invisible to the eye by daylight. I was told that sometimes dolphins may be seen disporting themselves amidst the shoals of medusæ, but on this occasion we were not so fortunate as to see any. On the 1st November we entered Port Saïd at 10 a.m., and for the first time touched the shore of the African continent; I trust, with thankful hearts for all the mercies we had received.

Slowly we steamed up the harbour towards our anchorage, passing a line of steamships of several nations, chiefly British. On passing an Egyptian man-of-war we received a salute (presumably in honour of General Sir E. Wood, but the question has not been decided!) the men standing all along the bulwarks with hand to hand horizontally extended, looking like so many human crosses clad in white, or like shirts hung out to dry. Soon after, a state barge came alongside to take Sir E. Wood and



his party off for Ismailia. It was unfortunately completely filled, so that there was no room for us—doubtless a matter of profound regret to the General, who took his departure amidst much shaking of hands and waving of handkerchiefs. Leave-taking now became general all round. Our passengers broke up into parties for their respective destinations, and at length we tumbled overboard into a boat and rowed for land with the gloomy prospect of a night sail up the canal in a passenger steam-barge amidst a crowd of unsavoury Moslems. Our baggage was carried to the hotel by porters whose powers of endurance seemed little short of those of mules or camels. Mountains of heavy baggage, calculated, one would have supposed, to crush them to the earth, were piled on their backs. All hands helped the men to their feet, and off they started for the Custom House amidst the shouts and gesticulations of their comrades. We were, however, spared the annoyance of unpacking our baggage; the Director-General of Customs having, through Mr. Cook's agent, sent instructions to pass all our baggage and effects unexamined.

During dinner we made a discovery which relieved us of our difficulty. We learned that a P. and O. steamer was to leave Port Saïd at 4 o'clock for Alexandria, and we resolved to take passage in her, and by this way to go on to Cairo. The "Dakatliah" was airy and not very full of passengers, and after the close packing of the "Tanjore" we felt very comfortable indeed. We had a good night's rest, and were up betimes to view the African coast, evidences of which first appeared in the distant lines of feathery palms. We had been coasting for many miles off the Delta of the Nile, and all along our track the waters of the Mediterranean had changed their ordinary deep blue into a light greenish tinge, in consequence (as I was informed by Mr. Le Mesurier, of the Egyptian Railway Department) of the influx of the Nile waters.

It is unquestionable that the Nile carries down large quantities of mud into the Mediterranean, which is taken up by the prevalent eastward current, and finds its way into the harbour of Port Saïd, where dredging operations have constantly to be carried on at heavy cost in order to keep the channel of the required depth. The Damietta branch of the Nile may, from its position with reference to Port Saïd and the ship-canal, be considered the more immediate cause of the silting up of the canal bed.

This source of expense and danger to the navigation Mr. Le Mesurier proposes to meet in the following way<sup>1</sup>:—It will be observed on referring to a map of the district, that between the harbour of Port Saïd and the Suez Canal on the one side, and the Damietta branch of the Nile on the other, lies the great inland lake of Menzaleh, through which the canal has been carried, chiefly by dredging, for a distance of twenty-seven miles. The portion west of the canal still remains under water, but that to the east is now dry. This western portion, covering an immense area, Mr. Le Mesurier proposes to convert into a great precipitating basin for the Damietta branch,

<sup>1</sup> The project I only give in outline, as kindly communicated to me by Mr. Le Mesurier himself, during our stay on board the "Tanjore."

the effect of which would be *ultimately* to convert this tract into a vast field for agricultural purposes, while the waters which would pass off into the Mediterranean, being to a great extent deprived of their silt, would cause *immediate* relief to the harbour of Port Saïd, and that part of the canal which opens into it. This is a grand scheme, calculated to be of benefit both to the agricultural and commercial interests of Egypt. I can only express the hope that Mr. Le Mesurier may have the happiness of seeing it one day put into execution.

On approaching Alexandria, a pilot came on board to steer us through the intricate channel by which the harbour is entered; and on rounding the point of the large breakwater, we came in view of the city and its harbour<sup>1</sup> all at once, a view calculated to afford both pleasure and surprise,—pleasure at its beauty; surprise, that a harbour and city so recently the scene of a tremendous bombardment should, at first sight, present such slight traces of the conflict. In front lay the city, built on a gradually-ascending slope, and in the background to the left the elevated and fashionable suburb of Ramleh. On the left of the harbour, the Fort of Pharos, partly in ruins, and lighthouse, the Palace of Ras-et-Teen, white and glistening in the sunshine, and surrounded by pleasant gardens. On the right, the barracks, fortifications, and lighthouse and other public buildings; and in the distance, the noble column known as “Pompey’s Pillar.” The harbour itself was gay and busy; ships of many nations lay at their moorings, both merchantmen and passenger steamships; while the beautiful yacht of the Khedive swung at anchor in the centre. The surface of the water swarmed with smaller craft and barges, amongst which was one to convey on shore Her Majesty’s Consul, Mr. Cookson, who had made the passage with us from Suez, and whose acquaintance we had the pleasure of making. He kindly insisted on sending us ashore in his barge, and told off his *khawass* to accompany us to our hotel, and afterwards to conduct us over the palace and fortifications. Owing to this kind action on the part of Mr. Cookson, we were enabled to see the principal sights of this ancient city to the best advantage; nor did his servant leave us till he had seen us off in the train for Cairo in the evening.

We found much of the city in ruins—ruins caused by the mob, not by foreign guns; and, as much uncertainty prevailed as regards the future of Egypt, restoration and rebuilding were proceeding but slowly. It only required the British Government to make the announcement that at least a contingent of our troops should be allowed to remain in Egypt for the preservation of order to induce capitalists to come forward and commence building. But this the Government had hesitated to do, and confidence in the future was consequently shaken. Who that knows Egypt can doubt that a permanent protectorate, supported by a sufficient British army, would prove a blessing of incalculable value to the country?

No object in Alexandria interested me more than the noble monolith

<sup>1</sup> The city has two harbours—the western or Eunostus, and the eastern, or New Port. We entered the western.

known as "Pompey's Pillar." The name is misleading, as one naturally associates it with that of the great Roman General ; but, as the Greek inscription shows, it was erected in honour of Diocletian during the prefecture of Pompeius, in the year 302.<sup>1</sup> But whatever its origin, its immense size and beautiful proportions strike the beholder with admiration. Like most of the Egyptian monoliths, it is of red porphyritic granite, 73 feet in length, with a circumference of 29 feet 8 inches, highly polished, standing on a pedestal, and surmounted by a capital 16 feet 6 inches in diameter, giving a total height of very nearly 100 feet to the monument. It may well be doubted whether a monolith of this description belongs to the epoch of the Roman occupation. It is far more likely that its origin dates back to that period of very ancient Egyptian art which gave birth to the obelisks, the Sphinx, and the Great Pyramids. Its original birthplace was amongst the granite quarries of Upper Egypt, and whether hewn fresh from the native rock, or taken from some more ancient structure, it was a work of no small skill to transport it from its original site and erect it upon the elevated platform of solid limestone from which it is visible for miles in almost every direction.

It is to be hoped that Pompey's Pillar will defy the cupidity of foreign states. Within a few years the two companion monoliths of the ancient city have been carried away : one to adorn the banks of the Thames, the other those of the Hudson. Who that visits the modern cities of Europe, and witnesses the monuments of ancient Egyptian art, of which that country has been stripped, in order that *they* may be adorned, can restrain a sigh of regret at the spoliation of the land where art of the grandest conception had its birthplace and its maturity while that of Greece and Rome was still in the future ?

We left Alexandria in the afternoon, in company with an officer of the army of occupation, and travelled along a route, to us, new and full of interest. The railway at first passes along enormous mounds of broken pottery. And here I may mention that in the East, often when all traces of buildings have disappeared, fragments of pottery remain to attest the former existence of buildings. The reason of this is that pottery is almost indestructible. Houses, temples, churches, may have been laid in ruins, the materials broken up and carried away, but a "potter's vessel" when once broken is useless for any purpose ; no one cares for it, and it is left to add to the accumulations which take place at every town or village.

Soon we emerged on the Garden of Egypt, the fertile Delta of the Nile, without which, indeed, Egypt would be but a rocky or sandy desert penetrated by a deep gulf, as the Egyptian priests informed Herodotus was its original condition. Interminable fields of maize, cotton, sugarcane, and other produce cultivated by the fellahin, succeed each other, irrigated by means of little water-wheels, sometimes worked by men, sometimes by bullocks, the water carried in little channels made by the feet, and allowed when required to flow over the beds containing seed ; all probably very

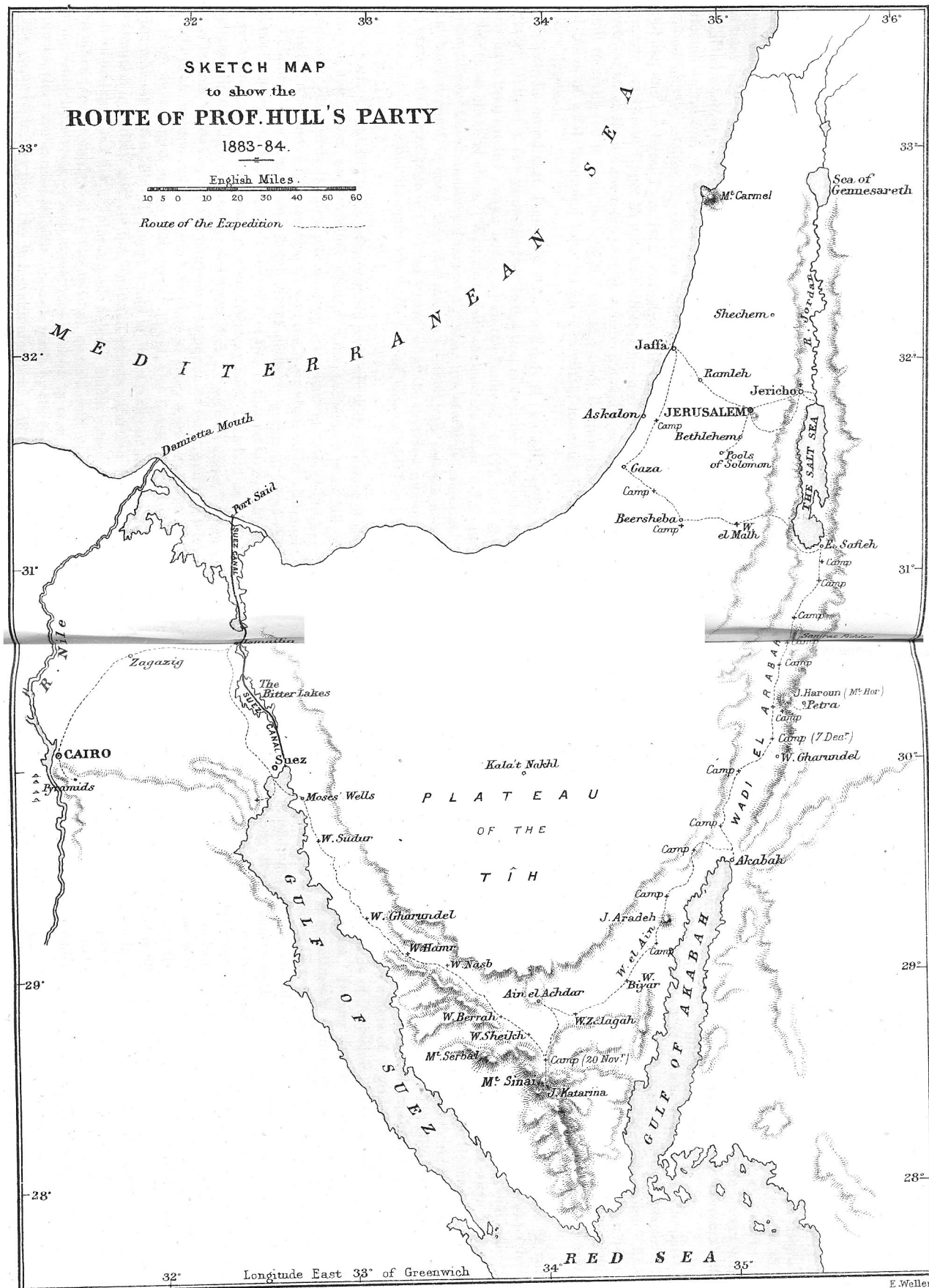
<sup>1</sup> The inscription is given in Murray's "Handbook for Egypt," Part I, p. 132.

SKETCH MAP  
to show the  
**ROUTE OF PROF. HULL'S PARTY**

1883-84.

English Miles.  
10 5 0 10 20 30 40 50 60

Route of the Expedition



much as in the time of Ptolemy, if not even earlier. Groves of the date-palm, with enormous clusters of ripe fruit, rose aloft above the level of the Delta, or formed small clumps near the villages.

The cultivation of the palm, and of other fruit trees, was largely extended by Mehemet Ali, who made a decree promising remission of a certain amount of taxation for each tree planted. This had the desired effect. On producing a certificate of having planted so many trees the fellahin had his taxes reduced. Some time after, when the work of plantation had been accomplished, the decree was repealed, and a tax was put on the trees—a financial operation both beneficial to the Government and to the cultivator, who enjoyed the fruits of his labour.

We passed several towns and villages of the fellahin; of the latter nothing can be conceived more miserable as human abodes, in comparison with which a village in Connaught might be considered handsome. The houses consist of small mud cabins, huddled together, in which men, women, and children share the space with dogs, fowls, and pigeons. The cow or donkey does not require shelter at night in this part of the world, so is excluded from the home circle.

We crossed two branches of the Nile, each about as wide as the Thames at Kew, the water of which was as usual turgid. The water had fallen to 6 feet below its maximum, which it reached about the middle of October. The origin of the fine sediment which the Nile always carries in suspension, as well as of the rise and fall of the waters themselves, is now fully understood since the publication of Sir S. Baker's remarkable work.<sup>1</sup> Briefly stated, the origin is somewhat as follows:—The Nile below Khartoom consists of one undivided stream, but at El Damer, about 170 geographical miles lower down, it receives the waters of a great tributary, the Atbara, descending from the highlands of Abyssinia. This river undergoes the most extreme transformations. During the early months of the year the waters are so reduced as sometimes to form only a series of great stagnant pools, in which are collected in very close quarters all the inhabitants of its waters, consisting of fishes, crocodiles, and huge tortoises. The banks, through a long line of country at the base of the mountains, are formed of masses of mud and silt, easily undermined, and liable to fall into the waters on the rise of the river. About June tremendous thunderstorms, accompanied by a deluge of rain, break on the Abyssinian highlands. The waters of the Atbara rise with extraordinary rapidity, and descend with a roar like that of distant thunder, giving warning of the approaching deluge. Soon the channel is filled up with the flood, the banks of mud are undermined, and fall down in large masses into the waters, where they are speedily broken up and converted into silt, the finer portions of which are carried along, and finally enter the Nile, and impart to its waters much of the turgid character for which they are known in Lower Egypt.<sup>2</sup> The

<sup>1</sup> "Nile Tributaries of Abyssinia," p. 52.

<sup>2</sup> A good deal of sediment is also brought down by the Bahr-el-Azrek, or the Blue Nile, some of the sources of which also are found in the Abyssinian highlands.

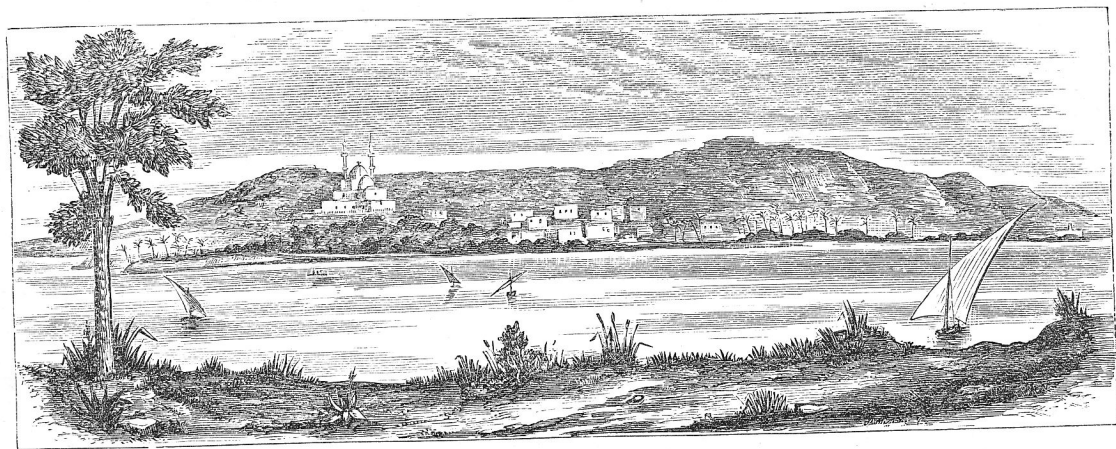
river now becomes a great fertilising agent, and when allowed to flow over the cultivated fields, imparts the necessary moisture, so that under the influence of a powerful sun from two to three crops can be annually gathered off the land; giving rise to an extraordinary amount of natural wealth. That this sediment originally caused Lower Egypt to be reclaimed from the Mediterranean Sea was known to Herodotus, who calls this country "the gift of the Nile."

Arrived at Cairo one of the first arrangements to be made is for a visit to the Pyramids, always a memorable event in any man's life. After all that has been written upon these grand monuments of Egyptian art it might appear presumption to attempt to add even a small quota of information; still, at the risk of such an imputation, I venture to give a brief account of my own impressions.

The drive out from Cairo is very charming. Having crossed the river the road runs along its bank for several miles under the shade of overhanging branches of the Nile acacia, and fine views of Cairo and of the range of the Mokattam Hills behind are obtained. Here we happened to meet the Khedive and his retinue on returning from his morning drive, and further on we turned in at a gate leading past the palace built for the Prince of Wales, through groves of oranges, lemons (just beginning to ripen), fields of maize, sugarcane, and cotton. Another turn brought us to the causeway, which runs in a straight line westward towards the base of the platform on which the Pyramids of Cheops and Ghizeh are built, and from which the first view of them is obtained. The first view will probably disappoint the traveller, for the distance is greater than he thinks (owing to the transparency of the air); consequently the structures appear smaller than is really the case. The avenue itself is three miles long, in a perfectly straight line, over-arched by acacia trees, whose shady boughs, laden with large fruit-pods, afford a grateful shade from the sun's rays.

The best view of the Pyramids is obtained from a part of the causeway road, about half a mile from the platform on which they are built. From this point the four principal Pyramids are seen ranged in line; that of Cheops, or "the Great Pyramid," in front; that of Ghizeh next, and two much smaller ones in the rear. In the background is the ridge of sand which marks the line of the desert, stretching on either hand for miles.

It is well known that these great tombs of Egyptian monarchs are built on a platform of the nummulite limestone, which was partially levelled for the foundation, but which has never been entirely cleared from the accumulated rubbish. This platform of solid rock marks the limits of the Nile Valley. On driving up to the summit of the platform you are immediately beset by a crowd of importunate Arabs, who have mastered sufficient of your language to make you understand that independent action is out of the question, and that you may as well resign yourself submissively into their hands. Having done so, and decided whether you will ascend to the summit or descend into the vast interior, you get breath to cast your eyes upwards along the face of this jagged mountain



side, *as it now appears*, and to appreciate in some measure the vastness of its proportions.

The Pyramids you behold are, however, very different from those of the time of Herodotus. In the first place you perceive that the Great Pyramid is truncated, instead of ending in a point like its neighbour, that of Ghizeh. Again, you observe that the apex of Ghizeh is cased in smooth stone while the whole exterior of the Great Pyramid is formed of step-like rows of masonry. It was not thus that the Egyptian architect handed over his great work to his monarch; for in 1837 Colonel Howard Vyse discovered two casing stones in position, which may now be seen. They are blocks of limestone, 8 feet 3 inches long and 4 feet 11 inches in perpendicular height,<sup>1</sup> and indicate that the whole exterior was encased by polished blocks, giving it a perfectly smooth and glittering surface, well calculated to protect the building from injury, and to give it an aspect of finish and completeness very different from that which it now presents.<sup>2</sup>

The act of vandalism which has deprived the Pyramids of their outer casing was perpetrated by the Caliphs, who carried away the stones to build the mosques of Cairo; the result being that the general appearance of the exterior gives one the impression that this most ancient of buildings is rapidly disintegrating and destined to fall to pieces in the course of ages. This is no mere fancy. Let any one examine closely the condition of the outer walls, and he will find that they are penetrated by cracks and little fissures in all directions, along which the stone is crumbling away. These are due, I believe, to the expansion and contraction occasioned by the great changes of temperature between day and night; and the consequence is, that when a thunderstorm breaks over the district, as sometimes happens, the loosened pieces are washed down, and fresh surfaces for the sun to act upon are exposed. In course of time, therefore, the Great Pyramid, as well as that of Ghizeh,<sup>3</sup> must become a ruin; and for this the only remedy is re-casing.

All our party but myself elected to ascend the summit—I to visit the interior, in hopes of recognising some of Professor Piazza Smyth's marks and determinations; so, delivering myself into the hands of four Arabs, I dived into the dark passage. This is an undertaking which (as Miss Martineau observes) no one should attempt who is at all of a nervous temperament. You soon begin to repent of your choice when you find yourself within the dark walls, descending deeper and deeper, two savages before and two behind. Occasionally they stop, and put the question, "How you feel, sir?" to which, of course, you reply, "Oh, quite well!" Inwardly you *feel* quite the reverse, but it is no time to allow the slightest hint of timidity to escape. At length, after an indefinite descent, and another equally indefinite ascent, you find yourself in the great interior

<sup>1</sup> Murray's "Guide," Part II, p. 246.

<sup>2</sup> It is stated by Abd-el-Lateef that the casing stones were polished and covered with inscriptions.

<sup>3</sup> The upper part of Ghizeh is still cased with its original polished blocks; hence its apex is pointed.



called the "King's Chamber," dark and oppressive, notwithstanding the flickering of the candles which your guides carry; and now they take advantage of their opportunity: they demand *bakhsheesh*, produce various "*antiqua*," generally shams, and strive to make you purchase on the spot. Making a virtue of necessity, I promised *bakhsheesh* all round, and that I would make certain purchases upon getting to the open air, it being manifestly impossible to examine these articles with the aid of their gloomy light. This satisfies my tormentors, and after a hasty glance all round, we commence our outward descent, and at length emerge into the dazzling light of day. My guides again produce their "*antiqua*," demand their *bakhsheesh*; but now it is *my* time to make terms. Seating myself on a stone, I proceed to select what I wish, and to name my own price; and finally, with a franc each for *bakhsheesh*, send them about their business.<sup>1</sup>

The Pyramids are built of nummulite limestone—not hewn on the spot, but brought from quarries situated at the base of the hills ten miles above Cairo, on the right bank of the Nile. The quarries are of vast size, as I was informed by Dr. Schweinfurth; and one may see the tokens of the care exercised in selecting the stone, soft portions being left, the harder cut out for blocks. The lines drawn by the overseer for the workmen are also visible on the walls. The blocks were transported on a sloping causeway to the water's edge, floated across, and then hauled up a long similar causeway, still in existence, on the opposite side to their destination.

The Sphinx is, however, sculptured out of the native rock, and the horizontal lines of stratification are too plainly visible.<sup>2</sup> The head is of harder material than the neck, which is formed of softer and whiter strata. Every one must regret the defacement which this grand work of Egyptian art has undergone; but knowing the custom of Mohammedans to deface all objects which they consider idolatrous, it is not difficult to trace the cause for this act of barbarism.<sup>3</sup>

The so-called Temple of the Sphinx must excite the admiration of every beholder. It consists of a series of vast rectangular chambers, cut out of the solid limestone, with recesses for tombs. The walls are lined with massive blocks of the red granite of Syene, beautifully cut and polished, and fitting closely. One of the walls lies exactly north and south, so that when the shadow of the sun is coincident therewith it is noonday.

In this temple (as I was informed by one of the guides) Professor

<sup>1</sup> There are three execrable words which were constantly cropping up during our journey, and of which travellers should beware, viz.: "*bakhsheesh*," "*antiqua*," and "*quarantina*." The language would be improved if these were expunged from its vocabulary.

<sup>2</sup> Our witty, but not very accurate guide, Mark Twain, says the sphinx is made of granite!

<sup>3</sup> As witness the defacement of the greater number of the statues in the Museum of Antiquities, Constantinople.

Smyth spent much of his time when engaged in making his measurements for his well-known work.<sup>1</sup>

When passing through Alexandria we had the pleasure of making the acquaintance of that indefatigable traveller and excellent geologist, Dr. Schweinfurth, to whom Mr. Hart had a letter of introduction. Having arrived at Cairo just after ourselves, he kindly offered to accompany us on a visit to the Mokattam Hills, at the base of which the city is built, and from which the stone for the construction of the houses and public buildings has been chiefly obtained.

This range of hills, though of no great elevation (600 to 700 feet), forms a fine background to the city, as well as to the Valley of the Nile, owing to the abrupt and scarped face it presents towards the north and west. It is composed of beds of the nummulite limestone, remarkably fossiliferous, both nummulites, shells, echini, and even fossil crabs being abundant. The quarries are of great extent, and the stone beautifully white, or slightly yellow, and capable of being chiselled into fine mouldings and architectural forms. From the summit of the ridge, which had been the sanitary camp of the British troops during the outbreak of cholera, we enjoyed an extensive view, and one full of variety and interest. To the right, at our feet, lay the capital of Egypt, with the streets, palaces, mosques, and churches, interspersed with gardens and groves of trees; and in the foreground, standing on a projecting platform, the citadel and the mosque of Mehemet Ali, with its exquisitely graceful minarets. To the left, and washing the eastern base of the hills, stretched the green and fruitful plain of the Nile; the great river itself carrying its channel from side to side, and crossed opposite the city by the bridge we had passed over the previous day. Looking across the valley, the horizon towards the west is bounded by the yellow ridge of the desert sands, in front of which, as if to mark the boundary between the region of verdure and that of drear sterility, are planted the Pyramids, in grand procession, headed by the greatest and oldest, those of less stature and of more recent date bringing up the rear throughout a tract of many miles up the river side. Away towards the north might be seen the plain of the Delta, with its green illimitable fields, and frequent groves of palms. From no other spot, perhaps, can the mind become so fully impressed by the fact that to the Nile, and the Nile alone, does Egypt owe all she has of fertility and wealth. Beyond is the desert of sand, a sea-bed without its animate forms, lifeless and waste. As Dean Stanley has well observed, the Nile, as it glides between the Tombs of the Pharaohs, and the City of the Caliphs, is indeed a boundary between two worlds.<sup>2</sup>

Under the guidance of Dr. Schweinfurth we were able to see the

<sup>1</sup> "Our Inheritance in the Great Pyramid." However much, in this hypercritical age, one may feel inclined to doubt some of the conclusions at which this author has arrived, every one must admire the labour and enthusiasm with which he endeavoured to work out a great problem.

<sup>2</sup> "Sinai and Palestine," Edition 1873, Introduction, p. xxxiv.

most satisfactory evidence that at a very recent period, and while the shells of the Mediterranean and Red Seas were still unchanged, all the great plain we have been contemplating was submerged to a depth of over 200 feet. At about this level the limestone rock is bored by *Pholades*, and shells now living in the neighbouring seas are to be found imbedded in sand and gravel which then formed the shores; while the coast-line was defined by the cliffs, which rose some 400 feet above the waters. The sand-beds with large *Clypeasters*, which occur south of the Pyramids, indicate the position of this sea-bed on the opposite side of the Nile Valley. How great has been the change since then! But long ere the foundations of the Pyramids were laid, the sea had receded to a level perhaps not very different from that at which it stands to day.<sup>1</sup>

On ascending towards the summit of the ridge we visited several enormous caverns sufficiently large to shelter an army, which occur on both sides of the valley, and at an elevation of about 500 feet above the sea. These caverns are hollowed in the limestone rock, and evidently not by human agency. They afford a suitable retreat for the rock pigeons, which we started from their nests. Dr. Schweinfurth considers these to be ancient sea-caves, and if this be so the land has been still further submerged within a very recent period. On the summit of the plateaux we reached one of the entrenchments of the army of Arabi Pasha, and at a short distance further, towards the east, the British station for making observations on the recent transit of Venus. The spot is marked by a block bearing the following inscription:—

CAPTAIN GREEN, R.E., 1883.

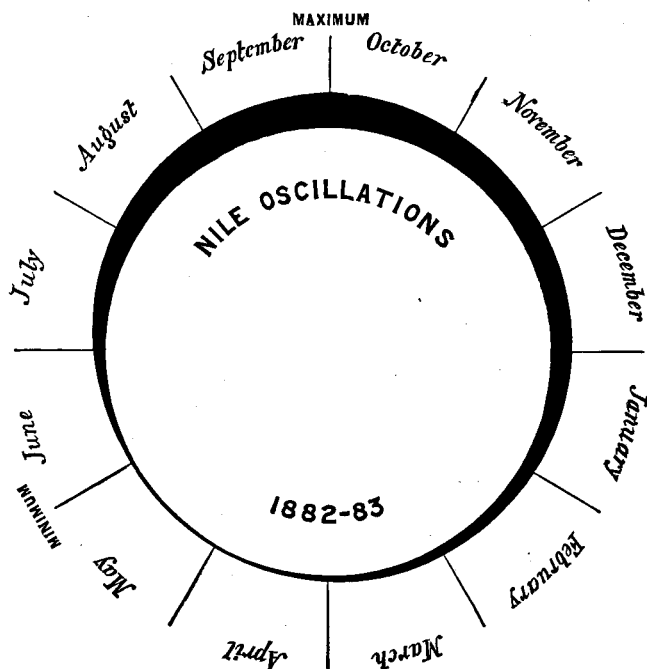


Next in interest to the Pyramids we may place the Museum of Egyptian Antiquities at Cairo, a collection of surpassing interest and variety, illustrative of ancient Egyptian art, collected mainly through the instrumentality of Mariette Bey. The museum stands by the banks of the Nile. It unfortunately happened that at the time of our visit the Director, to whom I had a letter of introduction, was absent, and the official catalogue had not then been published,<sup>2</sup> but with the aid of either "Murray" or "Baediker," and the inscriptions accompanying the objects themselves, the visitor need be at no loss.

In this place I may refer to the Nile oscillations. On the wall of Shepherd's Hotel is to be seen a map, or diagram, upon which is represented the oscillations of the waters for each year as it comes round. Those for the year 1882-3 were as follows:—

<sup>1</sup> To this physical fact in the history of the Nile Valley I shall have occasion to allude further on; and the detailed proof must appear in another place. It is only necessary here to give the general result. When we say that the sea has receded, this is owing to the land having been elevated.

<sup>2</sup> But has since, as I see by a recent review in the *Times*.



<i>Elevation.</i>			<i>Months.</i>
Minimum ....	....	....	{ May.
Slight increase ....	....	....	{ June.
Rapid increase ....	....	....	{ Latter part of June.
Slight increase ....	....	....	{ July.
Maximum ....	....	....	{ Middle of August.
Slight decrease ....	....	....	{ Middle of August.
			{ " September.
			{ End of September.
			{ Middle of October.
			{ End of October.
Rapid fall ....	....	....	{ November.
			{ December.
			{ January.
Gradual decrease ....	....	....	{ February.
			{ March.
			{ April.

On Monday, 5th November, our Arabs and camels mustered for inspection in an open space of ground not far from our hotel, and we went out to visit them and to have our first experience of bestriding a camel's back. There were about forty in all—some with saddles for riding, these

being slight and young-looking ; the others with nets and ropes for baggage. The men belonged to the Towâra tribe, of whom the head Sheikh Ibn Shedid, resides permanently in Cairo.<sup>1</sup> I liked the faces of the men, which were open and good-humoured, and felt confident we should be perfectly safe under their charge, a confidence not misplaced by subsequent events. The Towâras occupy the whole of the Sinaitic promontory south of the Tih plateau. They are divided into five branches, of which the Szowaleha is the largest ; next the Aleygats, then the El-Mezeine, the Ulad Soleiman who live near the town of Tor ; and last, the Beni Wassel, a very small branch near the south-east coast.

The Towâras are a peaceable tribe, friendly to travellers, and had no part in the murder of Professor Palmer and Lieutenant Gill. Their Sheikh, on the contrary, was instrumental in bringing four of the culprits to justice, and accompanied Sir C. Warren into the desert to effect their capture.<sup>2</sup>

The negotiations for our escort had been effected between Messrs. T. Cook & Sons' agent at Cairo and the Abbot of the Monastery of St. Catherine, and by him our men and camels were sent over to Cairo, from their home in the Wâdy Feiran, in order to receive their baggage loads, and to pass inspection ; and they had arrived outside the city the evening before we saw them in the space near the hotel. In the course of the day the whole procession with their loads passed in front of our hotel, and afforded a sight probably not very novel to the residents, but to us not only novel, but of considerable interest. The camels upon which we were to ride were bestrode by their respective drivers, then came others with barrels of flour, barrels for water, the tents, five in number, rolled up into the most compact dimensions, boxes of provisions, our camel trunks, crates with live turkeys and poultry, and other matters too numerous to mention in detail. We were not again to see them until our arrival at the landing stage near Ain Musa, on the eastern side of the Gulf of Suez, to which place we intended to proceed by rail and boat.

On the morning of 8th November we left Cairo by rail for Suez, passing by Zagazig and Tel-el-Kebir, where Arabi Pasha had made, a few months previously, his most determined, but ineffectual, stand against the British arms. As far as Zagazig the country is richly cultivated, immense fields of corn, cotton, and sugarcane succeeding each other mile after mile ; while the station platforms were piled with great bales of cotton, compressed and bound with iron-straps, for shipment to England and elsewhere. Occasionally the Egyptian ibis, an elegant bird with white

<sup>1</sup> Not by choice, probably, but by constraint, as a hostage for the good behaviour of the tribe.

<sup>2</sup> It had originally been intended that we should have an escort of the Egyptian Camel Corps, which had been kindly granted by Cheriff Pasha at the request of Captain Kitchener, Major in the Egyptian cavalry, but the proposal was afterwards abandoned for very good reasons ; first, it could not accompany us further than Akabah, beyond which station the services of an escort were only expected to be of value ; and secondly, we felt there was no necessity, as we had full confidence in the good faith of our convoy.

plumage, and in form somewhat like a small heron, might be seen in flocks amongst the cultivated fields, close to the teams of buffaloes while ploughing; or at other times perched on the backs of the buffaloes themselves, busily engaged in clearing the ticks from the animals, a process which the animals themselves evidently enjoyed.

After leaving Zagazig the country becomes more and more arid and desert-like, till at length, on approaching Tel-el-Kebir, the sands set in as far as the eye can reach on both sides. We noticed the ditch and entrenchments of Arabi's army which were stormed by the British troops under General Lord Wolseley, and a small camp of Egyptians still occupying the ground. We also passed the burial-ground of the British troops who fell on that memorable occasion, prettily planted with shrubs and flowers, which were being carefully tended by gardeners. Tablets to the memory of the officers and soldiers have been placed on the walls of the English church at Cairo.

The route lay along the side of the "Sweetwater Canal," which carries the waters of the Nile to Suez, Ismailia, and Port Saïd. This canal was constructed by the Ship-Canal Company, and it occupies very much the line of the ancient channel intended to connect the waters of the Nile with those of the Red Sea, and beyond the tract influenced and irrigated by its waters all was sandy desert covered by scrub, amongst which the only visible inhabitants were a shepherd and his flock. It was dark when we reached Suez, and on reaching our hotel we learned that the steamship, the "Shannon," had arrived from England, and lay in the Gulf awaiting the arrival of H.R.H. the Duke of Connaught, on his way to India.

Next morning, on ascending to the roof of our hotel, to take a glance at the surrounding country, we were struck by the bold aspect of Jebel Attâkah, which rises in the form of a lofty escarpment along the western shore of the Gulf of Suez a few miles from our position. In form and outline it seemed to bear some resemblance to the ridge of Jebel Mokattam behind Cairo, and to be in some measure, in a geological point of view, representative of it; the strata were, in fact, easily visible from the roof of the hotel. We determined to devote the day to a visit to this fine range, and taking a sail-boat manned by four Arab sailors and a boy we dropped down the Gulf. The wind was light, and sometimes failed us, so that the sailors had recourse to the oars, which they accompanied by a monotonous chant extemporised for the occasion, and, as we supposed, in our honour; as we could distinguish the word "hawajah"<sup>1</sup> not unfrequently. At length, after three hours, we landed on a pier leading up to the quarries which were opened by M. De Lesseps for his buildings at Suez. From the pier we toiled up to the quarries under a burning sun (the temperature in the shade being 91° Fahr.), and were rewarded by finding the limestone rocks crowded with fossil shells, though generally only in the form of casts. Our return was enlivened by a steady breeze which

<sup>1</sup> Hawajah (or gentleman) is the Arabic word applied to Europeans.

sprung up from the north-west, and as we were carried along we were on the look-out for the flying fish, which from time to time leaped out of the water, and after skimming over the crests of the waves for some yards, disappeared. As we neared the harbour the sun went down behind Jebel Attakah, and soon after, the sky over the hills was all aglow, as if behind was concealed a great city in conflagration; the deep red of the west shading off through purple and roseate hues into the dark grey of the zenith. It is only in the East that such sunsets reward the beholder.

*(To be continued.)*

---

### LETTER FROM CAPTAIN KITCHENER.

ABBASSIYEH,

13th January, 1884.

You will, I know, have received before this a full account of our proceedings from Professor Hull until we parted—he going to Gaza, and I striking across the desert to Ismailia. Our rate of travelling up the Wády Arabah was too fast for survey work. At first, while the valley was narrow, I was able, with Mr. Armstrong, to keep up by working hard, and being out almost every night after dark; but when the valley increased to fifteen miles wide I found it was impossible on camels to survey both sides at the rate we moved. I did all I could, and took up the work again later on the west side. My report will show how the work was done, and if you measure the distances I had to go I think you will find I got over as much ground as a camel would allow. They are bad beasts for surveying. I used to keep mine at a good trot for a bit until he got cross, which he showed by roaring, and then suddenly shutting up all four legs and coming with a thud on the ground, at the same moment springing up again and darting off in an opposite direction. Continued correction caused him to collapse again, and then roll, which was decidedly uncomfortable. I don't think I have ever done such hard work as I had up that Wády Arabah from Akabah to the Dead Sea. The result is, however, I think, very satisfactory; I have been able to run a triangulation up the whole way, and join on to the old work by measuring a base at Akabah. I took the levels by vertical angles, and kept up a complete chain of levels throughout. I found Akabah is out of position, being shown too far south on the Admiralty, and I found the south end of the Dead Sea to be terribly out—the Lisan has to be moved about three miles, and the whole shape of the south end altered. You will get full details in my report and plans, which I am preparing to send you as soon as possible.

By going up from the south end of the Dead Sea to Bir-es-Seba, I was able to put in a corner of the map and join on to our old work.