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SESSION 1878-79.

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III.—REMAINS OF BUILDINGS IN MIDIAN. BY CAPTAIN RICHARD F. BURTON.

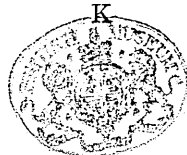
MR. PRESIDENT AND GENTLEMEN,—If I appear before you in the light of that “very clever, learned and civil gentleman,” who lectured the “Father of Medicine” upon the art of healing, your Secretary alone is to blame. He suggested that even a non-architect might lay before the Royal Institute of British Architects novel, and perhaps interesting, details concerning the “Remains of Building” in a land so little known as Midian. I am here to answer the invitation, and I venture to hope that you will be good enough to correct and to rate these details at their proper value.

But before entering upon the subject proposed to me, we must determine where Midian is and what it is. You need hardly be told that before the Year of Grace, 1877, “Midian” was a word and little more. Some mappers extended its vague and mysterious limits deep into the Peninsula miscalled Sinai. Others stretched them northward to, and even beyond, the parallel of the Dead Sea; while the “Coryphæus of the Encyclopædists” reduced Midian to a “Canton of Idumæa”; and so forth.

On the other hand the Bedawin, who now hold the soil, speak with no uncertain sound. Arab tradition, it may be observed, allows many things to slip from memory; for instance, it has clean forgotten “Ophir” of golden fame. But when it does retain a name, or the semblance of a name, as *El-Khailân* for “Havilah,” and *Es-Sabá* for “Sheba,” we may rely upon its truth. And Midian is a case in point.

Arz Madyan—the land of Midian—in the language of its actual tenants, begins northwards with the Fort of El-'Akabah (in lat. 29° 28'); and, subtending the seaboard, extends south to the Fort of El-Muwaylah (N. lat. 27° 40'). It has therefore a latitudinal length of 108 direct geographical miles. For political, geographical and other reasons, I have ventured to call it “Madyan Proper,” or “North Midian,” in opposition to “South Midian.” The latter section would stretch from the Fort of El-Muwaylah as far as the Wady Hamz in N. lat. 25° 55', or 105 miles. Thus the total extent of the Midianite seaboard is 213 direct geographical miles, a line which the extensive sinuosities of the coast may prolong to nearly 300. Midian, both north and south, forms the easternmost province of Egypt. Like H.H.'s “Mameluke” predecessors, the Khediy, Ismail I. of Egypt, a Prince to whose liberality and perspicacious views both my Expeditions owe their existence, still garrisons the seaboard forts. Even considered mineralogically, the land falls into a two-fold division. In northern or Upper Midian, the ancient Egyptians mined for copper, while the Nabathæans and their successors worked Southern or Lower Midian chiefly for gold.

Topographically speaking the whole tract is a prolongation of the great Hauranic Valley (Auranitis); of the land of Moab; of the Nejeb or south country; of Idumæa, which the Hebrews called Edom, and of the classical Nabathæa, whose western capital was Petra, the Rock. Like those regions lying east and south-east of the Jordan Valley and the Dead Sea, regions once so populous and powerful, and now very types of the abomination of desolation, Midian is, and ever has been, inhabited by a mixed and kindred race of citizens and Bedawin. The former would naturally affect the seaboard; hence even in the days of Moses (B.C. 1452) we find that the maritime country had its “cities and goodly castles” (Num. xxxi). The wild men, who wandered about the interior, are still what they always were Scenitæ, tent-dwellers. Thus the learned Mr. Fergusson opines (p. 25, “The Temples of the Jews, &c.,” London, Murray, 1878) that “the Tabernacle may have had its origin from



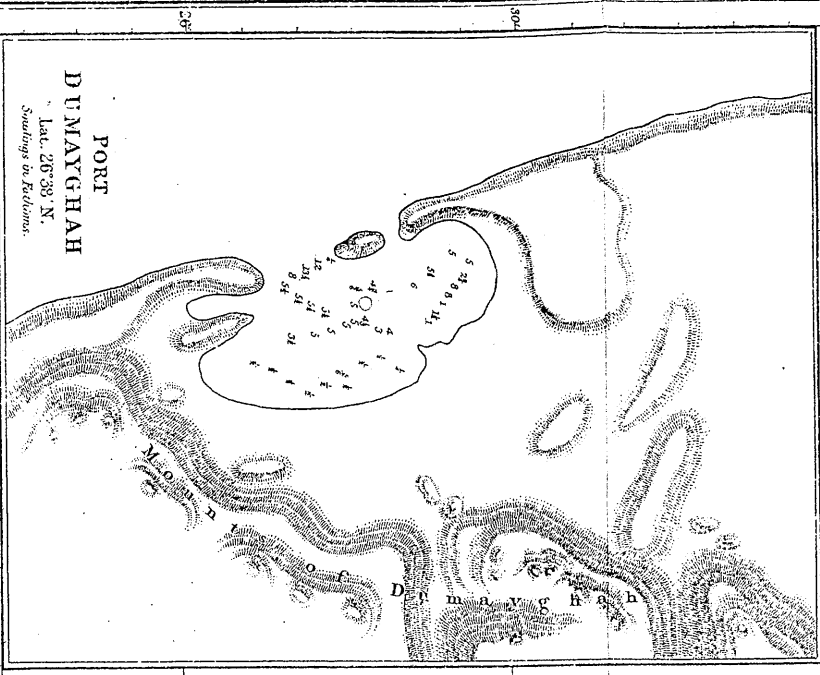
some sacred tent of the Arabs of Midian." Moses, who was connected by marriage with the ruler of the land, would naturally have borrowed, from his country of refuge, the idea of the Pavilion, which developed itself into the Temple of Solomon.

The Land of Midian must also have been influenced by the great line of transit and traffic, which ran through its length from south to north. Strabo (xvi. c. 4, § 24) shows that, about the beginning of the Christian era, this main road, subtending the coast, was one of the earliest of "Overlands." The merchandize of India and of southern Arabia was landed at the southernmost Nabathæan port, Leuke Kome (Λευκή Κώμη), the "White Village," whose name translated survives in *El-Hawd*. The fine port lies in N. lat. 25° 6', about the same parallel as El-Medinah, and in E. long. 37° 13' 30" (Gr.) Here, before the Nile route to Alexandria was opened, merchants disembarked their goods, preferring the long and toilsome camel-journey to the dangerous ship-voyage northwards; and, reaching Petra, the imports were passed on to Phœnicia and Egypt. The remains of the eighteen cities and towns discovered by the two Khedivial expeditions, all lie upon or near this ancient "Overland," and the country appears to have been equally rich in commerce, in agriculture and in minerals.

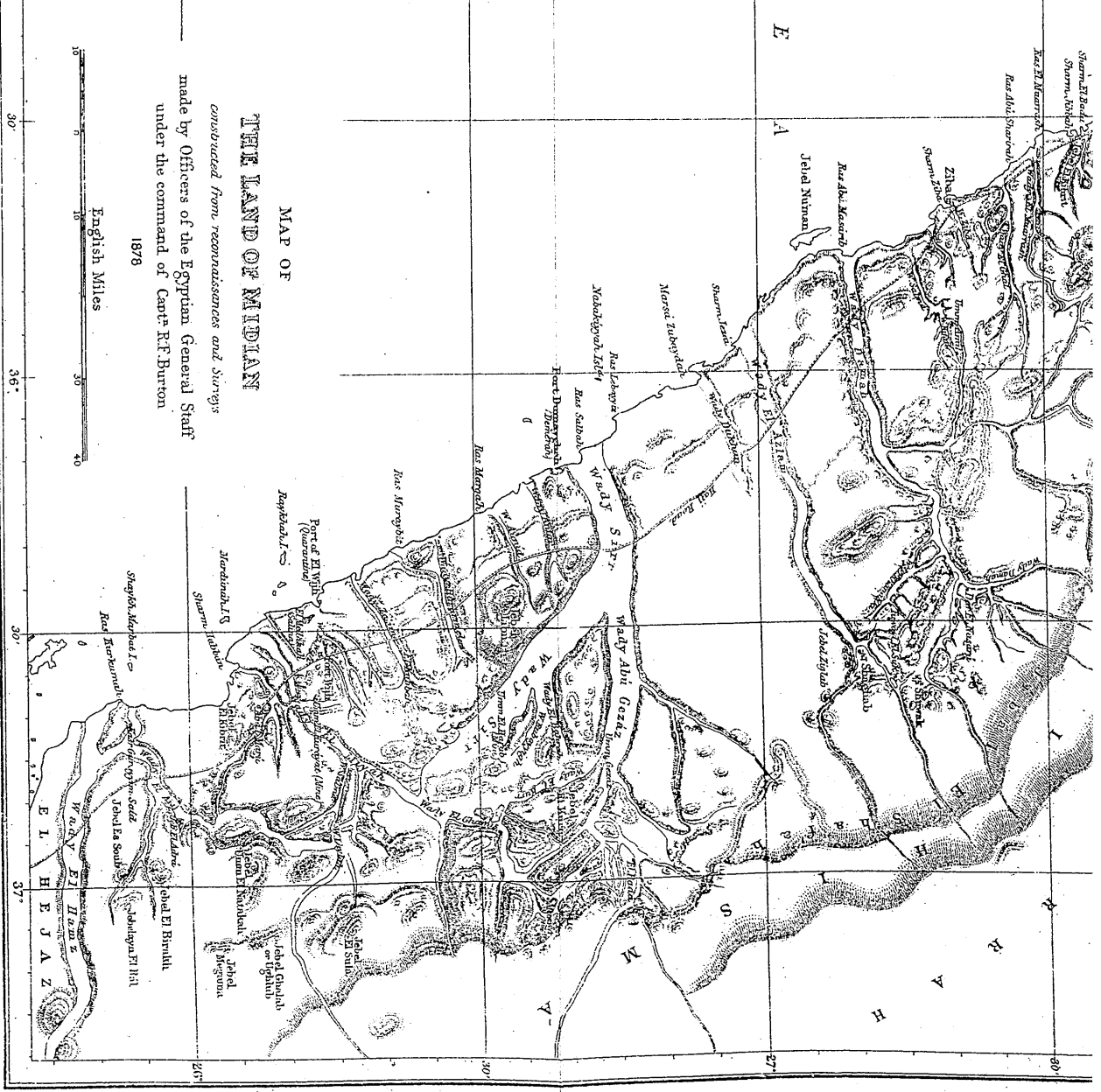
Considering her position, then, ancient Midian would adopt the style of building chosen by the races that lived, under similar conditions, on her northern frontier. And we have an excellent point of comparison in the Negeb (Negeb), called in the days of Abraham (*Gen.* xx. 1) the "South Country," because the Holy Land lay to the north of it. This tract has been opened to us by the late Rev. E. Wilton ("The Negeb, or the South Country," London, 1863), and pictorially by the journey of Messrs. Tyrwhitt-Drake, and Palmer. Part II. of "The Desert of the Exodus" (E. H. Palmer, M.A., London, Bell and Daldy, 1871), contains a long and trustworthy description of this interesting region. The illustrations, *mutato nomine*, might serve for Midian, especially those of El-'Aujeh, of Kharābat Lussān (p. 346), of the "Muweileh" Cairns (p. 354), and of the ancient fort of "El-Meshrifeh" (p. 371). Midian, it is true, can show few remains of building to be compared with the ruined houses and the town gateway of Sebaita-Zephath (pp. 360, 375), or the "interior of church at El-'Aujeh" (p. 369), while her catacombs are far from equalling those of the Capital, Petra. On the other hand her shafts and galleries are superior in science to the stone quarry at El-'Aujeh (p. 366); and her classical shrine or temple at the southernmost limit has no rival known to us in the "South Country." The destruction of buildings in both regions is probably synchronous. "The history of the Christian Church of the Negeb," says Professor Palmer (p. 377), "is now quite lost, but it is more than probable that it perished either under the invasion of the Persian Khosroes, or that of the Caliph Omar." The same effects may have extended to Midian under the conquering Sassanian king, Khusrau Anúshirawán (A.D. 531-579), or when 'Omar and his successors sent forth the various expeditions which began in A.D. 650. But here it would appear there was a second period of destruction; and that evidently dates from the early 16th century, when Sultan Selim laid down his maritime road for the pilgrim-caravans. As regards the precious metals, it is my opinion that they have been worked, more or less, up to the present day.

And yet another preliminary,—the building material supplied by the maritime country and the subtending mountains. In this point the Midianite architects were peculiarly fortunate. A vast formation of the Secondary Period, which ran along the seaboard and even extended into the "Sinaitic Peninsula," supplied them with an abundance of limestone. For their temples, palaces and houses they had the finest *Rughám* (alabaster), plain and variegated; while the gypsum served as cement. I have deposited in the British Museum a noble specimen of *Rukhám* (white saccharine-marble) from the Jebel El-Lauz or Almond Mountain. Equally abundant are the grits; and the new

W. J. Thomson, Del.



**PORT
DUMATYGHAH**
Lat. 26° 38' N.
Sounding in Fathoms.

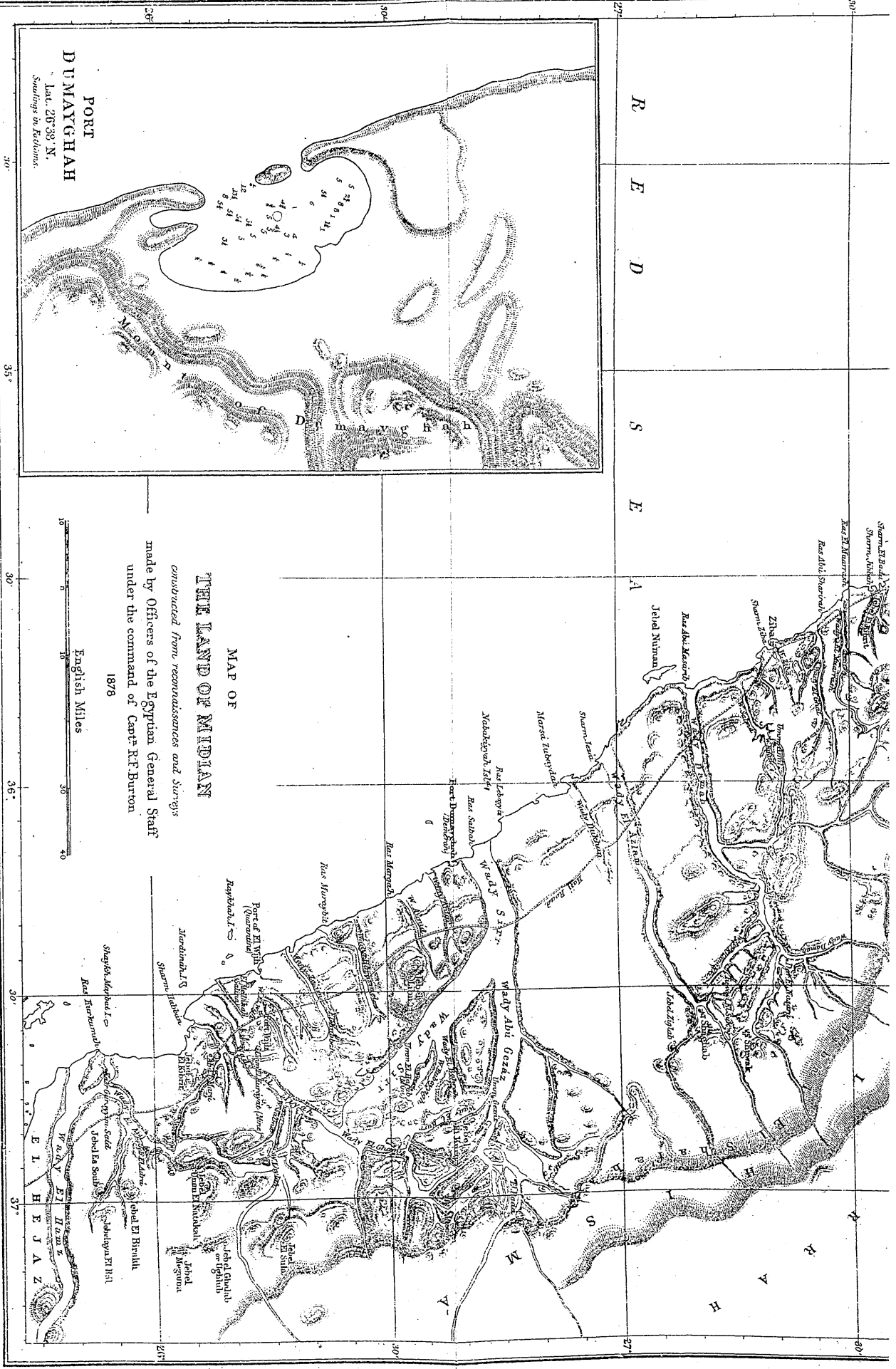


**MAP OF
THE LAND OF MIDIAN**
*constructed from reconnoissances and surveys
made by Officers of the Egyptian General Staff
under the command of Capt. R. F. Burton*
1878



TRANSACTIONS OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

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red sandstone of the Hismá, or inner region, is self-faced, built in places like natural brick-work. The Gháts and submarine chains consist of porphyritic traps, red and green; and of close hard granites containing little mica: the degradation of the latter yields a felspathic or kaolin clay which makes admirable fire bricks. The granites are almost everywhere cut by veins of quartz, showing all varieties of colour, and trending in all directions. This rock, which is richest in ore at its junction with the containing primaries, is the characteristic of the country. Here it whitens the valleys and lowlands that look as if snow had freshly fallen; there it rises in rounded cones which number hundreds of feet in height. Details concerning building material will occur in the course of description. Suffice it now to say that it is found in three several states; either artificially cut, or self-faced, or in water-rolled blocks and boulders.

These preliminaries finished, we may now proceed to the actual remains of building in Midian. For the convenience of my hearers I will begin, with the beginning, at the Fort of El-'Akabah, and treat in Section I. of the ruins of North Midian. Thence proceeding southwards I will notice the principal features of the southern division, ending where the great Wady Hamz forms the junction between the Egyptian Province and El-Hejaz, the Holy Land of the Moslems, now subject to the Porte. In order to save time I shall pass lightly over the minor details and enlarge chiefly on the remains of the Midianite capital and the temple on the southern frontier. And to spare you mortification of *crambe repetita* I shall be chary of matter already published in my prefatory volume, "The Gold Mines of Midian" (C. Kegan, Paul and Co., London, 1877); and draw freely upon my coming book, "The Land of Midian," which will be of a more popular nature.

RUINS IN NORTH MIDIAN.

The fort and settlement of El-'Akabah, at the head of the dangerous gulf, similarly named, have been described by a host of travellers. I do not remember, however, that anyone has noticed the traces of the ancient Elath or Eloth, which lies at the very head of the bay, and which evidently extended all round the chord from the north-east to north-west. This part is called El-Dár (the house) and it was the halting place of the pilgrim-caravans before New 'Akabah was founded; the principal remains are large blocks of cut stone covered by sea water which here is of the clearest. Inland and to the north rise the mounds and tumuli, the sole remains of ancient Elath, once the port of Petra, which is distant only two dromedary marches. A line of larger heaps further north shows where, according to the people, ran the city wall; finding it thickly strewn with scoriæ, old and new, I decided that this was the *Siyághah*, mint or smiths' quarter. Between it and the sea the surface is scattered with glass, shards, and slag; the metal treated was probably native copper from the Sinaitic Jebel and Wady Raddádi. Of this "chrysocolla" a specimen has been deposited in the British Museum.

About seven miles distant from El 'Akabah, and close to the western or Sinaitic shore, lies the "Pharaoh's Isle:" the natives know it as the *Jebel el-Kald'h*, or fort-hill. The bit of rock is a saddleback with pommel and cantle well defined; the material is grey granite quartz-veined and dyked with decaying porphyritic trap; and the ground-plan is a long oval of about 320 by 152 mètres. Here we made careful plans, drawings and photographs; there is, however, nothing novel in the castle which was described by Ruppell in 1826, and by Wellsted in 1838. Suffice it to say, that we found several strata of building. The mass is evidently European, built during the days when the Christians and the Crusaders held El-'Akabah. Apparently it rests upon Roman ruins, and the latter, perhaps, upon Egyptian remains of far older date. I can assign no period to the rock-hewn cisterns. The upper part of the fortification is attributed by popular legend to the reign

of Saláh el-Dín (Saladin) who, in A.D. 1167, cleared El-'Akabah of the infidel invader by carrying ships on camel back from Cairo. Later generations of thieves, pirates, and fishermen made it their refuge and abode; and thus the uppermost masonry and the embrasures are rude in the extreme.

Steaming southwards along the eastern side of the 'Akabah Gulf, we pass some unimportant ruins, the "Girl's Palace," the "Bedawi's Castle," and the remains of El-Hakl (popularly pronounced El-Hagul), the Ἀγκάλη (Ancale) of Ptolemy. A second islet off this shore is said to contain the "Palace of the Bedawi Woman;" and inland there are signs of a *Mashghal* or "atelier" where metal was worked in a mountain known as Tayyib Ism—of the "good name." After finishing the northern two-thirds of the gulf we land at Makná, and enter upon a highly interesting section of Midian.

Makná, also called by the people "Madyan," is evidently the Μάκνα, Μαίνα or Μαίνα which Ptolemy (vi. 7, sect. 27) places in N. lat. 28° 45', the true being 28° 23'. It is evidently the port of the Midianite capital, and the site of an important mining industry. But it will hardly bear more description. Dr. Beke visited it in 1874; and the fine volume lately edited by his widow contains a plan of the so-called "Praying-place of Moses." In my first book (*The Gold Mines of Midian, &c.*) I have given a full account of its remains. It is a charming site, with an abundance of water in the Wady-bed, and a flood of verdure, dates, daum-palms, and other trees, surging up and streaming down the high dry sandbanks which form the narrow "gate" or valley-mouth.

The road to the capital lies up this huge Fiumara, which is known to the Arabs as Wady Makná or Wady Madyan. A march of 17½ miles east with some five miles of northing leads to its head, where a shallow wave of ground divides it from the Wady 'Afil, alias the Wady El-Bada'. The latter Fiumara shows both banks lined with courses of rough stone, mostly rounded and water-rolled boulders, evidently the ruins of the conduits which served to feed the rich growth of the lower valley.

This place is evidently the capital of Madyan Proper, the Μαδιάμα which Ptolemy (vi. 7 sec. 27) places amongst his Mesogeian towns in N. lat. 28° 15' with little error (true 28° 28'). The Bedawin, faithful to their tradition, call it *Magháir Sha'ayb*, "Caves" (or catacombs) "of the Prophet Jethro," who used to winter at this place and wander seawards in the date-season.

The ruins, of large extent for North Midian, and equal to those of all the towns we have seen put together, begin with a palm-orchard on the left bank. The Jebel el-Safra, a mass of gypsum, shows the foundations of what may have been the *arz*. It is a double quoin, the taller to the south, the lower to the north, and both bluff in the latter direction. The dip is about 45 deg.; the upper parts of the dorsa are scatters of white on brown-yellow stone; and below it, where the surface has given way, appear mauve-coloured strata, as if stained by manganese. Viewed in profile from the west, the site of *El-Muttali*, as the Arabs call the "Hauteville," becomes a tall, uptilted wedge, continued northwards by the smaller feature, and backed by a long sky-line, a high ridge of plaster, pale coloured, with glittering points.

This isolated "Yellow Hill," a "horse" in Icelandic parlance, rising about two hundred feet above the valley-sole, is separated by a deep, narrow gorge from the adjacent eastern block. The slopes, now water-torn and jagged, may formerly have declined in regular lines; and evidently all were built over to the crest like those of Syrian Safet. The foundations of walls and rock-cut steps are still found even on the far side of the eastern gut. The knife-back is covered with the foundations of what appears to have been a fortified monastery or palace; a straight street or passage running north-south, with five deg. west (mag.). It serves as base for walls one metre and a half thick, opening upon it like rooms: of these we counted twenty on either side. At the northern end of the ridge, which, like the southern, has been weathered to a mere spur, is a work composed of two semicircles fronting to the north and east. A bastion of well-built wall in three straight lines overhangs the perpendicular

face of the eastern gorge; in two places there are signs of a similar defence to the south, but time and weather have eaten most of it away. The ground sounds hollow, and the feet sink in the crumbling heaps: evidently the whole building was of *Rughám* (alabaster or gypsum); and in the process of decay it has become white as blocks of ice, here and there powdered with snow.

On the narrow, flat ledge, between the western base of the *Safra* and the eastern side of the Bada' valley, lie masses of ruin now mere rubbish; bits of wall built with cut stone, and water-conduits of fine mortar containing, like that of the Pyramids, powdered brick and sometimes pebbles. We carried off a lump of sandstone bearing unintelligible marks, possibly intended for a man and a beast. We called it "St. George and the Dragon," but the former is afoot—possibly the Bedawin stole his steed. There was a frustum or column-drum of fine white marble, hollowed to act as a mortar; like the Moslem headstone of the same material, it is attributed to the Jebel el-Lauz, where ancient quarries are talked of. There were also *Mahrákah* ("rub-stones" for grain) of close-grained red syenite, and fragments of the basalt hand-mills used for quartz-grinding. Part of a mortar was found, made of exceedingly light and porous lava.

South-east of the Hauteville falls in the now rugged ravine, *Khashm el-Mutallí*, "Snout of the high" (town). It leads to the apex of the coralline formations, scattered over with fragments of gypsum, here amorphous, there crystalline or talc-like, and all dazzling white as powdered sugar. Signs of tent-foundations and of buildings appear in impossible places; and the heights bear two Burj or watch-towers, one visible afar, and dominating from its mamelon the whole land. The return to the main valley descends by another narrow gorge further to the south-east, called *Sha'b el-Darak*, or "Strait of the Shield:" the tall, perpendicular, and overhanging walls, apparently threatening to fall, would act *testudo* to an Indian file of warriors. High up the right bank of this gut we saw a tree-trunk propped against a rock by way of a ladder for the treasure-seeker. The Sha'b-sole is flat, with occasional steps and overfalls of rock, polished like mirrors by the rain-torrents; the mouth shows remains of a masonry-dam some fourteen feet thick by twenty-one long; and immediately below it are the bases of buildings and watercourses.

Walking down the left bank of the great Wady, and between these secondary gorges that drain the "Yellow Hill," we came upon a dwarf mound of dark earth and rubbish. This is the *Siyághah* (mint and smiths' quarter), a place always to be sought, as Ba'lbak and Palmyra taught me. Remains of tall furnaces were scattered about, and here upon the surface and below it, but not more than one foot deep, were found the coins of Midian for the first time *in situ*.

Beyond the *Siyághah*, the left bank is gashed by the ravines draining the south-eastern prolongation of the "Yellow Hill." Water cuts through this rotten formation of rubbish like a knife into cheese; forming deep chasms, here narrow, there broad, with walls built up, as it were, of fragments, and ready to be levelled by the first rains. The lines of street and the outlines of tenements can be dimly traced; while revetments of rounded boulders show artificial watercourses and defences against the now dried-up stream. The breadth of this, the eastern settlement, varies with the extent of the ledge between the gypsum-hills and the sandy Wady; the length may be a kilomètre. The best preserved traces of crowded building end with the south-eastern spur of the Jebel el-Safra. Beyond them is a huge cemetery. The ancient graves are pits in the ground; a few still uncovered, the many yawning wide, and all of them ignoring orientation. Those of the moderns, on the contrary, front towards Meccah. The Bedawin of this country seem ever to prefer for their last homes the most ancient sites; they place the body in a pit, covered with a large slab or a heap of stones, but they never fill in the hollow, as is usual among Moslems, with earth. The arrangements suit equally well the hyena and the skull-collector; and thus I was able to make a fair collection of Bedawi crania.

At the south-eastern end of the outliers projected by the Jebel el-Safra, where a gentle slope of red earth falls towards the valley bank, is the only group of buildings of which any part is still standing. The site may be old, but the present ruins are distinctly mediæval, dating probably from the days of the Egyptian "Mameluke Sultans." Beginning from below and to the south-west is a *Hauz*, or cistern, measuring twenty-six by nineteen and a half mètres, with a depth of nine or ten feet. The material is cut sandstone, cemented outside with mortar containing the normal brick-crums and pebbles, and inside mixed with mud. At the north-eastern and south-western corners are retaining buttresses in two steps, exactly like those in the inland fort of El-Wijh: at the two other angles are flights of stairs; and the sole is a sheet of dried silt. To the south-east lies the remnant of a small circular furnace, and on the north-north-east a broken wall shows where stood the *Bayt el-Saghir*, or smaller reservoir. A narrow conduit of cut stone leads, with elaborate zigzags, towards two *Sákiyah* ("draw-wells") hollowed in the gypsum. The southern, an oval of five mètres ten centimètres, is much dilapidated; and its crumbling throat is spanned by a worn-out arch of the surrounding Secondary rock. Close to the north-west is the other, revetted with cut stone, and measuring six mètres in diameter. It is an elaborate affair, with a pointed arch and a regular keystone; circular *Sudûd*, or "walls for supporting the hauling-apparatus;" and minor reservoirs numbering three. On a detached hillock, a few paces to the north, stands the fort which defended the establishment. The short walls of the parallelogram measure fifteen mètres forty centimètres; and the long, eighteen mètres sixty centimètres; the gate, choked by ruins, leads to a small hall, with a masked entrance opening to the right. There is a narrow room under the stone steps to the west, and two others occupy the eastern side. This fort is to be restored for the better protection of pilgrims; and shortly after our departure an Egyptian engineer, Sulayman Effendi, came from Suez to inspect and report upon it.

According to local modern tradition this scatter of masonry was the original site of the settlement, called after the builder *Bir el-Sa'idani*—the "Well of Sa'idân." For watering each caravan the proprietor demanded a camel by way of fee; at last a Maghribi—that is, a magician—refused to "part;" betook himself to the present camping ground, sank pits, and let loose the copious springs. The old wells then dried up, and the new sources gave to this section of the great Wady 'Afal its actual name, *Wady el-Buda'*—"of the innovation," so hateful to the conservative savage. Hence Ruppell's "Beden," which would mean an ibex.

On the opposite or right bank of the broad and sandy bed, the traces of ancient buildings extend to a far greater distance—at least to two kilomètres. They have been a continuous line of forts, cisterns, and tenements, still marked out by the bases of long thick walls; the material is mostly gypsum, leprous-white as the skin of Gehazi. But here, and indeed generally throughout Midian, the furious torrents, uncontrolled during long ages by the hand of man, have swept large gaps in the masses of homestead and public buildings. Again the ruins of this section are distributable into two kinds—the City of the Living, and the City of the Dead.

The former, of considerable extent, hugs the watercourse, and crowns all the natural spurs that buttress the bed. Beginning from the north lie two blocks of building considerable in extent: the southern, called by the Arabs *El-Mulká*, is a broken parallelogram. Further down stream the bank is a vast strew of broken pottery; and one place, covered with glass fragments, was named by our soldiers *El-Khammárah*—"the tavern" or "the hôtel." As in ancient Etruria, so here, the people assemble after heavy rains to pick up what luck throws in the way. It is said that they often gather gold pieces, square as well as round, bearing by way of inscription "prayers" to the Apostle of Allah. Some of us, however, had a shrewd suspicion that the *Tibr*, or "pure gold-dust," is still washed from the sands, and cast probably in rude moulds.

Behind, inland or westward of this southern town, lies the City of the Dead. Unlike the pitted graveyard to the north-east, the cemetery is wholly composed of catacombs, which the Bedawin call *Magháir* ("caves") or *Bibán* ("doors"). The sites are the sides and mouths of four little branch-valleys which cut through the hillocks representing the Wady-bank. The northernmost is known as *Wady el-Khurayk*, because it drains a height of that name; the others bear the generic term *Wady el-Safrá*, so called, like the *hauteville* hill, from the tawny yellow colour of the rocks. The catacombs, fronting in all directions, because the makers were guided by convenience, not by ceremonial rule, are hollowed in the soft new sandstone underlying the snowy gypsum; and most of the façades show one or more horizontal lines of natural bead-work, rolled pebbles disposed parallelly by the natural action of water. In the most ruinous, the upper layer is a cornice of hard sandstone, stained yellow with iron and much crevice'd; the base, a soft conglomerate of the same material, is easily corroded, and the supernal part caves in upon the principle which is destroying Niagara. At each side of the doorways is a *Mastabah* ("stone bench"), also rock-hewn, and with triple steps. The door-jambs, which have hollowings for hinges and holes for bars, are much worn and often broken; they are rarely inclined inwards after the fashion of Egypt. A few have windows, or rather port-holes, flanking the single entrance. The peculiarities and the rare ornaments will be noticed when describing each receptacle: taken as a whole, they are evidently rude and barbarous forms of the artistic catacombs and tower-tombs that characterise Petra and Palmyra.

The *Magháir* may roughly be divided into four topical groups. These are—the northern outliers; the "Tombs of the Kings," so called by ourselves because they distinguish themselves from all the others; the "buttressed caves" (two sets); and the southern outliers. The first mentioned begin with a ruin on the right jaw of the Khurayk gorge: it is dug in sandstone strata, dipping, as usual, from north-west to south-east; it faces eastward, and the entrance declines to the south. All external appearance of a catacomb has disappeared: a rude porch, a frame of sticks and boughs, like the thatched eaves of a Bulgarian hut, stands outside, while inside evident signs of occupation appear in hearths and goat-dung, in smoky roof, and in rubbish-stréwn floor. Over another ruin to the west are deeply cut *graffiti*, of which squeezes and photographs were taken; there are two loculi in the southern wall, and in the south-eastern corner is a pit, also formerly containing a sarcophagus. In a hill-side to the south of this cave is another, dug in the *Tawá* or coloured sandstone, and apparently unfinished; part of it is sanded up, and its only yield, an Egyptian oil-jar of modern make, probably belonged to some pilgrim. Crossing the second dwarf gorge we find, on the right bank, a third large ruin of at least fourteen loculi; the hard upper reef, dipping at an angle of 30 deg., and striking from north-west to south-east, fell in when the soft base was washed away by weather, and the anatomy of the graves is completely laid bare. Higher up the same Wady is a fourth "Maghárah," also broken down; the stucco-coating still shows remnants of red paint, and the characters TI—possibly Arab "Wasm," or tribal marks—are cut into an upright entrance-stone.

The precipitous left bank of the third gorge contains the three finest specimens, which deserve to be entitled the "Tombs of the Kings." Of these, the two facing eastward are figured by Rüppell (p. 220) in the antiquated style of his day, with fanciful foreground and background. His sketch also places solid rock where the third and very dilapidated catacomb of this group, disposed at right angles, fronts southwards. Possibly the façades may once have been stuccoed and coloured; now they show the bare and pebble-banded sandstone.

The southernmost, which may be assumed as the type, has an upright door, flanked by a stone bench of three steps. Over the entrance is a defaced ornament, which may have been the bust of a man; in Rüppell it is a kind of geometrical design. The frontage has two parallel horizontal lines,

raised to represent cornices. Each bears a decoration resembling crenelles or Oriental ramparts broken into three steps; the lower set numbers eight, including the half ornaments at the corners, and the higher seven. The interior is a mixture of upright recesses, probably intended for the gods or daimons; and of horizontal loculi, whose grooves show that they had lids. There is no symmetry in the niches, in the sarcophagi, or in the paths and passages threading the graves. The disposition will best be understood from the ground-plans drawn by the young Egyptian officers; their sketches of the façades are too careless and incorrect for use, but the want is supplied by the photographs of M. Lacaze.

Above these three "Tombs of the Kings" are many rock-cavities which may or may not have been sepulchral. Time has done his worst with them. We mounted the background of quoin-shaped hill by a well-trodden path, leading to the remnants of a rude Burj (watch-tower), and to a semicircle of dry wall garnished with a few sticks for hanging rags and tatters. The latter denotes the *Musallat Shu'ayb*, or Praying-place of (Prophet) Jethro; and here our guides took the opportunity of applying for temporal and eternal blessings. The height at the edge of the precipice which, clinging to the north, showed a view of our camp and of Yubú' and Shu'shú' Islands, was in round numbers 450 feet (aner. 29·40—28·94). From this vantage-ground we could distinctly trace the line of the Wady Makná, beginning in a round basin at the western foot of the northern Shigd Mountain and its sub-range; while low rolling hills, along which we were to travel, separated it from the Wady Bada'-Afál to the south.

Two other important sets of catacombs, which I have called the "buttressed caves," are pierced in the right flank of the same gorge, at the base of a little conical hill, quaintly capped with a finial of weathered rock. The material is the normal silicious gravel-grit, traversed and *cloisonné* by dykes of harder stone. Beginning at the south, we find a range of three, facing eastward, and separated from one another by flying buttresses of natural rock. No. 1 has a window as well as a door. Next to it is a square with six open loculi ranged from north to south. No. 3 shows a peculiarity—two small pilasters of the rudest (Egyptian?) "Doric," the only sign of ornamentation found inside the tombs; a small break in the south-western wall connects it with the northernmost loculus of No. 2. Furthest north are three bevel-holes, noting the beginning of a catacomb; and round the northern flank of the detached cone are six separate caves, all laid waste by the furious boreal gales.

The second set is carved in the bluff eastern end of an adjoining reef that runs away from the Wady; it consists of four sepulchres with the normal buttresses. They somewhat resemble those of the Kings, but there are various differences. No. 2 from the south is flanked by pilasters with ram's-horn capitals, barbarous forms of "Ionic" connected by three sets of triglyphs. The pavement is of slabs; there is an inner niche, and one of the corners has been used as an oven. On a higher plane lies a sunken tomb, with a deep drop and feet-holes by way of ladder; outside it the rocky platform is hollowed, apparently for graves. The other three façades bear the crenelle ornaments; the two to the north show double lines of seven holes drilled deep into the plain surface above the door, as if a casing had been nailed on, while the northernmost yielded a fragmentary inscription on the southern wall. These are doubtless the "inscribed tablets on which the names of kings are engraved," alluded to in the *Jihan-numá* of Haji Khalifah.* Rounding the reef to the north, we found three catacombs in the worst condition; and of these, one shewed holes drilled in the façade.

The southern outliers lie far down the Wady 'Afál, facing east, and hewn in the left flank of a dwarf gulley which falls into the right bank not far from the site called by our men "the tavern."

* Wellsted, vol. ii., Appendix.

The group numbers three, all cut in the normal sandstone, with the harder dykes which here stand up like ears. The principal item is the upper cave, small, square, and apparently still used by the Arabs; in the middle of the lintel is a lump looking like the mutilated capital of a column. The two lower caves show only traces.

There is a tradition that some years ago a Frank (Rüppell?), after removing his Arab guides, dug into the tombs, and found nothing but human hair. Several of the horizontal loculi contained the bones of men and beasts; I did not disturb them, as all appeared to be modern. The floors, sounding hollow underfoot, gave my companions hopes of "finds;" but I had learned, after many a disappointment, how carefully the Bedawi ransack such places. We dug into four sepulchres, including the sunken catacomb and the (southern) inscribed tomb. Usually six inches of flooring led to the ground-rock; in the sarcophagi about eight inches of hard tamped earth was based upon nine feet of sand that ended at the bottom. The only results were mouldering bones, bits of marble and pottery, and dry seeds of the Kaff Maryam, the well-known rose of Jericho (*anastatica*), which here feeds the partridges, and which in Egypt supplies small children with medicine and expectant mothers with a charm. The cave also yielded well-developed specimens of bats (*rhinopoma*), with long spiky tails.

I have described at considerable length this ruined Madiama, which is evidently the capital of Madyan Proper, ranking after Petra. In one point it is still what it was, a chief station upon the highway, then Nabati, now Moslem, which led to Petra, *vid* the Ghor or Wady el-'Arabah.

From the capital of Midian Proper, which is surrounded by *ateliers* and other ruinous outliers, we make our way to the sea shore; and, still going south, we visit the three pilgrim-stations—'Aynunah, Sharmá, and Tiryam. The former is the *'Ovvi* which Pliny places in north latitude 28°40' (true 28° 2' 30"). The other two must have had classical names, but these are now forgotten. Perhaps one of them may be the *Modiava*, or *Modoiva* (Arab., Mudun, the Cities?) of Ptolemy (north latitude 27° 45'). 'Aynunah gave us the impression of having been the great *Warsah* ("workshop") and shipping-place of the coast-section extending from El-'Akabah to El-Muwaylah, upon which depended both Sharmá and Tiryam, with their respective establishments in the interior. Dr. Beke touched here in 1874; but, like his predecessor, Rüppell, he seems not to have noticed any signs of mining industry. Yet the condition of the slags and firebricks convinced me that iron and the baser metals have been worked in modern times, perhaps even in our own; by whom, however, I should not like to say.

I can add little to the description of 'Aynunah given in "The Gold Mines of Midian." There you may read of the maritime settlement and its extensive waterworks, well cemented cisterns, and an aqueduct three miles long built of rough stone and excellent cement, and lined along the water-way with broad, carefully-baked and eared tiles. The mortar, as usual throughout Midian, was mixed with small pebbles and crumbs of brick—you have seen the same in the Pyramids of Egypt. The aqueduct, which is all subaërial, heads in a groove of the rock where the mouth of the Wady breaks through the coralline cliffs forming the old shore. This gorge, which the Arabs call the *Báb* (gate), is some 200 mètres in width: a *barrage* of rough stone set in excellent cement collected the upper waters into a lake, and at the head of the latter stood a double row of furnaces. The ore was collected probably by slaves, whose little huts were built upon the cliff overlooking the dam; and in the slope below, a vein of silicate of copper, which the Arabs called *fayruz* (turquoise); had been carefully worked out. And this throughout maritime Midian appears to have been the general disposition of the settlements. The wealthy mine owners affected the seaboard; the miner-slaves were placed near the works.

Sharmā lies about seven miles south of 'Aynūnah. During my first expedition we had found, upon the right jaw of its Wady, a ruined village of workmen, whose *bothans* measured some twelve feet by eight. They differ from the Nawāmis, or "mosquito-huts," as the word is generally translated, only in shape—the latter are circular, with a diameter of ten feet—and they perfectly resemble the small stone hovels in the Wady Mukattab, which Professor Palmer ("Desert of the Exodus," p. 202) supposes to have been occupied by the captive miners and their military guardians. This time we ascended the coralline ridge which forms the left jamb. At its foot a rounded and half-degraded dorsum of stiff gravel, the nucleus of its former self, showed a segment of foundation-wall, and the state of the stone suggested the action of fire. Possibly here had been a furnace. The summit also bears signs of human occupation. The southern part of the buttress-crest still supports a double concentric circle with a maximum diameter of about fifteen feet; the outside is of earth, apparently thrown up for a rampart behind a moat, and the inside is of rough stones. Going south along the dorsum, we found remains of oval foundations; a trench apparently cut in the rock, pottery often an inch and more thick, and broken hand-mills made of the New Red Sandstone of the Hismā. Finally, at the northernmost point, where the cliff-edge falls abruptly, with a natural arch, towards the swamp, about one kilomètre broad at the "*Bāb*," we came upon another circle of rough stones. We were doubtful whether these rude remains were habitations or old graves; nor was the difficulty solved by digging into four of them: the pick at once came upon the ground-rock. Hitherto these ruins have proved remarkably sterile; the only products were potsherds, fragments of hand-mills, and a fine lump of white marble.

At Wady Tiryam I set the quarrymen to work, with pick and basket, at the north-western angle of the old fort. The latter shows above ground only the normal skeleton-tracery of coralline rock, crowning the gentle sand-swell, which defines the lip and jaw of the Wady, and defending the townlet built on the northern slope and plain. The dimensions of the work are fifty-five mètres each way. The curtains, except the western, where stood the *Bab el-Bahr* ("Sea gate"), were supported by one central as well as by angular bastions; the northern face had a cant of 32 deg. east (mag.), and the north-western tower was distant from the sea seventy-two mètres, whereas the south-western numbered only sixty. The spade showed a substratum of thick old wall, untrimmed granite, and other hard materials. Further down were various shells, especially *bénitiers* (*Tridacna gigantea*), the harp (here called "*Sirinbáz*"), and the pearl-oyster; sheep-bones and palm-charcoal; pottery admirably "cooked," as the Bedawin remarked; and glass of surprising thinness, iridized by damp to rainbow hues. This, possibly the remains of lachrymatories, was very different from the modern bottle-green, which resembles the old Roman. Lastly, appeared a ring-bezel of lapis lazuli; unfortunately the "royal gem" of Epiphanus was without inscription.

We now reach Fort El-Muwaylah, which I have mentioned as marking the southern frontier of Madyan Proper. The learned Arabist and traveller, Dr. Wallin, or as the Arabs called him Hāji Wali, considered the settlement a modern growth, in fact the outcome of the Egyptian pilgrimage. Had he looked two feet beyond the north-eastern town of the fort, he would have found long forgotten vestiges of ovens, and slags containing copper and iron. About one mile and three-quarters up the Wady Surr, the Nullah on whose right bank stands the settlement, he would have seen another ruin which the people term *Abū Hawāwit* ("Father of Dwelling Walls.") The site is a holm, or islet, in the bed which here runs east-west and splits; the main line is the southern, and a small branch, a mere gully, occupies the northern bed-side. The chief ruin is an oblong of twenty mètres by sixteen, the short ends facing 195 deg. (mag.); the whole built of huge pebbles. The interior is composed of one large room to the north, with sundry smaller divisions to the south, east, and west.

Defence was secured by a wall, distant 142 mètres, thrown across the whole eastern part of the islet : outside it are three large pits, evidently the site of cisterns. The people also told us of a well, the *Bir el-Ashgham*, which has long been mysteriously hidden. Immense labour has also been expended in revetting the northern and southern banks, both of the islet and the smaller branch-bed, for many hundreds of yards, with round and water-rolled boulders, even on a larger scale than at Magháir Shu'ayb. What all this work meant we are unable to divine. Perhaps it belonged to the days when the sea-board of Midian was agricultural ; and it was intended as a protection against the two torrents, the *Wady el-Zila'* and *Abi Zabab*, which here fall into the northern bank.

RUINS IN SOUTH MIDIAN.

The mining of the north country, to judge from the ruins, was confined to copper smelting and to spalling the quartz which was treated in the several establishments, notably at 'Aynúnah. In the section which we are about to visit, the remains, as will be seen, were much more considerable, and gold appears to have been the metal principally worked.

From El-Muwaylah a run of twenty direct miles southwards places us at the little port of Zibá, in north latitude $27^{\circ} 20'$. I have described this place in "The Gold Mines of Midian" (chap. xi.) ; in "The Land of Midian" (re-visited) I shall give my reasons for holding it to be the *Φοινίκων κόμη* (Phœnicion vicus) of Ptolemy. The old town stood immediately behind, or inland of, the modern settlement, and its stones, buried for ages under the sand, are now dug up to build its successor. To the north-east of it lies the *Jebel El-Ghál* where the best turquoises are found ; and to the east is a mining station called "Umm Ámil." It had been grandiosely described to me during my first visit, and I was somewhat disappointed to see a few worthless heaps of water-rolled stones. Our caravan entitled it "El-Lomán"—the bagnio, the prison for galley-slaves.

A three day's ride from Zibá to the east-south-east places the traveller at Shuwák (north latitude $27^{\circ} 15'$). It can be no other than the *Σόακα* of Ptolemy, a large and important station on the great Nabathæan "Overland." The site is a long island in the broad and sandy *Wady Shuwák* ; at the ruins the bend of the valley is from north-east to south-west, and the altitude is about 1700 feet.

We will begin at the *Wady-head*, and note the ruins as we stroll down. This section, *Shuwák proper*, is nearly a mile and a-half long, and could hardly have lodged less than twenty thousand souls. But that extent by no means represents the whole ; our next march will prolong it along the water-course for a total of at least four miles. The material is various—boulders of granite and syenite ; squares of trap and porphyry ; the red sandstones of the *Hismá* ; the basalts of the *Harrah* ; and the rock found *in situ*, a brown and crumbling grit, modern, and still in process of agglutination. The heaps and piles which denote buildings are divided by mounds and tumuli of loose friable soil, white with salt, miniatures of Babylon, Nineveh, and Troy. On the right side we find a large fort, half sliced away by the torrents, but still showing the concrete flooring of a tower. About the centre of the length are the remnants of a round "Burj ;" blocks of buildings, all levelled to the foundations, lie to the north-west, and on the west appear signs of a square. Perhaps the most interesting discovery is that of catacombs, proving a civilization analogous to that of Magháir Shu'ayb, but ruder, because more distant from the centre. The "caves" are hollowed in a long reef of loose *breccia*, which, fronting eastward, forms the right bank of the smaller branch. They are now almost obliterated by being turned into sheep-folds ; the roofs have fallen in, and only one preserves the traces of two loculi.

The arrangements touching fuel and water in this great metal-working establishment are on a

large scale. The biggest of the *Afrán* ("furnaces") lies to the north-west, near the right bank of the valley: all are of the ordinary type, originally some five or six feet high, to judge from the bases. They are built of fire-brick, and of the Hismá stone, which faces itself into a natural *latex*. We dug deep into several of them; but so careful had been the workmen, or perhaps those who afterwards ransacked these places, that not the smallest tear of metal remained: we found only ashes, pottery, and scoriæ, as usual black and green, the latter worked sub-aërially; many of them had projections like stalactites.

Water had been stored with prodigious labour. We traced the lines of half-a-dozen aqueducts, mostly channelled with rough cement, overlying a fine concrete: some of them had stones grooved to divert the stream by lashers. The *Fisklyyah* or "tanks" were of all sizes; and the wells, which appeared to be mediæval, were lined with stones cut in segments of circles. The greatest feat is an aqueduct which, sanded over in the upper part, subtends the left side of the valley. It is carefully but rudely built, and where it crosses a gully, the arch is of the Egyptian or Etruscan type, which Mr. Fergusson calls the "horizontal;" that is, formed of projecting stone tiers, without a sign of the key. This *magnum opus* must date from the days when the southern part of the Wady was nearly what it is now.

About a mile and a quarter below our camp, the Wady, which broadens to a mile, shows on the left bank a wall measuring a thousand mètres long, apparently ending in a tank of 110 feet each way. Around it are ruined parallelograms of every size, which in ancient times may have been workshops connected with the buildings in the island higher up. The torrents have now washed away the continuation, if ever there was any; and, though the lower remnants are comparatively safe upon their high ledge, the holm is evidently fated to disappear.

We left Shuwák considerably posed, puzzled, and perplexed by what it had shown us. A little pottery had been picked up, but our diggings had not produced a coin or even a bit of glass. The evidences of immense labour are the more astonishing when compared with the utter absence of what we call civilization. The Greek and Latin inscriptions of the Hauranic cities declare their origin; these, absolutely analphabetic, refuse a single hint concerning the mysterious race which here lived and worked, and worked so nobly. And, finally, who were the Moslems that succeeded them in a later day, when the Hajj-caravan, some three centuries and a-half ago, ceased to march by this road? How is it that the annalists say nothing of them? that not a vestige of tradition remains concerning any race but the Nazarenes?

After marching some seven miles from Shuwák with westing, you come upon formless heaps to the left. Half-an-hour afterwards, boulder-encircled pits of a brighter green on the right, the *Themáil el-Má*, or artificial cisterns of the Arabs, announce the approach to Shaghab. The ruins are built upon a more complicated site than those of Shuwák. The Wady Shaghab spreads out in a broad bulge with a "gate" to the west: this gorge is formed by the meeting of two rocky tongue-tips both showing large works. The mass of the city lay upon the left bank; on the right side up-stream no remains are visible. The population, however, could not have amounted to one quarter that of Shuwák. Here again appear the usual succession of great squares: the largest to the east measures 500 mètres along the flanks; and there are three others, one of 400 mètres by 192. They are subtended by one of many aqueducts, whose walls, two feet thick, show no signs of brick; it is remarkable for being run underground to pierce a hillock, and in fact, the system is rather Greek or subterranean, than Roman or sub-aërial.

Still descending, we found the ancient or mediæval wells, numbering about a dozen, and in no wise differing from those of Shuwák. At the gorge, where the Wady escapes from view, we planned

buildings on the lower right bank, and on the left we found a wall about half a mile long, with the remains of a furnace and quartz scattered around it. This stone had reappeared in large quantities, the moment we crossed the divide; the pale grey of the Jebel Zigláb and its neighbours was evidently owing to its presence, and from this point it will be found extending southwards and seawards as far as El-Hejaz.

A cursory inspection of Shaghab removed some of the difficulties which had perplexed us at Shuwák and elsewhere. In the Northern Country signs of metal-working, which was mostly confined to the Wadys, have been generally obliterated; either washed away or sanded over. Here the industry revealed itself without mistake. The furnaces were few, but about each one lay heaps of *Negro* and copper-green quartz, freshly fractured; while broken handmills of basalt and lava, differing from the rub-stones and mortars of a softer substance, told their own tale.

At Shaghab, then, the metalliferous "Marú," as the Arabs call the quartz, brought from the adjacent granitic mountains was crushed; then it was transported for roasting and washing to Shuwák, where water, the prime necessary in these lands, must have been more abundant. Possibly in early days the two settlements formed one, the single *Σόακα* of Ptolemy; and the south end would have been the head-quarters of the wealthy. Hence the Bedawin always give it precedence—*Shaghab wa Shuwák*; moreover, we remarked a better style of building in the former, and we picked up glass as well as pottery.

After riding nine miles on our return towards the coast, we came unexpectedly upon a large and curious ruin, backed by the broad Wady Dámah gleaming white in the sun. The first feature noticed was a pair of parallel walls, or rather their foundations, thirty-five feet apart, and nearly a kilomètre in length; it looked like a vast *hanjar*. To the left lie three tracings of squares: the central is a work of earth and stone, not unlike a rude battery; and, a few paces further north, a similar fort has a cistern attached to its western curtain. Heaps of rounded boulders, and the crumbling white-edged mounds which, in these regions, always denote old habitations, run down the right bank of the Wady el-Khandakí to its junction with the Wady Dámah. For want of a better name I called this old settlement *Kharábat* (the "Ruins of") *el-Khandakí*, and greatly regretted that we had not time enough to march down the whole line of the Dámah.

THE SOUTHERNMOST RUINS.

From Zibá we again steam southwards to El-Wijh el-Bahr ("Face of the Sea"), vulgarly called "Wedge," which lies in N. lat. $26^{\circ} 14'$, 86 direct miles or 107 knots by log, from El-Muwaylah. The name may be known to some of you, for here till the last two years was the main quarantine station of the pilgrims returning from Mecca. It was removed to Tor at the instance, I am told, of the English government, and the sooner it is restored to El-Wijh the better. It is my conviction that, under present circumstances, "Tor" is a standing danger, not only to Egypt, but to universal Europe.

Those who would travel inland from El-Wijh must organise a new caravan—here we are in the lands of Baliyy tribe, and Arabs do not permit transit or traffic by strange camels. There is, however, no difficulty in the journey. The civilizing influence of Egypt has made itself felt; and the old Shaykh, after a long term of imprisonment in the citadel, Cairo, has learned a remarkable courtesy to travellers.

We set out from El-Wijh on March 29, 1878, and after covering six miles we reached the inland fort. To the north-east of this work we picked up old and well-treated scoriæ, suggesting a more ancient settlement. Perhaps it was the *locale* preferred by the proprietors of the slaves who worked

the inner mines, hidden from view and from the sea breeze by the hills. Upon a reef of hard greenstone-porphry higher up the bed, we found Bedawi *Wusüm*, or "tribal marks," and Moslem scrapings comparatively modern. About half an hour's walk leads to another "written stone." A tall, fissured rock, of the hardest porphyritic greenstone, high raised from the valley-sole, facing north-west, and reducible to two main blocks, is scattered over with these "inscriptions," that spread in all directions. Most of them are Arab *Wusüm*; others are rude drawings of men and beasts, amongst which are conspicuous the artless camel and the serpent; and there is a *duello* between two funny warriors armed with sword and shield. These efforts of art resemble, not a little, the "Totem" attempts of the "Red Indians" in North and South America. There are, however, two inscriptions evidently alphabetic, and probably Nabathæan, which are offered to the specialists in epigraphy. M. Lacaze and I copied the most striking features in our *carpets*; he taking the right or southern side and leaving the other block to me. But the results did not satisfy us; and, on April 10th, I sent him with M. Philipin to make photographs: the latter, again, are hardly as satisfactory as they might be, because the inscriptions have not been considered the central points of interest. We shall pass during our present journey many of these Oriental "John Joneses" and "Bill Browns"; they will suggest the similar features of Sinaitic Wady Mukattab, which begot those monstrous growths, "The One Primæval Language" and "The Voice of Israel from Mount Sinai."

We now approach the first of the three great mining centres, and I shall describe it with some detail. Umm el-Karáyát, the "Mother of the Villages," is denoted by an airy heap of white quartz, some 200 feet high, which, capped and strewed with snowy boulders, seems to float above its valley. Instead of being a regular round-headed cone, as is usual with such formations, the summit is distinctly crateriform. The greater part of the day was spent in examining it, and the following are the results. This *Jebel el-Marú* showed, for the first time during the whole journey, signs of systematic and civilized work. In many parts the hill has become a mere shell. We found on the near side a line of air-holes, cut in the quartz-rock, disposed north-south of one another, and preserving a rim, sunk like that of a sarcophagus, to receive a cover. Possibly it was a precaution against the plundering which ruined Brazilian Gongo Soco. The Arabs have no fear of these places, as in Wellsted's day: Messrs. Clarke and Marie explored the deepest by means of ropes, and declared that it measured sixty feet. They had to be ready with their bayonets, as sign of hyenas was common; and the beast, which slinks away in the open, is apt, when brought to bay in caverns, to rush past the intruder, carrying off a jawful of calf or thigh.

This pit had two main galleries, both choked with rubbish, leading to the east and west; and the explorers could see light glimmering through the cracks and crevices of the roof—these doubtless gave passage to the wild carnivores. In other parts the surface, especially where the earth is red, was pitted with shallow basins, and a large depression showed the sinking of the hollowed crust. *Negro* quartz was evidently abundant; but we came to the conclusion that the rock mostly worked was a rosy, mauve-coloured schist, with a deep-red fracture, and brilliant colours before they are tarnished by atmospheric oxygen. It abounds in mica, which, silvery as fish-scales, overspreads it in patches; and the precious metal had probably been sought in the veinlets between the schist and its quartz-walling. In two pieces, specks, or rather *paillettes*, of gold were found lightly and loosely adhering to the "Marú;" so lightly, indeed, that they fell off when carelessly pocketed. Veins of schist still remained, but in the galleries they had been followed out to the uttermost fibril.

Reaching the crateriform summit, we ascertained that the head of the cone had either "caved in," or had been carried off bodily to be worked. Here traces of fire, seen on the rock, suggested that it had been split by cold affusion. A view from the summit of this burrowed mound gave us at once the

measure of the past work and a most encouraging prospect for the future. We determined that the *Marwah* or "quartz-hill" of Umm el-Karáyát was the focus and centre of the southern mining region, even as the northern culminates in the Jebel el-Abyaz. Further experience rejected the theory, and showed us half a dozen foci and centres in this true quartz-region. The main hill projects a small southern spur, also bearing traces of the miner. The block of green trap to the south-west has a capping and a vein-network of quartz; here also the surface is artificially pitted. Moreover, there are detached white-yellow *pitons* to the north-east, the east, and the south; whilst a promising hillock, bearing nearly due north, adjoins the great outcrop. All have rounded conical summits and smooth sides, proving that they are yet virgin; and here perhaps, I should prefer to begin work.

At our feet, and in north lat. $26^{\circ} 13'$, lies the settlement, in a short gravelly reach disposed north-west to south-east; and the bed is enclosed by a rim of trap and quartz hills. The ruins lie upon a fork where two gorges, running to the east and the north-east, both fall into the broad *Wady el-Khaww*, and the latter feeds the great *Wady el-Miyáh*, "the Valley of the Waters." The remains on the upper (eastern) branch valley show where the rock was pulverized by the number of grinding implements, large and small, coarse and fine, all, save the most solid, broken to pieces by the mischievous Bedawi. Some are of the normal basalt, which may also have served for crushing grain; others are cut out of grey and ruddy granites; a few are the common *Mahrakah* or "rub-stones," and the many are handmills, of which we shall see admirable specimens further on. One was an upper stone, with holes for the handle and for feeding the mill: these articles are rare. I also secured the split half of a ball, or rather an "oblate spheroid," of serpentine with depressions, probably where held by finger and thumb; the same form is still used for grinding in the Istrian island of Veglia. I have brought here to-night one of the few rude stone implements that rewarded our search.

The north-eastern, which is the main Wady, has a sole uneven with low swells and falls. It was dry as summer dust. I had expected much in the way of botanical collection, but the plants were not in flower, and the trees, stripped of their leaves, looked "black as negroes out of holiday suits." Here lie the principal ruins, forming a rude parallelogram from north-east to south-west. The ground plan shows the usual formless heaps of stones and pebbles, with the bases of squares and oblongs, regular and irregular, large and small. There were no signs of wells or aqueducts; and the few furnaces were betrayed only by ashen heaps, thin scatters of scoriae, and bits of flux, dark carbonate of lime. Here and there mounds of the rosy micaceous schist, still unworked, looked as if it had been washed out by the showers of ages. The general appearance is that of an *ergastulum* like Umm Ámil. Here perhaps the ore was crushed and smelted, when not rich enough to be sent down the Wady for water-working at the place where the inland fort of El-Wijh now is.

The second great mining centre lies some forty devious miles from El-Wijh. We reached it on April Fools' day, another that deserved the white stone. The site is the water-parting of the Wady Rubayyigh with the Wady Rábigh, both feeders of the Wady Sirr; this to the north, that to the south. The ruins, known as *Umm el-Haráb*, "Mother of Desolation," are the usual basement-lines; they lie in the utterly waterless basin, our camping-ground, stretching west of Marú Rubayyigh, a big white reef. This "Mother" bears nearly north of Umm el-Karáyát, in north lat. $26^{\circ} 33' 36''$: her altitude was made upwards of a thousand feet above sea-level.

At Umm el-Haráb we saw for the first time an open mine, scientifically worked by the men of old. They chose a pear-shaped quartz-reef; the upper dome exposed, the converging slopes set and hidden in green trap to the east and west, and the invisible stalk extending downwards, probably deep into Earth's bowels. They began by sinking, as we see from certain rounded apertures, a line of shafts striking north-north-east (45° — 50° mag.) to south-south-west across the summit, which may

measure 120 yards. The intervening sections of the roof are now broken away; and a great yawning crevasse in the hill top gives this saddleback of bare cream-coloured rock, spangled with white where recently fractured, the semblance of a "comb" or cresting reef.

We descended into our chasm, whose slope varies from a maximum of 45° to a minimum of 36° at the south. The depth apparently did not exceed thirty feet, making allowance for the filling up of centuries; but in places the hollow sound of the hammer suggested profounder pits and wells. I should greatly doubt that such shallow sinking as this could have worked out any beyond the upper part of the vein. Here it measures from six to eight feet in diameter, diminishing to four and a half and even three below. The sloping roof has been defended from collapse by large pillars of the rock, left standing as in the old Egyptian quarries; it shows the clumsy but efficient practice that preceded timbering. The material worked was evidently the quartz walling pink-coloured and silver-scaled micaceous schist; but there was also a whitish quartz, rich in geodes and veinlets of dark brown and black dust. The only inhabitants of the cave, bats and lizards (*Gongylus ocellatus*, L. etc.), did not prevent M. Lacaze making careful study of the excavation; the necessity of brown shadows, however, robs the sketch of its charm, the delicate white which still shimmers under its transparent veil of shade. Similar features exist at El-Muwaylah and El-Aujeh, in the wilderness of Kadesh: but those are *latomie*; these are gold mines.*

Another sign of superior labour is shown by the quartz-crushing implements. Here they are of three kinds: coarse and rough basaltic lava for the first and rudest work; red granite and syenitic granite for the next stage; and, lastly, an admirable handmill of the compactest grey granite, smooth as glass and hard as iron. Around the pin-hole are raised and depressed concentric circles intended for ornament; and the "dishing" towards the rim is regular as if turned by machinery. We have seen as yet nothing like this work; nor shall we see anything superior to it. All are nether mill-stones, so carefully smashed that one can hardly help suspecting the kind of superstitious feeling which suggested iconoclasm. The venerable Shaykh 'Afnán showed a touching ignorance concerning the labours of the ancients; and, when lectured about the *Nabat* (Nabathæans), only exclaimed, "Allah, Allah!"

After nighting at some uninteresting ruins which we named, after their Wady, *Mashghal Abá l-Gezáz*, on the second day (April 3) we reached the great station on the Nabathæan "Overland" between Leukè Kóme and Petra. It is the commercial and industrial, the agricultural and mineral centre, which the Greeks called *Badáts*; the Romans, *Badanatha* (Pliny, vi. 32); and the mediæval Arab geographers, *Badá Ya'kúb*. Now it is simply El-Badá: the name of the "Prophet" Jacob, supposed to have visited it from Egypt or Syria, being clean forgotten.

The better to understand the shape of the ruins we will prospect them from the *Shaháb el-Bám*, the "ash-coloured hill of the owl," one of the many rocks that stud the broad and fertile plain. It is an out-crop of grey granite, with large elements, pigeon-holed by weather, and veined by a variety of dykes. Here we find greenstone breccia'd with the blackest hornblende; there huge *filons* of hard red, heat-altered clays, faced with iron, whilst the fracture is white as trachyte; and there *filets* of quartz, traversing large curtains and sheets of light-coloured argils. This was evidently the main quarry: the sides still show signs of made zigzags; and the red blocks and boulders, all round the hill, bear the prayers and pious ejaculations of the Faithful. The characters range between square Cufic, hardly antedating four centuries, and the cursive form of our day. Some are merely scraped; others are deeply and laboriously cut in the hard material, a work more appropriate for the miner than for the passing pilgrim.

* See the illustration, "Desert of the Exodus," p. 306.

From the ruined look-out on the summit the shape of the city shows a highly irregular triangle of nine facets; forming an apex at the east end of our "Owl's Hill:" the rises and falls of the ground have evidently determined the outline. A palm-orchard, whose total circumference is 536 mètres, occupies a small portion of its south-eastern corner; and our camping-place, further east, was evidently included in the enceinte. The emplacement, extending along the eastern bank of the main watercourse, is marked by a number of mounds scattered over with broken glass and pottery of all kinds; no coins were found, but rude bits of metal, all verdigris, were picked up north of the palm-orchard.

Descending the Shahib el-Bám, and passing a smaller black and white block appended to its south-south-western side, we now cross to the left bank of the main drain. Here lies the broken tank, the normal construction of El-Islam's flourishing days. It is a square of thirty-two mètres, whose faces and angles do not front the cardinal points. At each corner a flight of steps has been; two have almost disappeared, and the others are very shaky. The floor, originally stone-paved, is now a sheet of hard silt, growing trees and bush; dense Tanzib-clump (*Sodala decidua*), with edible red berries, sheltering a couple of birds' nests, suggested a comparison between the present and the past. At the east end is the *Makhzan el-Máyah* ("smaller reservoir"), an oblong of 7·80 by 6·60 mètres; the waggon-tilt roof has disappeared, and the fissures show brick within the ashlar. Along the eastern side are huge standing slabs of the coarse new sandstone with which the tank is lined; these may be remains of a conduit. Around the cistern lies a ruined graveyard, whose yawning graves supplied a couple of skulls. A broken line of masonry, probably an aqueduct, runs south-south-east (143° mag.) towards the palms; after two hundred mètres all traces of it are lost.

The mining industry could not have been a prominent feature at Badá, or we should have found, as in Shaghab and Shuwák, furnaces and scoræ. Yet about the tank we lit upon large scatters of spalled quartz, which, according to the Baliyy, is brought from the neighbouring mountains. Some of it was rosy outside; other specimens bore stains of copper, and others showed, when broken, little pyramids of ore. Tested in England, it proved to be pure lead, a metal so rare that some metallurgists have doubted its existence: the finds have been mostly confined to auriferous lands.

Many ateliers and workshops are doubtless scattered all around the centre; but to examine them, a week, not a day, would be required. On the very eve of our departure the guides pointed northwards (350° mag.) to a "Mountain of Marú," called El-Arayfát, and declared that it contained a *Zaribat el-Nasávi*, or "enclosure made by the Nazarenes." I offered a liberal present for specimens; all, however, swore that the distance ranged from two to three hours of dromedary, and that no mounted messenger could catch us unless we halted the next day.

On April 5 we began our return-march by bending south-westwards, making for the coast. Several unimportant sites lay on the way and in parts the whole country was barred with quartz, in gravel of the same rock, and in veins which, protruding from the dark schist, suggest that it underlies the whole surface. Nothing more remarkable than the variety of forms and tints mingling in the mighty mass—the amorphous, the crystallized, the hyaline, the burnt; here mottled and banded, there plain red and pink, green and brown, slaty and chocolate, purple, kaolin-white; and, rarest of all, honeycomb-yellow. The richest part was at the *Majrá el-Kabsh* ("Divide of the Ram"), where we alighted and secured specimens.

On April 8 we reached our southern terminus, the Wady el-Hamz: it is a feature more interesting to the Royal Geographical Society than to the Royal Institute of Architects. I will simply refer the curious to my coming book on "The Land of Midian," and proceed directly to notice its remarkable ruin. The latter is known as the *Gasr* (= Kasr). *Gurayyim Sa'id* "Sa'id the Brave," was an African

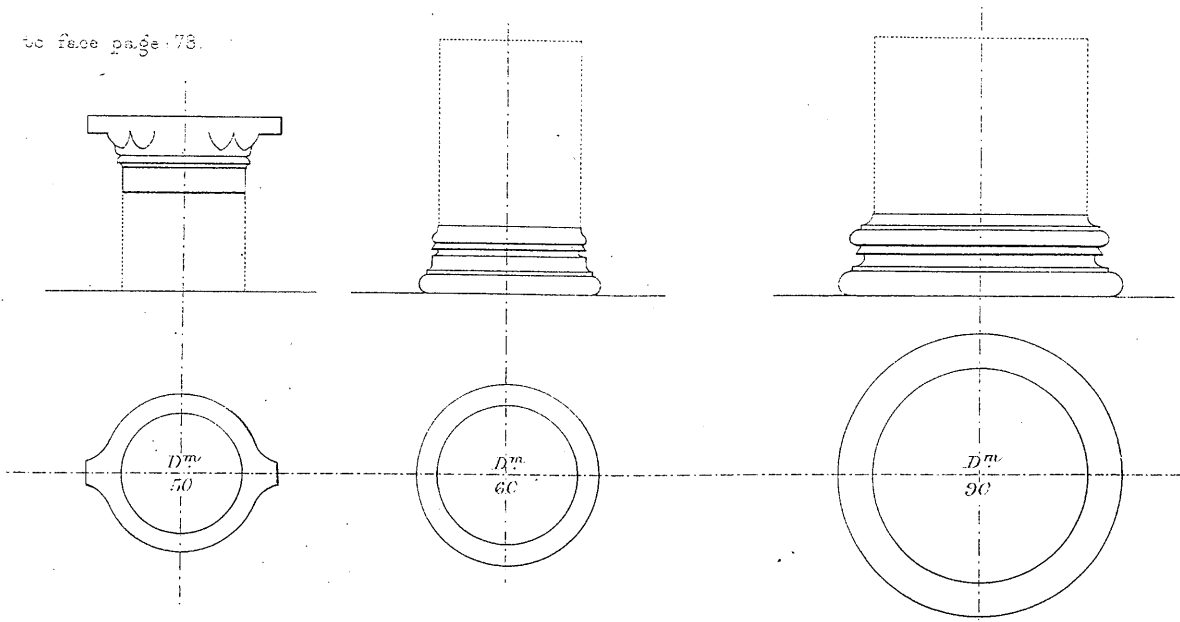
slave, belonging to an Arab Shaykh whose name is forgotten. One day it so happened that a *razzia* came to plunder his lord, when the black, whose strength and stature were equal to his courage and, let me add, his appetite, did more than his duty. Thus he obtained as a reward the promise of a bride, his master's daughter. But when the day of danger was past, and the slave applied for the fair guerdon, the Shaykh traitorously refused to keep his word. The Brave, finding a fit opportunity, naturally enough carried off the girl to the mountains; solemnly thrashed every pursuing party; and, having established a "reign of terror," came to the banks of the Hamz, and built the *Gasr* ("Palace") for himself and his wife. But his love for flesh-diet did not allow him to live happily ever after. As the land yielded little game, he took to sallying out every day and carrying off a camel, which in the evening he slew, and roasted, and ate, giving a small bit of it to his spouse. This extravagance ended by scandalizing the whole country-side, till at last the owner of the plundered herds, Diyáb ibn Ghánim, one of the notables celebrated in the romance called *Sírat Abú Zayd*, assembled his merry men, attacked the Gurayyim, and slew him. The site of the "Palace" is in north lat. $25^{\circ} 55' 15''$. It stands upon the very edge of its Wady's left bank, a clifflet some twenty-five feet high, sloping inland with the usual dark metal disposed upon loose yellow sand. Thus it commands a glorious view of the tree-grown valley, or rather valleys, beneath it; and of the picturesque peaks of the Tihámat-Balawíyyah in the background. The distance from the sea is now a little over three miles—in ancient days it may have been much less.

The "Palace" is, I think, a Roman building; whether temple or *nymphæum*, I had no means of ascertaining. The material is the *Rughám* or alabaster supplied by the Secondary formation; and this, as we saw, readily crumbles to a white powder when burnt. The people, who in this matter may be trusted, declare that the quarries are still open at *Abú Makhdár*, under the hills embosoming *Abá'l-Mará*. We should have been less surprised had the ruin been built of marble, which might have been transported from Egypt; but this careful and classical treatment of the common country stone, only added to the marvel.

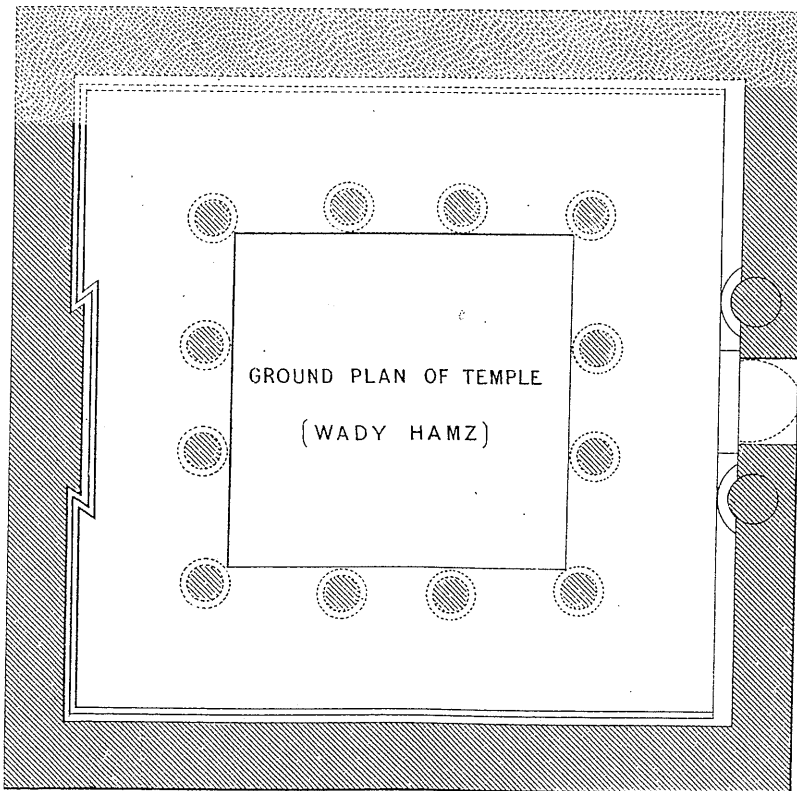
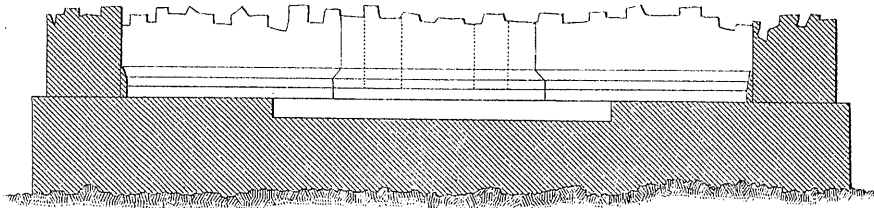
It must have been a bright and brilliant bit of colouring in its best days—hence, possibly, the local tradition that the stone sweats oil. The whole building, from the pavement to the coping notched to receive the roof-joists, is of alabaster, plain white and streaked with ruddy, mauve, and dark bands, whose mottling gives the effect of marble. Perhaps in places the gypsum has been subjected to plutonic action; and we thought that the coloured was preferred to the clear for the bases of the columns. The exposed foundations of the eastern and western walls, where the torrent has washed away the northern enceinte, show that, after the fashion of ancient Egypt, sandstone slabs have been laid under-ground, the calcaire being reserved for the hypæthral part. The admirable hydraulic cement is here and there made to take the place of broken corners, and flaws have been remedied by carefully letting in small cubes of sound stone. There are also cramp-holes for metal which, of course, has been carried off by the Bedawin, and the rusty stains suggest iron.

The building is square-shaped, as we see from the western wall, and it evidently faced eastward with 25° (mag.) of southing. This orientation, probably borrowed from the Jews, was not thoroughly adopted by Christendom till the early fifth century, when it became a *mos*. The southern wall, whose basement is perfect, shows everywhere a thickness of 0.95 centimètre, and a total length of 8 mètres 30 centimètres. At 2 mètres 87 centimètres from the south-western corner is a slightly raised surface, measuring in length 2 mètres 15 centimètres. Mr. James Fergusson supposes that this projection, which directly fronts the eastern entrance, was the base of the niche intended for the image. On each side of the latter might have been a smaller colonnette, which would account for the capital carried off by us to Egypt. Thus, adding 2 mètres 87 centimètres for the northern end swept into the valley, we have a

to face page 78.



ELEVATION OF RUINS.



Richard G. Burton

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length of 7 mètres 89 centimètres; and the additional half thickness of the east wall would bring it to a total of 8 mètres 30 centimètres.

The shrine was not *in antis*, and the site hardly admits of a peristyle; besides which, excavations failed to find it. That it might have had a small external *atrium* is made probable by the peculiarity of the entrance. Two rounded pilasters, worked with the usual care inside, but left rough in other parts because they could not be seen, were engaged in the enceinte wall, measuring here, as elsewhere, 0·95 centimètres in thickness. Nothing remained of them but their bases, whose lower diameters were 0·95 centimètre, and the upper 0·65; the drums found elsewhere also measured 0·65. The interval between the lowest rings was 1 mètre 63 centimètres; and this would give the measure of the doorway, here probably a parallelogram. Lying on the sand-slope to the north, a single capital showed signs of double brackets, although both have been broken off; the maximum diameter across the top was 0·60 centimètre, diminishing below to 0·50 and 0·44, whilst the height was 0·40. The encircling wall was probably supported by pilasters measuring 0·62 centimètres below, 0·45 above, and 0·11 in height. They are not shown in the plan; and I leave experts to determine whether they supported the inside or the outside. Several stones, probably copings, are cut with three mortice-joints or joist-holes, each measuring 0·15 centimètres, at intervals of 0·14 to 0·15.

The tossed and tumbled interior of this *maison carrée* exactly resembles the ruins of the Synagogue of Tel Hum, and similar localities published by the Palestine Exploration Fund. The pavement-slabs, especially along the south-western side, appear in tolerable order and not much disturbed; whilst further east a long trench from north to south had been sunk by the treasure-seeker. The breadth of the free passage is 1 mètre 92 centimètres; and the disposal suggested an inner peristyle, forming an *impluvium*. Thus the cube could not have been a *heroön* or a tomb. Four bases of columns, with a number of drums, lie in the heap of ruins, and in the torrent-bed were six, of which we carried off four. They are much smaller than the pilasters of the entrance; the lower *tori* of the bases measure 0·60 centimètre in diameter, and 0·20 in height (to 0·90 and 0·25), while the drums are 0·45, instead of 0·65. It is an enormous apparatus to support what must have been a very light matter of a roof. The only specimen of a colonnette capital has an upper diameter of 0·26, a lower of 0·17, and a height of 0·16.

Although the Meccan Ka'bah is, as its name denotes, a "cube," this square alabaster box did not give the impression of being either Arab or Nabathæan. The work is far too curiously and conscientiously done; the bases and drums, as the sundries carried to Cairo prove, look rather as if turned by machinery than chiselled in the usual way. I could not but conjecture that it belongs to the days of such Roman invasions as that of Ælius Gallus. Strabo* tells us of his unfortunate friend and companion, that, on the return march, after destroying Negrán† (Pliny, vi. 32), he arrived at Egra or Hegra (El-Wijh), where he must have delayed some time before he could embark "as much of his army as could be saved," for the opposite African harbour Myus Hormus. It is within the limits of probability that this historical personage‡ might have built the Gasr, either for a shrine or for a *nymphæum*, a votive-offering to the Great Wady, which must have cheered his heart after so many days of "Desert country, with only a few watering-places." Perhaps an investigation of the

* Lib. xvi. c. iv. § 24. The MSS. differ in the name of the "village situated on the sea;" some call it Egra, others Negra, after the inland settlement, and the commentator Kramer remarks, "Mire corrupta est hæc ultima libri pars."

† North lat. 26°, which would correspond with that of the Abá'l-Marú ruins.

‡ My friend Sprenger strongly protests against Ælius Gallus, begging me to abandon him, as the Romans must long have held the whole coast to El-Haurá, their chief settlement.

ruins at Ras Kurkumah and the remains of Madáin Sálíh may throw some light upon the mystery. In our travel this bit of classical temple was unique.

Mr. Fergusson, whose authority will not readily be disputed, calls the building a small shrine, and determines that it can hardly be a tomb as it is hypæthral. The only similar building known to him is that of "Soueideh" (Suwaydah) in the Haurán (de Vogüé, "Syrie Centrale," Plate IV.) The latter, which is Roman, and belonging to the days of Herod Augustus, has a peristyle here wanting; in other respects the resemblance is striking.

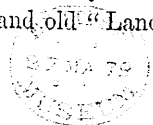
I will conclude this Paper with our discovery of the mine El-Marwah, the northernmost of the gold diggings known to the mediæval Arabian geographers, and mentioned by all who have described this part of Arabia. Leaving the "Palace" we struck northwards over the salt maritime plain, and a slow ride of eight miles placed us in a safe gorge draining a dull-looking unpromising block. A short and easy ascent led to a little counter-slope, the *Majrá Majayrah* (Mukayrah), whose whitening sides spoke of quartz. We rode down towards a granite island where the bed mouths into the broad Wady Mismáh, a feeder of the Wady 'Argah. Here, after some ten miles, the guide, Náji, suddenly halted and, in his showman style, pointed to the left bank of the watercourse, exclaiming, "Behold Abá'l-Marú!" ("the Father of Quartz").

To the east of our camp the open Wady Mismáh showed the ruins of a large settlement which has extended right across the bed; as the guides seemed to ignore its existence, we named it the *Kharábat Abá'l-Marú*. Some of the ruins were on a large scale, and one square measured twenty yards. Here the peculiarity was the careful mining of a granitic hillock on the southern bank. The whole vein of *Negro quartz* had been cut out of three sides, leaving caves that simulated catacombs.

We have now seen, lying within short distances, three several quartz-fields, known as—*Marwah*, "the single Place or Hill of Marú" (quartz); *Marwát*, "the Places of Quartz;" and *Abá'l-Marú*, "the Father of Quartz;" not to speak of a Nakb Abú Marwah further north. Schweinfurth (the *Athenæum*, July 6, 1878) also describes a "Wadi Abu Marwa ('Quartz Valley')" south of the African Galalah block. The conclusion forced itself upon me that the name of the celebrated Arab mine *Zá'l-Marwah* or *El-Marwah*, the more ancient *Μόχουρα* (Mochura), which Ptolemy places in north lat. 24° 30', applied to the whole district in South Midian, and then came to denote the chief place and centre of work. To judge by the extent of the ruins, and the signs of labour, this focus was at *Umm el-Karáyát* ("the Mother of the Villages"), which is surrounded by a multitude of miner-towns and *ateliers*. And the produce of the "diggings" would naturally gravitate to El-Badá, the great commercial station upon Nabathæan "Overland."

Thus *El-Marwah* would signify "the Place of Marú," or "Quartz-land," even as Ophir means "Red Land." A reviewer of my first book on Midian objects to the latter derivation; as "Seetzen, among others, has conclusively shown that Ophir, the true translation of which is 'riches,' is to be looked for in Southern Arabia." *Connu!* But I question the "true translation;" and, whilst owning that one of the Ophirs or "Red Lands" lay in the modern Yemen, somewhere between Sheba (Sabá) and Havilah (Khaulán), I see no reason for concluding that this was the only Ophir. Had it been a single large emporium on the Red Sea, which collected the produce of Arabia and the exports of India and of West Africa, the traditional site could hardly have escaped the notice of the inquiring Arabian geographers of our Middle Ages. The ruins of a port would have been found, and we should not be compelled theoretically to postulate its existence.

And now nothing remains but to thank you for this patient hearing; and to solicit your good wishes for the future welfare of the grand old "Land of Midian."



DISCUSSION.

THE PRESIDENT.—My friend, Capt. Burton, began by apologizing for reading in this room such a Paper as "The Remains of Buildings in Midian," because he said he thought there were few architectural remains in Midian. Those, however, who have read the author's description will have seen that he has discovered traces of buildings, which set one conjecturing in the most interesting manner as to what they represented and what they may have been in former times. Capt. Burton has given us a new pleasure in connection with what I may call an almost undiscovered land. Any general information he may give of a country which he alone has visited, must be of interest to us. The sentiments and ideas which ancient peoples and dynasties may be supposed to have entertained must, I think, interest architects. No apology was needed for reading this Paper. We were all pleased to hear it, and we have acquired information by having heard it and read it.

Captain BURTON, in answer to questions put by the President, by Professor Kerr, Professor Lewis, and others, made the following remarks:—

In reply to the question whether there are any remains existing in Midian anterior to the Romans, I may say we found one which I think may be distinctly assigned to the date of Herod Augustus; but most of the ruins are in such a state that they may be of any age. In the city of Maghâir Shu'ayb, which is the Madiâna of Ptolemy, there are remains of buildings in alabaster, which has crumbled into the semblance and the consistency of salt. Most of the coins found were imitations of the Athenian tetradrachm, shewing that there were "smashers" in those days. The most remarkable specimen of the coinage was composed of a thick piece of copper with a thin plate of silver over it. On one side is the well-known owl, while the other side is almost entirely obliterated. I have shewn the coin to the Royal Asiatic Society, and the supposed date of it is 300 years B.C. It might have been transported into Midian, but there is no reason for believing it was made there. With this coin we found others of a distinctly local origin, on which there were remains of the impression of the owl, but in a perfectly barbarous form, the head of the goddess being reduced to the appearance of a single eye.

My predecessor, Dr. Beke, in his book "Sinai in Arabia," speaking of the occupation of the land of Midian by the Egyptians, gives an account of how bars of copper were brought back, of so fine a quality as to look like gold. We found in several places old mines, which had been worked by the Egyptians so thoroughly that scarcely a scrap of metal could be picked out.

Beyond what I have already said, I could form no idea of the date or the purposes of the original buildings. In the "Book of Numbers," mention is made of the castles and goodly cities of Midian, and in those days I presume the face of the country was much as it is now. They had a long line of sea coast; they carried on agriculture and commerce, and the Bedawin brought down the traffic to the coast. With regard to the question whether anything in the native traditions or fables, which may have come under my notice, enabled me to go back to the origin of the buildings which I have described as being in shapeless ruins, the fact is most of the existing tribes are comparatively modern, and of half-Egyptian origin. The people of the southern and middle portions of Midian date from the Byzantine Empire. Mention is made by all Classical geographers of the Nabatheans, with regard to whom much difference of opinion exists; it is still a question whether they were not the original inhabitants of Babylonia. No doubt they were inhabitants of Edom or Idumæa, extending as far west

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as Petra, "The Rock." Most of these places have traditions attached to them. For instance, near the port of El-Muwaylah they shewed me a large slab of rock, with four marks upon it, which they hold to be hoof-prints. It was a lime-stone block, in which those appearances are not uncommon. It is related that in ancient days, when the pass was impassable on account of this rock, a man mounting a celebrated horse sprang upon the top, leaving the marks of the hoofs, and jumped down on the other side, a depth of 20 feet. There is a similar legend near the so-called Mount Sinai, and it is interesting for two reasons: firstly, it shews that in those days horses were bred in both countries; and secondly, in Ptolemy, the coast-range near the spot is mentioned as the Horse Mountain. There is no appearance in the configuration of the ridge itself to justify that appellation, so I suppose it was the tradition which suggested the name. Amongst the Arabs the mare was more thought of than the man; the modern Bedawin have forgotten the rider, but they remember the name of his horse.

I have received from my learned correspondent, Dr. Ad. Gurlt of Bonn, a book which is apparently very little known. It is the first which alludes to coal being burnt in Great Britain. It is a translation in Latin from the Greek hexameters of Dionysius Aphrus, a writer of the Augustan age, and states that gold is found in the mountains of Midian, and silver in the rivers. Other classics declare that there is a large extent of country in Western Arabia over which the precious metals were found. You will remember it has been asserted by Niebuhr and others that a mine of precious metal never had been found in Arabia, and this theory was accepted as late as the period of Sir Roderick Murchison's death.

Professor Lewis asks whether anything of a Druidical character has been found in the country? But I presume, as Mr. Fergusson is not here, the word "druidical" is used in rather a loose sense. True, I found circles in many places, and they are common in Arabia generally. One of my men promised to show me a dolmen, but he was not able to find it. I heard of only one existing in Midian; and it is said to be mounted upon three supports.

The President has remarked that it would be interesting if I were to inform you whereabouts the future treasures of this land are expected to come from. My answer is that I have no intention to monopolise them. I shall be happy to have as many shareholders as you please. There are two places where I should propose working. One is at Makná, about two thirds down the gulf of Akabah, in North Midian. There the whole mountain line, subtending the coast, is composed of quartz containing signs of gold, silver, iron and copper. The curious point is that when my late friend Dr. Beke was looking for his true "Mount Sinai," under the conviction that it was a volcano, he was much disappointed at not having found signs of plutonism. I may however state that we discovered a small volcano a little to the south of it. I would try a part of the coast with hopes of finding silver and copper; but for gold I should try South Midian. The whole strip of subtending coast is extensively covered with veins and cones of quartz. In one place a mountain has been so extensively mined that it has assumed the semblance of a crater. I should land at El-Wijh and take about a four hours' walk up the country, where it would be easy to make a tramway. You then come to a place where the old mine, still existing there, has been extensively worked. Whether the men of old were driven out by water I cannot say. Those who have the highest opinion of mining in ancient times confess that their pumps were very defective, and at the depth of 40 or 50 feet they might have been driven out by water. El-Marwah is mentioned by Mediaeval geographers as the northernmost mine in which gold has been found. I presume the whole of the gold came from that chain which runs down to Aden, and what we should call in India the Western Gháts.

GOLD IN MIDIAN.*

NIEBUHR, the traveller, who was not wholly ignorant of Arabian literature, should have been better informed when he asserted "the precious metals are not found or known to exist in Arabia, which has no mines, either of gold or silver" (Description de l'Arabie, p. 124, Amsterdam, 1774); and as Niebuhr's reputation rose high, his dictum has been universally accepted by the writers, scientific as well as popular, of the last half-century.

There could be no greater mistake. Dr. Ad. Gurlt, of Bonn, a *savant*, who is preparing for publication the "History of Mining and Smelting," remarks, in a letter addressed to me, that Midian shows (in literature) traces of the industry which, under the Phœnicians, Egyptians, Romans, Nabathæans and Arabs, has lasted nearly 2,000 years. He has kindly forwarded the following notes upon his authorities.

Moses (B.C. 1452) mentions, among the metals which were purified by fire after being plundered from the Midianites, *tin*, an ore of the greatest importance, considering the part it plays in the bronze arms, instruments, and implements of ancient nations. In Numbers xxxi. 22, we find—besides tin—gold, silver, brass (copper?), iron, and lead. All these metals were rediscovered by the second Khedivial expedition to Midian.

Ramses III. (B.C. 1000) of the twentieth dynasty, in the eleventh year of his reign, opened the great mines of copper in the land of 'Athaka ('Akabah). According to the Harris papyrus (Brit. Museum), translated by Eisenlohr, the ore was yellow as gold (pyritic copper?), while the Sinai diggings yielded only Mafkat, green copper ore (= chrysocolla). You will find the description in Dr. Beke's "Sinai in Arabia," and my coming work, "The Land of Midian (Revisited)," will copy the original hieroglyphs.

Dionysius Aphrus, a Greek geographer of Augustus's day, and interesting to us because he is the first classic that notices our coal treasures, declares of Arabia behind the Libanus and in the Nabathæan country, "Ideoque ipsa regio tantis hucusque floruisse muneribus dicitur, ut ejus montes *aurum* pariant, et flumina convehant argentum, eorumque ripæ Thymiamate et fragrantibus herbis redolent, atque qui ibi victitant maximas possident opes, neque induunt nisi paludamentis aureis, aut sericis quam mollissimis. Verum qui primum Libani montis fontem tenent, ipsi sunt qui Nabatheï sunt appellati." From this it is evident that Northern Arabia was meant. (Translated by the Veronese Antonius Becharias, and printed by Henricus Paulus at Basel, A.D. 1534, p. 53.) Pliny only says of Arabia, "Litus Hammæum ubi *auri* metalla" ('Nat. Hist.,' iv. cap. 32).

Hieronymus, Bishop of Phœno, who was present at the Council of Ephesus in A.D. 449, declares that condemned Christians and other convicts were compelled to work at the copper mines of North-western Arabia. Phœno is the Phunon (or Punon) of the Book of Numbers (xxxiii. 42), a place lying four miles south of Dedan, between Zoar and Petra, and alternately belonging to Idumæa (Edom) and to Arabia Petræa. He says "Sunt autem montes *auri* fertiles in deserto procul undecim mansionibus a *Choreb* [Horeb, the so-called Mount Sinai], juxta quos Moyses scripsisse perhibetur; sed et metalla æros Phæno [he also calls copper "metallum Fenum"], quod nostro tempore corrui; montes venarum *auri* plenos olim fuisse vicinos existimant."

* An account of Dionysius Aphrus, addressed by Capt. Burton to *The Athenæum*. By the courtesy of the Editor of that journal, the letter is permitted to appear here simultaneously.

Eusebius of Cesarea, the "Father of Ecclesiastical History" (A.D. 264-340), in his account of the persecutions of Diocletian and Maximin (A.D. 303-310), states that many Christians were condemned to the mines, "ad metalla eruenda damnati sunt"; and, "Præses provinciæ omnes ad aeris metalla, quæ sunt apud Phœnum Palestinæ damnavit" ('De Martyr Palest.,' cap. 7).

That the Arabs worked the gold mines of Egypt we know from El-Idrisi, from Abulfeda, and from the Cufic inscription of the Khalif El-Mustakfi b'illah. A.D. 989. The old diggings have been admirably described by Linant (de Bellefonds) Pasha; and those of Coptos have lately been explored by the Egyptian staff. In my coming volumes I shall attempt to prove that those of North-western Arabia were also worked, and that tailings have been washed, perhaps, even in the present day.

Thus we have reason to believe that the mines of Midian have been known to the world for the last 2,500, and possibly for 3,000 years. You will ask, Has not the country been exhausted? and I reply not one-thousandth part of the quartz reefs has been touched. The ancients laboured with great skill and care; but, as Dr. John Percy says, water was generally an insurmountable obstacle to ancient workers proceeding *downwards* in their mines.

A correspondent who visited 'Akabah in 1864, and who wandered three months over north-western Arabia, informs me that he considers Midian a gold-field *par excellence*. The richest reefs would be in the neighbourhood of the sporadic and outlying volcanoes which, all now extinct, appear to have been connected with the Harrah, or great plutonic band subtending the coast. The northernmost of these centres he would place 9 miles south of 'Akabah along the eastern coast of the gulf, and the second 93 miles from the northern head, and some 3 miles inland from the corner of the gulf and the Red Sea. A third would be near the Jebel el-Abyaz ("White Mountain"), the great vein of quartz described in the "Gold Mines of Midian." The fourth and last great reef lies 5 miles inland and 30 miles south of the entrance of the Gulf of 'Akabah. This would place it near the central item of the three Jibâl el-Kibrît ("Sulphur Hills"), whose peculiarity is that of being plutonic, whilst the two others contain the metal diffused in gypseous chalk.

It has also been brought to my attention that the celebrated Arabist, Fulgence Fresnel, detected signs of metallurgy in Midian. Wellsted in 1838 visited the site marked "Fayrabat" on the hydrographic chart, lying about five hours' walk east of Wjih el-Bahr, popularly called "Wedge," the former quarantine ground of the pilgrims returning from Meccah. He descended the shafts and explored the galleries, but he converted the quartz into limestone, and he did not perceive that he was in a gold mine. Fresnel, who followed him on April 28th, 1844, was escorted to the spot by the chief of the Baliyy clan, and at once distinguished the old workings, glass fragments and slag scattered around the ruins. The curious reader will refer, for his travels in this part of Arabia, to the "Erdkunde," Part xiii., third book, "West-Asien," second edition, 1847. Carl Ritter compiled his account from three sources: (1) *Revue des Deux Mondes*, 1839, tomes, xvi. and xvii., F. Fresnel's "L'Arabie Vue en 1837-38"; (2) *Journal Asiatique*, 4me série, séance 1840; and (3) "Lettres Manuscrites sur l'Arabie," written after 1838 to M. J. Mohl, of the Academy, Paris. In a foot-note (p. 5) Ritter says that these letters were lent to him by M. Mohl, and during the last twenty years they have probably been published.

Fresnel calls the place Umm Hafirât or the "mother of diggings," a title well deserved, as the quartz hill has been honeycombed by the ancient miners. Shaykh Afnân, chief of the Baliyy tribe, to whom the land belongs, assured me that the ruins were known as Umm el Kârâyât, or "mother of the villages," because surrounded by minor remains of such settlements, and this I personally ascertained to be the fact.