

Geology and Archæology of the Hadhramaut, South-west Arabia

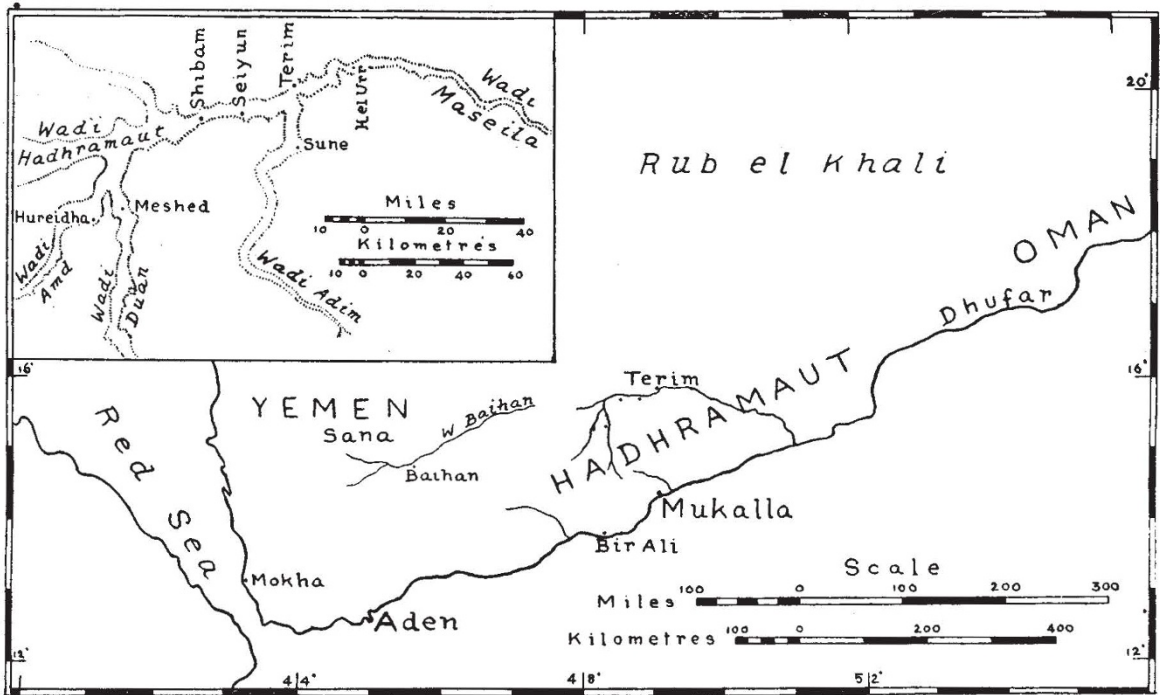
Preliminary Notes on the Lord Wakefield Expedition

By Miss G. Caton-Thompson

ON September 18, 1937, Dr. S. A. Huzayyin gave a preliminary account in *NATURE* of the results of the Egyptian University Scientific Expedition to the Yemen and Hadhramaut. It may be advantageous, therefore, also to record in brief the geological and archæological results of

facts. Consequently all relics of pre-Islamic habitation, irrespective of date, were welcomed, provided only these were found in association and *in situ*.

The Wadi Hadhramaut from Terim westwards for more than forty miles seemed at the points



the Lord Wakefield expedition, which worked in the western part of the Hadhramaut last winter. The party consisted of Miss Freya Stark, whose knowledge of the country and language made scientific work by her two companions possible in a land still unaccustomed to, and suspicious of, Europeans; Miss E. W. Gardner; and myself.

The geological work was limited to the Pleistocene, and was concerned mainly with the physiography of the mighty wadi system, with special reference to dating and past climates.

Archæologically, we were confronted by a land of romantic traditions centring round the incense trade, of which the early material culture was virtually unknown, and which consequently had tended to become a dump of untested theory not unusual in regions where literary and epigraphical records have been unpartnered by archæological

examined to be of slight importance for any but early Islamic sites, though rock-engravings and accompanying rude scrawls in the South Arabian characters* were found, rather scantily, at certain points. An unrecorded pre-Islamic site near Shibām, probably of little value, was noted but not dug.

Geologically also, the main wadi proved unprofitable in this stretch, for though its scree-slopes yielded numbers of palæoliths, no deposits harbouring them *in situ* were found. If gravel terraces exist, they are deeply blanketed by great deposits of æolian silt which floor the valley, and drown the lower talus slopes.

In the Wadi Amd, a northward-draining major tributary of the Wadi Hadhramaut, where shortly

* It seems better to avoid the terms 'Himyaritic' and 'Sabean' or their compound, until they are chronologically and geographically defined by archæological method.

before Christmas we settled in the little town of Hureidha, luck changed, and we were kept busy with a superabundance of material and its systematic excavation.

GEOLOGY*

The Wadi Amd is two to three kilometres broad, and is floored, like the main valley, with a gently sloping fine æolian silt, a deposit partly wind-, partly water-laid. Bordering the main flood channel, gravel is exposed, both in terraces and interbedded with the silt. These we were anxious to date, for after the original cutting of the valley to some unknown depth the deposition of gravel and silt were the most important events in its history. There are three terraces. The highest and best developed lies at ten metres above the wadi floor; the lower ones are laid against it at five and three metres.

The ten metre terrace is distinguished from the others by the æolian silt interbedded in it, and in places overlying it. This is identical with the silt of the valley floor; and the finding of tools, both in it, and more abundantly in the gravels, dates the infilling, or at least the upper part of it, to palæolithic times. The implements, specially numerous in the ten metre terrace, belong to the Levalloisian culture, but unlike many of their relatives in Egypt, in Palestine, or others as geographically near as Somaliland, these Hadhramaut tools are crude in workmanship, and undifferentiated in type. Here no succession of stone-age cultures breaks the monotonous continuity of the Levalloisian tool-making. Hand-axe cultures seem to be absent (the Egyptian expedition found one specimen in the Yemen); likewise the blade and burin industries, of which the route into Africa may therefore not be sought via Southern Arabia as many, including myself, had believed. Wherever we searched, on the high plateau or jōl, on the spurs and scree of the Wadi Hadhramaut, in the lateral valleys, the Levalloisian type of tool alone was found, and in great numbers. It seems as though its manufacture must have persisted in these parts long after Africa and the Near East had progressed to more advanced stages of stone-age development. An obsidian industry of small blade cores and geometric forms was indeed found; but this was proved conclusively to be historic, and at most not older than a few centuries before the Christian era—a conclusion already reached by Dr. Huzayyin.

The Egyptian expedition had traced in the Yemen a series of pluvials in prehistoric times, and a minor oscillation in the historic period, the latter based on archæological evidence such as dry wells

and empty tanks. We cannot say we found indications of greater rainfall in the Hadhramaut in historic times; but on the evidence of the palæolithic gravels, it seems indisputable for part of the Pleistocene.

That the æolian silt deposition in the valleys is due to climatic rather than to local physiographic causes, such as ponding by lava flows in the lower reaches of the main wadi, seems assured also by our observation of similar deposits choking the shallow valleys on the high plateau, far removed from the influence of Wadi Hadhramaut, and lying between it and the sea. Climatic implications were extended further by the discovery of Pleistocene travertines crowded with vegetation; these, which were dated by derived pebbles in the ten-metre gravels, may throw interesting light on the past flora of the country.

If the upper part of the filling of these great wadis trenched 300 metres in the limestone plateau, is Middle to Late Pleistocene, it is evident that the original cutting is pre-Quaternary. The climatic changes of the European Ice Age with which the cutting of the Hadhramaut valleys had formerly been correlated, affected only the nature and amount of their subsequent infilling and re-cutting.

ARCHÆOLOGY

The work, which was necessarily of an exploratory nature, was centred on Hureidha. It covered the chief aspects of pre-Islamic activities in the region, and yielded information concerning domestic dwellings, irrigation works, and places of worship and burial.

No reliable information could be had beforehand as to prospects of getting labour for digging, and difficulties had been prophesied. It was a surprise, therefore, to find a sufficiency of recruits for the unfamiliar work. They were, on the whole, intelligent and agreeable to direct, and compared well with similar untrained labourers in the Near East.

Irrigation and Houses. At first glance the ruin-field, intermittently scattered over about ten square kilometres of the loess-like plain, looked uninviting. Its noticeable feature was a large number of fairly evenly spaced stone-rubble heaps, which sprang from bare wind-swept ground. Detailed mapping proved them to be relics of a big irrigation system. In this respect, fortune had economized her resources, for it so happened that Miss Gardner, some years ago, had mapped a Ptolemaic irrigation system discovered in the desert Faiyum. Comparison of the two systems will be an interesting study in ancient man's ingenious inventions in both regions to turn a desert into a fertile plain on a scale seldom initiated to-day.

* I am indebted to Miss Gardner for the geological notes.

The source of the water was the monsoon summer rain; the flood was led off the main channel far above the irrigated area, and carried to it by a canal 16–20 metres broad, still discernible in the sandy waste. From this, numerous smaller channels distributed the water in a network of runnels.

There was no evidence that a town or even a village had existed amongst these fields now desert. But some knolls smothered in sand showed, by a scatter of sherds, that house foundations, singly or in clusters, lay beneath. One such homestead was excavated, and disclosed a five-to-six roomed mud-brick building, formerly limewashed, fitted with mud-brick benches. Logs of wood reinforced the door-treads, and the ceiling had been constructed in the fashion still practised in the region, of twigs laid in parallel bundles across rafters and over-daubed with mud. Few objects except broken pots were found here, but the form of these, supported by inscribed fragments, served to equate the dwelling with the temple and tombs we excavated near by.

The Temple. The temple, the first of its kind to be excavated in South Arabia, which was completely buried in drift, stands in the formerly cultivated plain. It is an oblong structure 17 metres \times 20 metres in size, set on a raised platform capping a natural eminence, with its main façade on the south-west. From here the ground falls sharply to a depression or basin, the artificial origin of which is attested by a bordering throw-up of clayey silt, now greatly weathered, but still impressive in extent. We noted a similar depression at the foot of the unexcavated temple-mounds at Meshed, and surmise that these basins may form an integral part of temple plans in South Arabia.

The podium is faced by massive stone-rubble walls, four to five metres high, and half a metre thick, set on a batter of 7°. Twenty-one courses of roughly shaped sandstone blocks, bonded and mortar-bedded, still stand, topped by a coping of huge ashlar blocks of rusticated work with drafted borders. The interior was levelled up by a dry filling of great boulders. A top dressing of small mortar-laid pebbles formed the bed of a flagged pavement, which still lay intact over a considerable area.

Little remained of the superstructure except the stumps of five tapering blocks with square bases set in parallel alignment which may be the remains of thin columns*, or aniconic objects; and vestigial partition walls of polished lime-plaster of finest quality, in part recessed. These define a forecourt giving access to the main 'pillar' area through a narrow flagged passage and entrance.

* Columns are an important feature in pre-Islamic temples in Yemen (cf. Rathjens and Wissmann, "Südarabien Reisen". Band 2. Hamburg, 1932.)

Structural evidence was obtained for at least three phases of building, rebuilding or readaptation, which finally raised the platform floor above that of the podium coping, and extended the original building by important additions to the south-west front. These are referred to in one of more than fifty inscriptions found; and interesting light may be thrown on rebuilding activities and their authors' names, when all have been studied by Prof. Ryckmans of Louvain, who has most kindly undertaken the task.

The temple platform was reached by two stone stairways. One, the older and more important, though even so not part of the original structure, gave access from the south-east; its base widened out to nearly three metres, and an inscribed slab had been carelessly reutilized in a tread. The other, later, stairway, only a metre wide, approached via the south-west angle. Built into it also were several discarded inscriptions. Both these flights took off from a circumambulatory pavement considerably above the surrounding level of the original building. Sherds were collected in test pits down to 2.80 metres below this pavement.

There is reason to suppose that the building was originally wholly plastered; pavings, stairways and partition walls were certainly thus faced. Whether the rubble retaining walls were treated in the same way is uncertain but not improbable.

Clearance of the very interesting peripheral buildings crowded round the temple base had, of necessity imposed by time, to be confined to those lying at the foot of the south-west façade, itself added in the latest period. A 'temenos' area was therefore not delimited. The cluster of outlying buildings was, however, of outstanding interest, for it included a pair of perfect, and remains of other imperfect, apsidal structures of small size, characterized by a central free-standing, altar-like stone, surrounded by a low kerb or by a bench of flat slabs, rectangular on three sides, convex on the front.

That these places, though amongst the latest additions, were shrines of aniconic religion seemed proved; for standing erect against the base of one such 'altar' were two baetyllic stones, one rudely fashioned from a stone-brick into human form, the other a symmetrically tapered, rough-dressed, stone. Both were carefully embedded upright in plaster, and before both were placed stone incense-burners of rectangular form, stained red and patterned, as well as earthenware saucers and a stone offering-tray.

The temple, referred to in one of the dedicatory inscriptions by the name of Madabûm, was devoted to the worship of the Moon God, whose name occurs on all the inscriptions so far examined

by Prof. Ryckmans, and whose symbols appear also on funerary pottery and stone. To that deity burnt offerings were made in fire-altars.

The inscriptions must belong to the earlier periods of the building's existence, for the large number actually *in situ* were obviously in secondary, and not original, positions. Some indeed had been built-in upside down or sideways to the lettering; others were exposed only on removal of a plaster-coated floor or step; yet others lay beneath the circumambulatory pavement, or had been ruthlessly cut down to fit their new position. Traces of a red staining like that on the incense-burners were repeatedly observed upon them.

Of considerable interest in this context is a graffito of a running camel with outstretched neck, resembling in style many of the naturalistic rock-drawings sometimes rashly assumed to be of prehistoric age.

The Tombs. Those examined lay in the lower slopes of the cliffs some half-mile from the temple and dwellings, the general contemporaneity of which was proclaimed by the pottery common to all. They consisted of artificial caves quarried back into the sloping talus, and were roughly circular cavities of varied size; the couple excavated measured 8 metres in diameter by 2.40 metres in height. Drift and cave-rubble filled them almost to their ceilings. One example had low benches cut in the walls to receive the corpses singly, or in double-decked loculi. This tomb was entered by a narrow down-sloping dromos 5 metres long, cut into the cliff side; passage and entrance had been skilfully repacked with scree, difficult to distinguish from the natural undisturbed article. The cliffs here seem to be riddled with cave tombs, a few of which have been cleared by bedouin and reused as dwellings or goat pens. Others have been partially plundered and abandoned.

The second cave-sepulchre examined amplified and corrected the deductions drawn from the first. It contained one bench only, upon which a skull and single bone rested amongst a group of ten pots, shells and miscellanea. But here, unlike the other tomb, the floor itself presented an astonishing mass of sherds and pottery vessels—sixty more or less complete ones were recovered, some inscribed—mixed up with forty-two skulls, disarticulated and fragmentary bones, and simple grave goods. It seemed at first legitimate to infer very complete plunder of a communal tomb by contemporary robbers. But this in no way explained the singular disproportion gradually observed in the parts of the skeletons present. For example, whereas this chamber contained forty-two skulls, it yielded only seven lower jaws, and these mostly in fragments. A theory of fractional

burial seemed beside the mark, for the confusion exceeded the bounds probable in any pious practice. It seems preferable to invoke the explanation of an ossuary. In the first place the population, as evidenced by the loculi caves visited, buried their dead in family sepulchres. Over a fairly prolonged period (during which the temple was twice altered) an insufficiency of suitable tomb-sites within reasonable distance or permitted limits developed. The older tombs were cleared of their mouldering bones and grave goods, and these were unceremoniously redeposited *en masse* in an ossuary. Future work will test the validity of this interpretation, which on present data seems best to fit the facts.

Twelve skulls alone were complete enough for preservation. They are markedly long-headed, and uniform in type, but along with the other finds await detailed study.

Viewed as a whole, the semi-civilized culture thus brought to light near Hureidha can lay no claim to be in the vanguard of progress of its period. Pronouncement on the date must be reserved; it probably lies within the last few centuries before the Christian era. Apart from the irrigation system, imitation is more apparent than initiative. The pottery is monochrome, hand-made and clumsy, though fairly ambitious in form. Debased amulets of Egyptian derivation were cherished, and seals denote intercourse with Syrian or Babylonian regions. The beads, on the other hand, contain Eastern as well as East Mediterranean elements, and should, when expertly examined, yield their quota of evidence to an interesting story.

An exhibition of the finds will be held at the Fitzwilliam Museum, Cambridge, by the courtesy of the director, Mr. Louis Clarke, during the meeting of the British Association in August, and will form the first authenticated group of archaeological material from the Hadhramaut obtained in excavation.

The expedition was primarily made possible by the generosity of Lord Wakefield, to whom archaeologists must be under a debt of gratitude for the acquisition of entirely new data; and it received also invaluable support from the Royal Geographical Society, from Mr. Louis Clarke on behalf of his Museum, and from the Ashmolean Museum, Oxford. Our thanks, moreover, would be incomplete without acknowledgments to the International Federation of University Women, from which Miss Gardner holds a senior science fellowship enabling her to join the expedition; and finally to Mr. Ingrams, First Political Officer to the Hadhramaut, and to Mrs. Ingrams for their cordiality and kindness.