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On the cover: an 18th-century map of the Holy Land, by Eman. Bowen.

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Editorial

The first thing readers will notice about this, the sixth volume of our *Bulletin*, is the changed format. This has been introduced because so many excellent research papers have been submitted this year that the editors have achieved their long-desired goal of publishing a journal which is not simply a record of the lectures we hear during the year, but also one which the academic world will find of use, and which the library of any institution dealing with the antiquity of the Near East will need to have on its shelves.

Our future policy will be to encourage scholars, and especially the younger generation who often find it hard to publish, to submit papers for inclusion in the *Bulletin*, and we hope to be able to select among British, Continental, North American and Israeli research for publication. To further this aim the editorial board has been enlarged to include Shimon Gibson as a full member. He will have special responsibility for book reviews. In Israel we have also appointed Eliot Braun to the board. He is a field archaeologist with the Israel Department of Antiquities and Museums. Members will remember the paper he gave us last year on his excavations at the site of Yiftaḥel (see *BAIAS* 1985–6, pp. 17–26). He has agreed to act on our behalf by receiving and forwarding material for publication, and we owe him thanks for doing so. Anyone who wishes to submit a paper for the board's consideration is invited to send it to one of the addresses printed inside the front cover.

We are proud to present a paper by our late President and a Society founder, Dr Richard Barnett, as the first in this new format. We owe this to the kindness of his widow, Barbara, and to his literary executor, and one-time colleague at the British Museum, Dr John Curtis. Dr Curtis has pointed out that the paper is not in as full and finished a form as Richard would have wished had he lived; nevertheless the subject: 'Six Fingers in Art and Archaeology', is one which was dear to him and on which he had, indeed, lectured. It is fitting that the Society which he founded a quarter of a century ago should publish it in a journal which was his dream-child, and we are not only delighted to do so, but grateful for the opportunity to his heirs.

Subscriptions to the *Bulletin* are increasing, as is membership of the Society. The Committee would like to welcome new members and invite them to make themselves known when we meet for lectures. Meanwhile, we hope that they enjoy this volume of the *Bulletin*. We have made new friends both in and beyond London. We have held several joint lectures with other Societies, including our now annual one with the Palestine Exploration Fund, and also with the West London Synagogue's Social and

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Cultural Group, the Anglo-Israel Association (together with the British Israel Arts Foundation) and with the North-West Reform Synagogue's Adult Studies Department. We also participated with the Institute of Jewish Studies in the panel discussion on the Dead Sea Scrolls at the School of Oriental and African Studies, in which several eminent scholars took part. Outside the capital we forged links with the West Midlands branch of the Friends of Israel, when Professor Ussishkin, and later in the year Professor Gichon, lectured to them in Birmingham. We hope to increase our association with them in the coming year and to provide lectures for other branches elsewhere. We also arranged one faculty and one public lecture for Professor Ussishkin in Manchester, and since these were most successful, we shall be expanding such arrangements in the future. This is one very useful way of increasing the Society's activities, and we do hope that members who live outside London will be able to attend some of them. We also hope to organize a lecture tour of the United Kingdom for an Israeli scholar, via the good offices of Ruth Kohn and the British Israel Arts Foundation, with whom a relationship which has proved productive on both sides began last year.

As this issue goes to press, the Society's Jubilee Archaeological Tour of Israel is girding its loins to set out. The tour is to be led by Roberta Harris, the Society's Honorary Secretary and one of the Editors of the *Bulletin*. Judith Littman, our Organizing Secretary, will also be on the tour and hopes, she says, to learn something about the archaeology of Israel at last. To prove that she is too modest by far we propose to test her on her return!

Much has been achieved this past year, but much still remains to be done. We still have not the funds to give as many grants as we would wish to students, and the Silver Jubilee Appeal Fund is still open for further contributions. The programme of lectures outside London needs to be further expanded and the Committee is also thinking of ways to broaden our appeal to the public. If any member has good ideas on the subject, or is willing to help with this project, please contact us via the office (address inside the front cover). The *Bulletin*, in spite of an increased circulation, is still not able to cover all its costs, so that once again the financial assistance of Mr John Day of Auto-Wrappers Sales Ltd is greatly appreciated by all of us. In June members of the Committee were pleased to have the opportunity of expressing to him the thanks of all of us, by presenting him with a finely bound copy of the first five volumes of the *Bulletin*. Since without him we still could not survive, it seemed an appropriate way for us to thank him.

It is pleasant to end on a note of optimism: the Society is going from strength to strength, subscriptions to the *Bulletin* are growing in number, and new ways of increasing our activities are constantly being tried, with a great measure of success. All in all it has been a good year for us and members of the Society may be assured that the Committee will not cease its efforts to make the coming year even more successful than the last.

Shimon Gibson Roberta L. Harris Jeremy Schonfield

Six Fingers in Art and Archaeology

R. D. BARNETT

The editors include this paper by a society founder, Chairman and President, the late Dr Richard Barnett, in the knowledge that it is not presented in as complete a form as he would have wished. Dr John Curtis of the British Museum, who is Dr Barnett's literary executor, has kindly agreed to allow us to publish it in the form it was left at his death last year.

In Dostoevsky's *Brothers Karamazov* there is a long and rather moving account of the servant Masha to whom a child is born with six fingers. He rejects it in the belief, it seems – we are not told which hand was affected – that it comes from the Devil, and Masha spends the rest of his time reading religious books.

The phenomenon of six fingers or toes (polydactylism) in ancient art and archaeology is one which has received no attention from scholars, although it can clearly be shown to have existed in art, and to merit such attention.

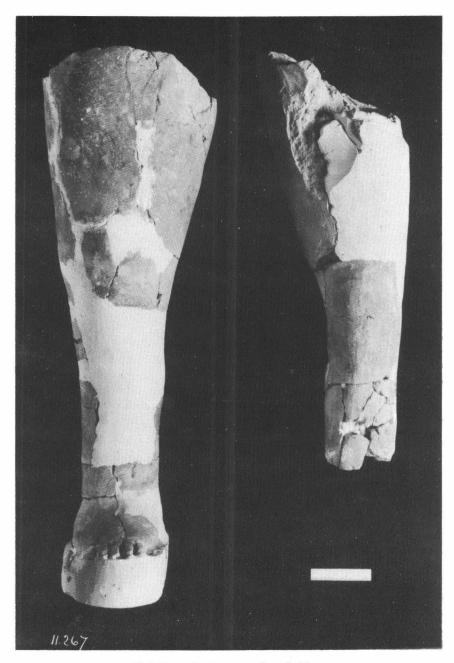
Polydactylism is in fact a common and inherited genetic abnormality, especially in closely interbred communities. It is less commonly encountered today, as cosmetic surgery in Western countries is applied to it frequently at birth.

In the ancient Near East it clearly attracted much attention and interest. Priests and sorcerers in Mesopotamian areas were consulted as to its significance at birth and incorporated their conclusions formally in the Assyrian collection of omen texts called *šumma izbu*. This collection is particularly valuable inasmuch as it provides us with an explicit commentary on the views of ancient people on the phenomenon at that time. It shows us that in Mesopotamia the birth of the six-fingered child was held to be a favourable sign if the extra finger was on the left hand. The omen then promised prosperity and wealth. If, however, it was on the right hand, dire consequences might be expected. So we obtain the equation: left hand – good; right hand – evil.

Examples in art or archaeology known to me are:

- 1 A foot of a clay statue, from the Neolithic temple at Jericho² (six toes) (Plate 1).
- 2 A life-size Neolithic clay statue from Ain-el-Ghazzal, Jordan³ (six toes).
- 3 A figure of a seated steatopygous female from Hagar Qim, Malta, c. 2200 BCE, National Museum, Valetta (six fingers on both hands).
- 4 A Cycladic marble idol, Ashmolean Museum, Oxford, from Naxos⁴ (six fingers on both hands).
- 5 In Egyptian art, in a broken statuette found at Akko in 1977, ascribed to the thirteenth dynasty, early second millennium BCE.

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Pl. 1. Foot of a clay statue from Jericho.

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- 6 In North Iran we meet it in about the twelfth century BCE in the folk art of Marlik, in a pair of clay naked figures, male and female. They have six toes on each foot.
- 7 In the Levant, on some bronze Syrian figures representing an armed god.6
- 8 On some of the clay sarcophagi from Deir el-Balah, near Gaza, twelfth century BCE.⁷
- 9 In the Iron Age, in some of the bronze figures affixed to cauldrons, possibly of North Syrian or East Anatolian manufacture.
- 10 On some figures carved on tridachna shells.8

All these sporadic representations are on the divine or semi-divine plane. We read in the Bible⁹ that David's nephew, Jonathan, son of Shimei, in an episode resembling that of David himself with Goliath, also slew a 'giant' in Gath (or, according to I Chronicles XX:4, in Gezer). This 'giant' (Hebrew rapheh, plural: rephaim) had six fingers on each hand and six toes on each foot. It seems clear, therefore, that in the Levant, polydactylism was considered to be a mark of identification of Rephaim. But who are the Rephaim? From the Ras Shamra texts they are shown to be divinized ancestors who receive worship along with a major deity in cult ceremonies.¹⁰

As we have said, six fingers are occasionally shown on the hands of the winged 'siren figures', as they are sometimes called in Germany. These figures of bronze (or Henkelattaschen), usually in the form of girls – but occasionally male and even twoheaded, with outstretched arms, and the wings, body and tail of a bird - were originally fixed in pairs or fours to the rims of bronze cauldrons. These cauldrons were manufactured probably in Eastern Anatolia or North Syria – or (less likely) Urartu – in the ninth or eighth centuries BCE. Over seventy such winged figures are known, recovered from ancient sites as far distant as Etruria in the west, and as far east as Soviet Armenia. Many have been found in Greece, particularly at Olympia, and the type was eagerly imitated by early Greek bronze-smiths. 11 Of the seventy or so oriental examples, two at least show six fingers on the right hand (Olympia A1, A12), as do two of the Greek imitations (A19 c), whereas A20 goes one better, sporting six fingers on the right, but seven on the left. None of the publications, as far as I have noticed, even comment on these peculiarities. The learned authors probably never noticed them. I have suggested elsewhere that they represent Rephaim in some ritual invited to drink from the cauldron. 12

Sometimes the ancient artist can hesitate and be inconsistent in this matter of polydactylism. In a gold square plaque from Ziwiyeh in Northwest Iran (seventh century BCE) a hero despatches a lion with a dagger held in his right six-fingered hand.¹³ But other square metal plaques depicting the same subject, apparently once part of the same object, do not appear to show this abnormality. However, the photographs available are not too clear.

Nevertheless, it is clear that interest in polydactylism and its significance surfaced strongly in the Near East in the third and second millennia BCE spreading to the Cyclades and Malta. The earliest example appears to be the fragmentary portrait statue (no. 5 in the above list) of an Egyptian of the thirteenth dynasty, found by



Pl. 2. Painted mummy cloth from Alexandria in Museum of Art and Archaeology, University of Missouri.

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chance near Akko. It shows unmistakable traces of six fingers on his right hand. In the art of Egypt in general, however, I have not observed it. But we are now once more down more or less firmly on the human plane. The same may be said of two examples in the clay sarcophagi of quasi-Egyptian character of the thirteenth century BCE which have been excavated at Deir el-Balah near Gaza, Israel. One of these was formerly in the collections of Moshe Dayan, now acquired by the Israel Museum. It shows a man with six fingers on the left hand. Another, published by T. Dothan from Tomb 116, is indistinct in details, but was clearly meant to be polydactylous. So, although polydactylism is most often recorded in divine or heroic representations, it clearly occurred often on a real or human plane, and accordingly is illustrated in the portrait art of mummy paintings in Hellenistic Egypt. A painted mummy cloth from Alexandria, now in Missouri, shows a woman with six toes on each foot (Plate 2).

In Greece in the eighth and seventh centuries BCE, the so-called 'Orientalizing period', many Oriental motifs are imitated. It comes therefore as no surprise to meet a clay figure of a Centaur from Lefkandi in Boeotia with six fingers on his right hand. ¹⁴ His discoverer suggests that he is Cheiron, the wise teacher of Achilles (perhaps by way of a play on his name and its derivation from *cheir*, a hand).

In Malta, as already noted, the motif of polydactylism goes back a long way. It occurs on the representations of steatopygous females. Small examples are of clay, and one – unfortunately broken – exists, which unmistakably has six fingers on each hand like the Naxian lady, is about 4 inches high and belongs to the Tarxien phase, about 2200 BCE. Her six-fingered hands would have been deemed a grave sign in Assyria, but we do not know its significance here or in Naxos: but some special powers are evidently suggested by this exceptional feature.

I have no further evidence to offer until we return to the Near East in areas peripheral to Mesopotamia in the Middle and Late Bronze Age. Thus in Iran in the thirteenth century BCE we have the twin figures from Marlik which have six toes on each foot, the hands being unclear. Another important piece of evidence is a crude bronze 'pinhead' or 'standard' of Luristan type from West Iran of about the ninth century BCE in the Foroughi Collection. It depicts a naked male and female figure – perhaps they are connected with the Marlik pair. He is clearly polydactylous, with six or seven fingers on his left hand, but as to his female partner, no information is at present available to me, and the catalogue description is insufficient.

From then on, the ancient world of art was conquered by the Greek ideal of the perfect human body, and the motif of polydactylism disappears save in the far west. The legend of Cuchullain, the Irish hero of the Ulster cycle who is supposed to have lived in the first century CE, claims that he had seven toes on each foot and seven fingers on each hand, plus seven pupils to each eye.

The motif of six fingers, however, re-emerges into the full light of canonical Western art in the late Middle Ages. At the pilgrim centre of Maria-Laach in Austria is a painting of c. 1440, much venerated by cripples, known as 'die Maria mit den sechs Fingern'. She has six fingers on her right hand. A Spanish statue in wood of St John the Baptist dated 1609, with six fingers on the right hand, exists in the church of St John in Oud Valkenburg, Holland. A fine painting, attributed to Maerten van

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Pl. 3. Detail from a painting by Maerten van Heemskerck of Alkmaar, in Hatfield House.

Heemskerck of Alkmaar, and now at Hatfield House in the Marquis of Salisbury's collection, shows Adam and Eve seated before the Tree of Knowledge, in which lurks the serpent. Adam raises his left hand which has six fingers and points his index finger (Plate 3). It has been suggested that these figures are portraits, painted for the marriage in 1516 of Andries van Oudhoorn and Wilhelmina Paling; but this is not certain.

More clear are the accounts of another contemporary, Ann Boleyn, Henry VIII's unhappy Queen whom he beheaded on charges of high treason and adultery and who, according to a slightly later and hostile witness, Nicholas Sanders (1575), in an anti-

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Protestant work, had six fingers on her *right* hand. Without saying in so many words that she was a witch, he certainly implies she was an evil influence.

In Malta the motif slumbered on, to be revived in the early sixteenth century CE in a now unfortunately headless limestone statue of St Paul with six toes on the left foot. Its pedestal is dated MDCIX and is in the Collegiate Chapter of Rabat, St Paul's Parish Church. The motif re-emerges in an eighteenth-century fresco in the refectory of the Catholic Seminary in St Chalcedonius Square, Floriana, where, in illustration of the visit of Nebuchadnezzar's steward to Daniel and his companions, as described in *Daniel* I:1–12, Daniel is pointing with his left hand to the food and drink which they reject. On his hand can be clearly seen six fingers, no doubt indicating his supernatural powers, since in the immediately following chapter we have his interpretation of the king's dream.

It is noteworthy that it was in Malta that the eminent biologist, Professor Thomas Henry Huxley, found the examples on which he based his study of polydactylism in his famous review, in the *Westminster Review* of April 1860, of Darwin's *Origin of Species*.

We also find traces of this strange phenomenon in Etruria. The religion and art of the Etruscans in the eighth to sixth centuries BCE were very receptive to Oriental influences. They possessed great interest in dark and mysterious cults, particularly about the after life and underworld, and followed Oriental patterns in evolving elaborate funerary rituals surrounded by magic practices and beliefs. In the Tomb of the Augurs at Corneto (Tarquinii), of the late sixth century BCE, we have a lively figure of a bearded dancer – he represents Phersu, the demon of death – shown brandishing a six-fingered left hand; and that this is done in a spirit of realism seems indicated by the fact that in the same tomb and as part of the same scene a dancing girl is shown making the 'sign of the horns', the index and little finger raised, to avert the *jettatura* or the Evil Eye emanating from Phersu – a gesture that is or was recently still known to the Italian peasantry.

Notes

- 1 '54 If a woman gives birth, and [the child] has six fingers on the right hand poverty will seize the house of the man.
 - 55 If a woman gives birth, and [the child] has six fingers on the left hand [the mother] is endowed with prosperity; [the man's] adversary will die.
 - 56 If a woman gives birth, and [the child] has six fingers each on its right and left hands the descendants [of the house] will be poverty-stricken.
 - 57 If a woman gives birth, and [the child] has six toes on its right and left feet the descendants of that house will be scattered.
 - 58 If a woman gives birth, and [the child] has six toes on its right foot [the child] is endowed with worrying.
 - 59 If a woman gives birth, and [the child] has six toes on its left foot [the child] is endowed with [...].

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- 60 If a woman gives birth, and [the child] has six fingers [and toes] on each of its right and left hands and right and left feet the land will live undisturbed.'
- (Erle Leichty, The Omen Series Šumma Izbu [Texts from Cuneiform Sources IV, New York 1970] 59.)
- 2 J. Garstang, LAAA XXII (1935) 166-7, pls LII-LIII.
- 3 Gary Rollefson, ASOR Newsletter 35/2 (Nov. 1983) 3.
- 4 Ashmolean Museum 1946. 118. Ch. Zervos, L'art des Cyclades du début à la fin de l'âge du bronze, 2500-1100 avant notre ère (Paris 1957) pl. 47.
 - 5 E. Negahban, A Preliminary Report on Marlik Excavation (Tehran 1964) pl. XI.
- 6 H. Seeden, *The Standing armed figurines in the Levant* (Munich 1980) p. 20, nos 56, 57; p. 21, no. 64. I am obliged to Dr G. Falsone for drawing my attention to these examples.
- 7 Israel Museum 82.2.833 (Left hand: 6 fingers); 82.2.828 (Left hand: 6 fingers). T. Dothan, Excavations at the Cemetery of Deir el-Balah (Oedem 10, Jerusalem 1979) 32.
 - 8 R. A. Stucky, The engraved tridachna shells (Dédalo XIX, São Paulo 1974).
- 9 'And it came to pass after this that there was again war with the Philistines at Gob: then Sibbecai the Hushathite slew Saph which was of the sons of the giant. And there was again war with the Philistines at Gob; and Elhanan the son of Jaare-oregim the Bethlehemite slew Goliath the Gittite [I Chron. 20: 5, the brother of Goliath], the staff of whose spear was like a weaver's beam. And there was again war at Gath, where there was a man of great stature, that had on every hand six fingers, and on every foot six toes, four and twenty in number; and he also was born to the giant; and when he defied Israel, Jonathan the son of Shimei David's brother slew him. These four were born to the giant in Gath; and they fell by the hand of David, and by the hand of his servants.' (II Sam. 21: 18–22.)
 - 10 G. R. Driver, Canaanite Myths and Legends (Edinburgh 1956) 66-71.
- 11 H.-V. Herrmann, Die Kessel der orientalisierenden Zeit (Olympische Forschungen VI) Berlin 1966.
- 12 R. D. Barnett, 'Sirens and Rephaim', in J. V. Canby et al. (eds), Ancient Anatolia: Essays in Honor of Machteld J. Mellinck (University of Wisconsin Press, 1986) 112-20.
 - 13 R. D. Barnett, BMQ XXVI (1962-2), pl. Lb.
 - 14 M. R. Popham, L. H. Sackett and P. G. Themelis, Lefkandi I (London 1979) pls 251-2.

The Rural Dwelling House in the Hebron Hills and Building Tradition in Palestine

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The following article deals with the characteristic features of the traditional house in the Hebron Hills, as revealed by a survey lasting from late 1978 till late 1980. Research comprised interviews with the inhabitants, detailed surveying, and many photographs of architectural details in houses and courtyards. Some ten dwellings were studied in depth.

In the late 1960s, an emergency survey was conducted in Aşvan, a village in Central Anatolia, in an area about to be inundated by the waters soon to rise behind the Keban Dam on the Upper Euphrates. The survey was part of a project directed by the British School of Archaeology in Ankara and was an attempt to compare the material culture of Asvan with finds from excavations in the area. The basic conclusions of this research were: 'The domestic architecture within a subsistence economy system is viewed as being a fundamental and very immediate expression of the basic, functional requirements which arise from the inter-relationships and interactions between man, his activities and the set of environmental constraints they operate within. It therefore provides a basic point of reference for the study of this system and the factors which react upon it . . . The present-day architecture within the Asvan region remains a very basic and immediate architectural expression. It may be seen as the continuation of a very ancient building tradition, as many features of form, material composition and constructional methods have remained relatively unchanged for thousands of years' (Hall et al. 1973, 245, 268). These remarks are highly relevant to our work in the Hebron Hills. Our survey focussed on the architectural components of the house, including the outer walls, the interior space and the courtyard, together forming an organic unit in which the daily activities take place.

The selection of houses was based on two main criteria: (1) construction prior to the British Mandate in Palestine, or at least before concrete and metal beams came into use; and (2) preference was for those houses which were still inhabited. These conditions were not easy to fulfil. The transition from traditional stone to concrete, which began in the 1920s, has greatly increased in pace in recent years and is almost complete. In few cases did we find houses from the Turkish period still occupied. In some cases we had to be content to deal with houses that had not long been vacated and were still used by the family in some manner. Thus, with the assistance of verbal

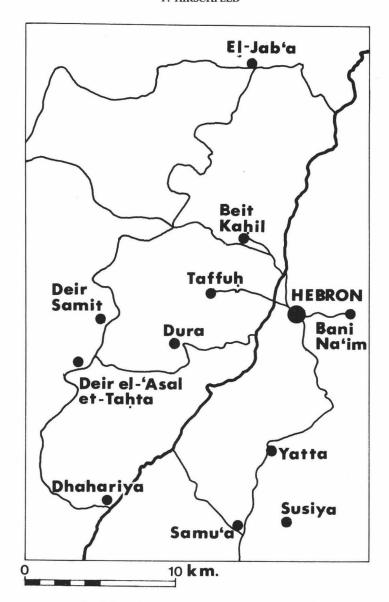


Fig. 1. Location map showing the villages surveyed.

descriptions and explanations, we were able to complete the documentation of a house.

Our principal aim was to document the fast-disappearing traditional dwelling culture. The urgency of this survey became more apparent both by the number of derelict stone houses found in the centre of most villages and by the number of

dwellings deserted within the time of our survey, some of which were destroyed to make way for new concrete houses.

The villages in which our surveys were conducted were (fig. 1): Deir el-'Asal et-Taḥta, Deir Samit and El-Jab'a on the western flank of the Hebron Hills; Beit Kaḥil, Taffuḥ and Dura on the high plateau; Dhahariya, Samu'a, Yatta and Bani Na'im, at the edge of the arid zone.

Apart from the traditional houses, we surveyed two additional buildings: a 'guesthouse' (maḍāfeh) in Bani Na'im and a traditional house in the town of Hebron. These buildings, especially the one in Hebron, complete the general picture of traditional dwelling patterns in the Hebron Hills. Previous studies (see below) enabled us to conclude that the picture portrayed in the Hebron Hills is largely representative also of other regions in Palestine.

The survey of the houses and interviews with the inhabitants, held in Arabic, enabled us to draw a relatively faithful picture of the house and the way of life within it. Our main difficulties lay in documenting building methods once employed but no longer practised. For this we had no choice but to consult other sources and attempt a reconstruction.

We first interviewed a number of veteran builders in Hebron and its vicinity. This helped to clarify not only technical details, but also to discover the character of the builders and their status within the society. A second source was several studies devoted to this subject. The first and most important is the extensive research by Gustav Dalman on crafts and customs in Palestine. The seventh and final volume, published after his death in 1942, is devoted to 'the house'. It contains detailed information on many houses from the period of Turkish rule in Palestine. Another study on traditional private dwellings, focussing mainly on folklore and the terminology related to the structure, is that of Tewfik Canaan (1933). For our purposes, the most relevant sections are those dealing with the various building procedures. An article by the architect Jacob Pinkerfeld, published in 1943, is also significant concerning building materials and methods.

Construction Practices in Local Building

Studies devoted to traditional Arab building highly commend the pleasant appearance of the houses (Ragette 1974, 32). This was largely determined by the character of the master mason, the *m'allim bannâ*. In building the rural house, only one paid professional builder was employed. Manual labour was supplied by members of the family and village. The master builder was thus responsible for all aspects and stages of the building: the general design, layout of the area to be built on, stone dressing, construction of the walls, and especially the casting of the roof, including the preparation of the frame and scaffolding (Canaan 1933, 25).

The recognized importance of the builder was expressed by Osman Shahid, erstwhile municipal engineer of Hebron, in an interview: 'A house was built without a plan, neither on paper nor on the site. The master builder arrived and it was he who built the house. The profession passed from father to son. In Hebron, for example,

there is a master builder who is familiar with traditional construction in Hebron. His name is Abu Heikal, and his two sons are also builders.'

Our interview with Abu Heikal was also very instructive, revealing the pride he held in his profession: his grandfather was a builder, and so was his great-grandfather. His father too was a builder and so are his two sons. They also 'work in stone' – are stone-dressers, including the dressing of decorative stones. He would return from work tired, and his bed would be prepared and the covers spread out, but he would stay up drawing profiles for stones. For him, masonry was a pleasure; it was his hobby. At the time of the interview he was seventy-four years old and still working. He earns a living by supervising and advising. If, for instance, someone wishes to convert an old building into a shop, he is called on for advice. Seeking no self-praise, he humbly states that he is the only 'master mason' in all Hebron. 'My father knew everything. He had a few rules and I, Abu Heikal, remembered them, and merely added to them.'82

The similar basic building plans and construction methods in the Hebron Hills produced the uniform architectural appearance of the houses there. However, more detailed comparison between houses reveals a great variety of building types, in part due to the builders' ability to adapt the plan to the demands of the particular house owner. Two or three basic types of dwelling were popular among the architect-builders and the peasant-customers. Certain of the building principles described below recur in every house.

As a rule, the traditional houses in the Arab village encompass a single room (Pinkerfeld 1943, 140). Internal division is effected by changes in level – the entrance, on the level of the courtyard, with a living level higher up and behind. The entrance level provides shelter for animals – fowl, sheep and cattle. The presence of animals in the house is a feature known also in Lebanon (Ragette 1974, 19) and in central Anatolia (Hall et al. 1973, 248). The entrance always opens onto the courtyard, generally to the east of the house, to obtain a maximum of morning sunlight, as well as protection from the perennial westerly winds. There is usually just one entrance into the interior, serving for both lighting and ventilation. Windows are built only when the living quarters are higher than the entrance to the house.

In all the houses surveyed, the foundation courses were laid directly on bedrock. The use of bedrock as the sole foundation of a house was a decisive factor in locating villages on rock exposures atop hills or on slopes (Dalman 1942, 47). The external walls of the traditional house were built solely of stone and its by-products. Bonding materials – plaster and lime – were produced on the spot, often by the family itself. The ceiling was also of local materials – timber beams, branches and brush. The walls, at least 1m thick, ensure stability and provide strong support for the roof. The method of constructing the walls readily allowed for thickening. The faces of the wall were built with medium-to-large stones (sometimes in secondary use). The space between the two faces was filled with a mixture of small fieldstones and mortar. Such thick walls had several advantages: (1) They facilitated building to some height (the average height of the houses surveyed ranges between 4 and 5m). Elevation of the ceiling allowed the living level to be raised at least 2m above the lower level. (2)

Cupboards and recesses could be built within the thickness of the walls, for storing most of the household accessories and utensils. (3) They provide excellent insulation, both thermal and acoustic (Pinkerfeld 1943, 125).

Building Procedures

Construction usually took place during the dry summer season. According to Canaan (1933, 22) it was customary to install a cistern in the courtyard a year prior to building. The family would assemble and gather the necessary materials. The process was described for us by a resident of Bani Na'im: 'Several of the family would go out into the hills and bring suitable stones back on camels. The stones were dressed here [on the building site]. The lime was prepared outside the village, in a pit dug in a wadi, where there was wood and brush. Every day, the women would bring fuel – wood and bramble - and the men would actually make the lime. The entire family would work for four or five days. The lime was brought to the site in sacks on donkey-back. At the same time, the building stones were brought. When everything was ready, the master mason was hired, and he would work alone, with no other professional help... He would plan the house himself, without any drawings. The external dimensions were laid out with a cord of standard length. The walls were marked out by wooden pegs, placed at the four corners of the house. The perimeter of the house was then marked with a string, stretched from peg to peg. They then dug along the string until bedrock was reached. On the bedrock they would begin building.'83

With the completion of the walls, the first phase of building came to an end. Sometimes weeks or even months would pass by before the roof was cast (Canaan 1933, 38–9).

Roofing Methods

Two methods of roofing were traditional in the Hebron Hills: a flat roof supported by transverse stone arches and wooden beams, or stone vaulting.

Flat roofing In ancient times, in this region, roofing consisted generally of wooden beams placed across the space between the walls of the house. A layer of rough plaster was spread over a network of branches laid on the beams. From Hellenistic times on, stone construction facilitated expansion of the roofed-over area by means of large wooden beams. In the Byzantine period a method long known in the Hauran and Negev was widely used: transversal stone arches were built at the same time as the walls of the house, taking the place of wooden beams as the main supporting element of the flat roof (Segal 1983, 40–1, note 10). There was little change in this method until recent times.

The main disadvantage of timber in roofs was its difficult preservation and maintenance. Dampness collecting in the upper earth layers of the roof would lead to decay and, from time to time, a roof or part of it would collapse. This was probably the prime reason behind the preference for stone vaulting.

Vaulted roofing Most of the traditional Arab houses in the Hebron Hills were roofed with cross-vaults. The construction of such vaults was relatively expensive and complicated, but advantageous because of its durability. The many-storey houses which have stood for hundreds of years are clear evidence of this.

A cross-vault is actually two barrel vaults set at right angles and crossing each other. The pressure and weight at the top is equally dispersed to the four corner pilasters supporting it (Acland 1972, 70–8). Such a roofing method is especially appropriate in the hill-country, where wood is in short supply, and stone abundant. Cross-vaults built of local materials made possible larger rooms within a single, unimpaired space. These factors led to a definite preference for cross-vaulting in the Hebron Hills.

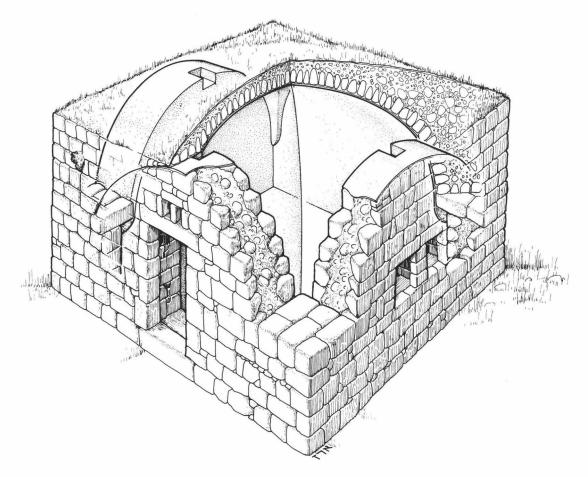


Fig. 2. An isometric drawing of a house built of stone with a vaulted roof (drawing by Erez Cohen based on Canaan 1933, Fig. 5).

The construction of vaulted stone houses is divided into two stages: erecting the external walls, and 'casting' the roof (fig. 2). The former culminates in four walls, each capped by a semi-circle. Canaan (1933, 38, Fig. 5) graphically describes this stage, referring to such semi-circular walls as *hlāl*, that is 'a wall like a crescent'. At the corners of these 'crescent' walls, four pilasters are integrated to support the vault. These pilasters are often constructed of large stones. In some cases a single large stone is seen protruding somewhat from the wall, emphasizing the transition from the pilaster to the springing of the vault. In houses of average size, four corner pilasters generally sufficed; in larger houses, however, additional supporting pilasters were required in the middle of the walls.

Constructing the vault, of course, was begun only after the crescent-like exterior walls had been completed. The vault proper was built on a large dome-like frame $(t\bar{u}b\bar{a}r)$ made of branches, brushwood, straw, rubbish and even old mattresses (Canaan 1933, 39–40; Dalman 1942, 49; Pinkerfeld 1943, 149). The entire mass of the frame was raised to the proper height by scaffolding. This was made up of a central pole (in Arabic, 'arūs, 'tent-pole') with eight horizontal wooden beams stemming out from it, four of them leaning on wooden supports (djaḥš, i.e. 'foal') in the corners and four resting in recesses at the top of the 'crescents'.

Constructing the roof required a long day's work, and assistance not only from the family but also from many villagers. The procedure is well described by Canaan: 'Men, women and boys are seen busily active. Some carry 'uqqād (brick-like stones): or rather, a man on the floor throws such a stone to another who stands on a ladder, and this to a third on the roof. Thus the 'uqqād are seen flying continually from one hand to another. Some workers bring tīneh (mortar) and others hand the material to the m'allim and his assistant. During the whole work they are heard singing joyfully. In their songs they praise the hospitality of the master of the house, the cleverness of the m'allim and the readiness of the inhabitants of the village to help' (1933, 41). A photograph illustrating this manner of constructing a roof, in the village of Beit Nequfa (el-Naquba) in the Judean Hills, was published by Dalman (1942, abb. 23).

El-Jab'a

Having described in general the methods and stages of construction of the traditional house in the Hebron Hills, we shall now give a more detailed account of a specific house. The stone house, in El-Jab'a village, is built on the southeast slope of the village. The present owner is a widow, between 70 and 80 years old, now living alone in the original family house, which was built about sixty years ago. About twenty years ago, with the growth of the family, her son built another stone house abutting the southern wall of the original house. Four or five years ago, another storey was added to it, of cast concrete (pl. 1). Today the son and his family live on the first floor, while the ground floor is used as a store room. The owner remained in the original house and, despite her age, strives to take care of the interior and the courtyard in front of it.



Pl. 1. El-Jab'a: a traditional stone house with a new extension, next to the main path of the village.

The Courtyard The house was built next to the main path of the village, which climbs to the top of the hill. As this path is public domain, a stone fence was built between it and the house, varying in height between 1 and 2m; its average width is about 1.2m. The entrance to the courtyard, located about 8m from the house, was poorly built, and is in fact little more than a break in the stone fence (fig. 3).

The natural bedrock surface of the courtyard is lower than the level of the path, four steps facilitating the descent. The carelessly built steps are merely an addition to the natural steps in the bedrock. The large courtyard measures about 8×15 m. On the west it is bordered by the front of the house, and on the east by a large, now-ruined $t\bar{a}b\bar{u}n$ (oven) structure. Next to the oven is a mulberry tree, dominating the southeast corner of the courtyard. In the southern part of the courtyard there had been a vegetable garden until the additional stone house was built there. The location of the courtyard, east and south of the original house, is characteristic of almost all the houses surveyed.

The natural bedrock floor of the courtyard was levelled off with tamped earth and gravel. Paving was laid down only at the entrance to the house, the flagstones probably serving to prevent the accumulation of water in front of the doorway in winter. About 3.6m in front of the house is a subterranean cistern, fed by runoff from the roof.

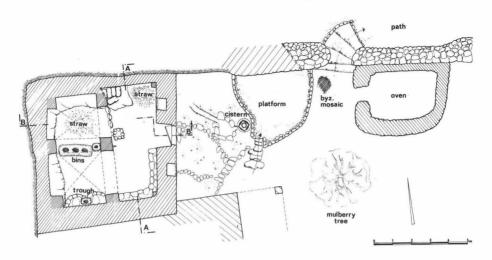


Fig. 3. El-Jab'a: plan of the house and its courtyard.

A large platform between the cistern and the fence serves as a dining and entertaining area throughout the year, and as a sleeping place for the entire family on hot summer nights. It is built of fieldstones, is 1.3m high and is reached by seven narrow stone steps. Triangular in shape, and bordered by a low stone curb, its surface is of well-polished white plaster.

The simple building technique of the platform, and its adaptation to the way of life in the courtyard, indicate a lack of prior planning. It was probably built by the owner himself. All the accessories in the courtyard – fence, cistern, $t\bar{a}b\bar{u}n$ and other installations – were made after the completion of the house itself.

The $t\bar{a}b\bar{u}n$ in the eastern part of the courtyard is a typical feature. It is oval in shape $(4 \times 5m)$, with walls 0.9m thick at their base. Today it is no longer in use, and the women employ a neighbour's $t\bar{a}b\bar{u}n$ for baking. The ruinous state of the $t\bar{a}b\bar{u}n$ enabled its construction to be studied. The walls were dry-built of fieldstones. Special care was taken over the opening, which is low and narrow (about $0.7 \times 0.7m$). The actual $t\bar{a}b\bar{u}n$ was located inside. The structure surrounding it protected it against wind and rain, and enabled year-round use. This also made possible the utilization of inferior fuels, such as dung, instead of precious wood. (The development of this type of $t\bar{a}b\bar{u}n$ seems to be connected with the decline of the forests in Palestine, beginning in Arab times, see: Avitsur 1976, 113.)

In the area of the courtyard entrance, in front of the $t\bar{a}b\bar{u}n$, a small section of a Byzantine mosaic was uncovered, indicating much earlier settlement on this spot. Many of the building stones may well have originated from that time.

Various installations along the exterior front wall of the house are an integral part of the courtyard. To the left of the doorway is a niche, about 0.8m above the floor, measuring $1 \times 0.6m$ and 0.5m deep. It is used for storing a variety of vessels connected with courtyard activities, such as wash buckets, cooking and work utensils,

and the like. To the right of the doorway, at about the height of the lintel, a massive stone hook juts out from the wall. An identical hook was found in the same location in a house surveyed at Taffuh. According to the owner, the hook was used to 'hang up sheep after slaughtering'.⁴

These installations illustrate the inseparable relation between house and courtyard. Much of the housework is done outside in the courtyard. In summer, the house is virtually relegated to the role of storeroom for food and utensils, the family spending both day and night in the courtyard.

The House In outer appearance, this house resembles most other traditional homes, simple and unadorned. It is square in plan, measuring $8 \times 8m$ externally (fig. 4). The walls are a maximum of 5.1m in height, with a thickness ranging between 1 and 1.2m. The inner and outer faces of the walls are built of stone courses, with a fill of earth and rubble between. Apart from the door-frames, the stones are crudely dressed. The inner faces of the walls and the ceiling are covered with thick, coarse plaster. The outer faces were left unplastered.

The foundations of the house were laid directly on bedrock, the mason artfully exploiting the natural differences in height. The foundations of the northern and

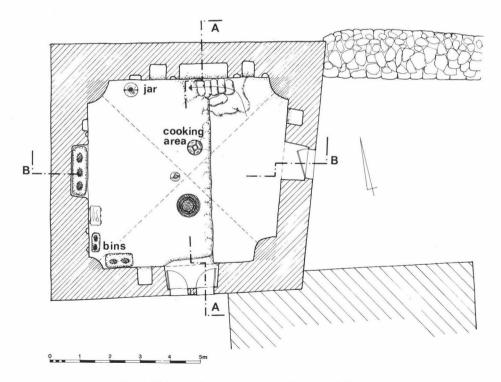


Fig. 4. El-Jab'a: plan of the upper living area of the house.

western walls are about 1.8m above the lower floor level, this difference being utilized to raise the living level (fig. 5, Section BB). The rock floor within the house is a direct continuation of that of the courtyard. The surface was slightly hewn away and levelled with tamped earth and gravel (a type of paving suitable only in storage areas).

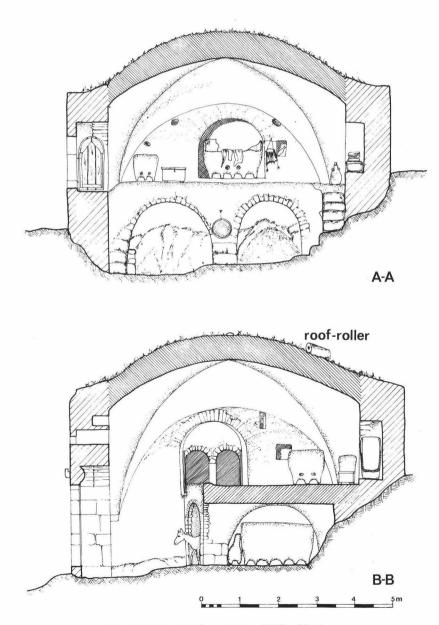


Fig. 5. El-Jab'a: Sections A-A and B-B of the house.

The entrance $(1.3 \times 2.9 \text{m})$ to the house – located in the middle of the front wall – is arched, widening out towards the interior. The threshold is built of two long, well-dressed stones, forming a sort of step. The doorpost stones are carefully dressed and well fitted. The door opening is 1m wide – the measurement probably not being accidental and following a standard unit. (During the survey it became clear that this standard unit of 1m was used mainly in the construction of the openings. Most of the entrances measured conformed to uniform dimensions: width, 1m; height, about 2m. A standard unit adhered to by both the builder and the carpenter was necessary for the entrances, to ensure that the wooden door would fit the stone doorframe.)

The lintel was built of especially dressed voussoirs. The door itself was of wood, shaped to fit the opening. The hinges were fixed on the left doorpost. In use, the door was mostly left ajar to enable maximum penetration of light. This was supplemented by a small opening above the doorway, also providing ventilation when the door was shut.

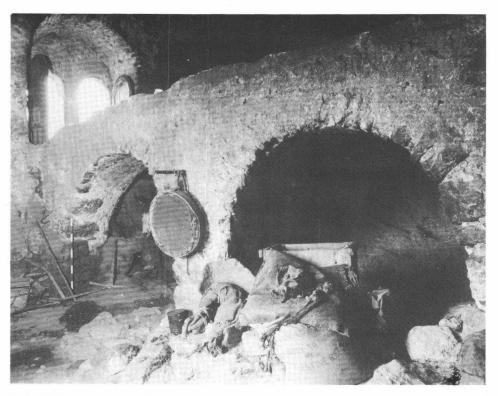
The ground floor of the house is arranged, in accordance with its function, as storeroom, granary and stable. The area just within the entrance is used mainly for storing tools, while the back part, occupying about two-thirds of the floorspace and covered by the upper, living level, is used for storing food and keeping animals (pl. 2).

Inside the entrance, to the left, next to the wall, is a low stone shelf 0.5m wide. Opposite it, in the corner to the right, a natural step in the bedrock is utilized for placing straw and fodder for the animals. A storage niche is built into the wall to the right of the doorway, 0.7m above the floor and measuring $0.6 \times 1m$ and 0.5m deep. In addition, nails and hooks jut out from the walls, used for hanging various objects including a large sieve, on the front wall of the living level.

The space beneath the living level is divided into two areas by two clay bins (for grain), placed between the back wall and the central pilaster supporting the upper level. The southern space serves as a stable for a donkey and as a chicken-coop. There are two troughs along the southern wall, built of small fieldstones and covered with a mixture of clay and straw. They are 0.6m wide and 0.7m above the floor. The space below them was utilized for the chicken-coop. Another bin exists between the two troughs. A large pile of straw is stored in the northern space. In front of the pile, towards the entrance, large sacks of food are stored on a raised stone surface. Although the surface is poorly built, it serves as a barrier for the pile of straw behind it

Upper living levels of this type vary from house to house. Sometimes they are built solidly and do not exceed a metre in height (as in houses surveyed in Taffuḥ, Dhahariya and Deir el-'Asal). In other cases they are built on stone vaults (as in this house and those surveyed in Beit Kaḥil and Bani Na'im). The living level in this house is 2.4m above ground level and is reached by stairs adjoining the northern wall (pl. 3). Five engaged pilasters and a freestanding pillar support the vaulting.

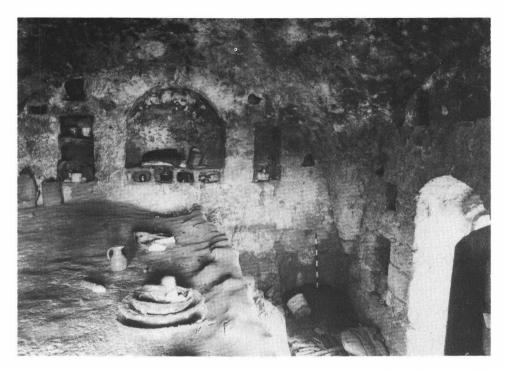
The living level here is quite wide $(4.1 \times 6.2\text{m})$, covering an area of about 25m^2 . According to the owner, about ten people lived here. An interesting feature revealed by the survey was the crowded living conditions prevalent in the traditional rural house. This is illustrated by the following table, in which the area is compared with



Pl. 2. El-Jab'a: the area immediately within the entrance to the house (towards the southeast). The ground floor area was open and used for the storage of various tools. The area below the arches served as a granary and donkey-stable.

the maximum number of occupants. (The data are based on interviews held in each house; although such a source is 'problematic', the consistently high number realistically reflects a mode of living common in Arab villages at the beginning of the century.)

Village	Area of Living Level (in m²)	Maximum Number of Occupants
Deir el-'Asal	30.2	15
Deir Samit	20.0	16
El-Jab'a	25.2	10
Taffuḥ	20.2	12
Beit Kahil	40.0	25
Dhahariya	28.5	20
Samuʻa	40.0	20
Bani Na'im	27.5	15



Pl. 3. El-Jab'a: the domestic area of the house (towards the north). The niches in the walls were used for storing cooking vessels. The stairs are against the north wall.

The average number of persons to a house appears to be 17. This conclusion could change previous scholarly assessments concerning population numbers in antiquity (in relation to this subject, see Broshi 1975).

The floor is well smoothed with thick white plaster. The polished floor lends the living area a feeling of homely cleanliness, in contrast to the rough rock surface of the ground level. The living level was originally lit by a large window in the middle of the southern wall, at floor level. This was a double-arched window (each arch of which is 0.6m wide and 1.1m high), divided by a well-dressed monolithic stone pillar. The stones of the window-frames are carefully dressed. Beneath the window-ledge is a drainage hole. The window itself is inserted within a large vaulted recess (1.8m wide and 1.9m high), the lower part of which is just a few centimetres below the living level. The arch of the niche is built of voussoirs, while its sides widen inwards, enabling the wooden shutters to be opened to a maximum. The window was essential for lighting the upper level. Similar windows are found in other houses surveyed (in Beit Kaḥil, Bani Na'im and other villages), where there was a raised living level. If the living level was low, the entrance door sufficed for providing light.

In the cold season, domestic activities take place in the central area of the living level, around the fireplace which is located directly beneath the centre of the ceiling.

This cooking hearth is portable; above it there is a hole through the vault serving as a chimney. This focus on a central fireplace contributes greatly to the feeling so characteristic of traditional houses in the Hebron Hills.

Most of the area of the living level is unoccupied during the day. Bedding, clothing and other articles are stored in several wall-cupboards and boxes. Three large vaulted niches surround the living level, their arrangement being related to the building technique of the roof (see above).

The vault, built of fieldstones and mortar, is thickly plastered within. The exterior of the vault – the roof itself – has a thick layer of fieldstones, mortar and earth. The thickness of the vaulting at the centre is at least 0.6m; while at its base it is more than 1.5m thick. The surface of the roof is covered with a layer of *nuwar* earth, annually renewed. A stone roller, permanently kept on the roof, is used to tamp the earth cover.

Summary

The prime intention of our survey of traditional building in the Hebron Hills is to document a dwelling culture which is rapidly disappearing. Rural houses of the type of El-Jab'a are representative of traditional building in Palestine from early times until recent years. The findings of our study can bring to life the picture of private dwellings in antiquity.

Acknowledgements

My thanks to Professor Yoram Tsafrir, of The Hebrew University, Jerusalem, for having encouraged me to study this subject; to Dr Ehud Netzer, of The Hebrew University, Jerusalem, for having shared with me his wide knowledge of the subject; and to Professor John Wilkinson, former Director of the British School of Archaeology in Jerusalem, for having read and discussed the manuscript with me prior to its publication.

Notes

1 The survey was conducted on behalf of the Institute for the History of Eretz-Israel of Yad Itzhak Ben-Zvi, in cooperation with the Kfar Etzion Field School; its results, including plans and photographs, are available for study in the archives at Yad Itzhak Ben-Zvi. The surveying was carried out and the plans drawn by architects Bianca Lepori and G. Solar. The photographs are by Z. Radovan. The Hebrew version of this paper was published in *Cathedra for the History of Eretz-Israel and its Yishuv*, 24 (1982) 79–114. The full results of the survey have been published under the title: *Dwelling Houses in Roman and Byzantine Palestine*, Jerusalem 1987 (Hebrew).

- 2 The interviews were held on 25 January 1979.
- 3 The interview was held on 23 June 1980.
- 4 Conveyed in an interview on 8 January 1979.

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Executions or Atrocities?: A Note on Tomb P19 at Jericho

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One of the most interesting of the MB II tombs excavated at Jericho is Tomb P19 (Kenyon 1965:388–411), which is now on display in the British Museum. This tomb presents the unusual feature, for a tomb of this culture, of a simultaneous mass burial, for which Kenyon offered a very specific explanatory hypothesis. This paper is intended to be a critical evaluation of her interpretation of the material.

In the tomb – which was a re-used EB–MB Outsize type, with one small jar, some bronze fragments and a few fragmentary bones remaining from the original burials – were a primary burial, skeleton E, of a woman aged c. 28, and six other skeletons, placed in the tomb when the initial burial had largely, but not completely, decayed. Skeleton A was a girl aged c. 15, B was a man aged c. 26, C was probably a boy aged c. 11, D was a girl aged c. 11, F was a man aged c. 24, and G was a girl aged c. 17. All of these latter 'six had been killed by one or more violent blows over the head, made with a blunt instrument' (Kenyon 1965:388). Moreover, skeletons B and F, both adult males, and C a boy, lack their right hands (Kenyon 1965:388). With these skeletons were a substantial quantity of grave goods, including, in addition to the usual pottery and food remains, at least three wooden tables, and at least two wooden stools. Kenyon's interpretation of these burials was as follows:

The explanation of this mass execution that immediately springs to mind is that the six individuals represent the retinue or family of a great lady, skeleton E, the only individual apparently not executed, sent to accompany her in the afterlife, as was the case in the Royal Tombs of Ur and possibly in some Nubian tombs of the same period as the Jericho tomb. But this is improbable since there was clearly an appreciable time interval between the deposition of skeleton E and those of the latter burials, sufficient to result in the considerable decay of skeleton E. A possible hypothesis is that some member of the family represented by the six burials was responsible for the death of E, and was only brought to justice, involving the common oriental practice of visiting wrong-doing on a whole family, after a considerable interval. But the most probable explanation is that tomb-robbers were caught in the act. The condition of skeleton E is very similar to that of the skeletons in tomb P21, where it is suggested that the explanation must be tombrobbing. Moreover, the striking-off of a thief's right hand is an oriental practice

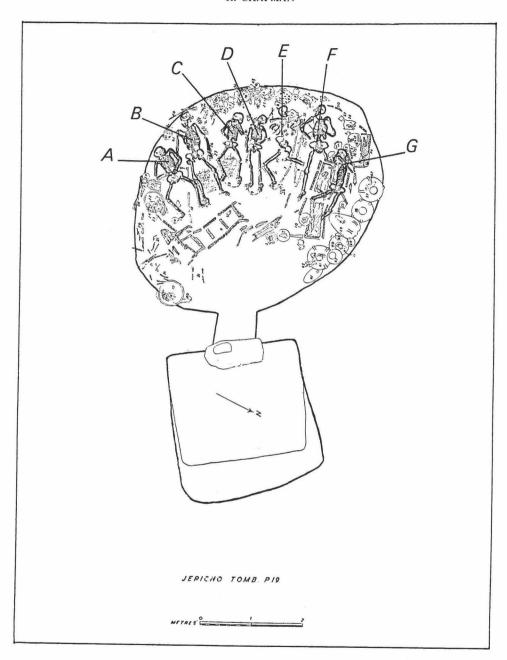


Fig. 1. Plan of Tomb P19 (after Kenyon, 1965, fig. 193, p. 389).

EXECUTION OR ATROCITIES? A NOTE ON TOMB P19 AT JERICHO

that survives in some countries today. It therefore seems most probable that the tomb-robbers were caught, perhaps the males B, F and C actually in the act, and they and the rest of the family were executed and placed in the tomb they had desecrated.

The lavish equipment in the tomb, with the stools that seem to be a mark of importance, would agree with the theory that the burial of skeleton E was a rich one, though the presumed precious objects on the body must have already been removed by the robbers, or perhaps were appropriated by those who brought them to justice. If the theory suggested is correct, presumably all the objects, a lavish provision of food, mainly along the right and rear walls of the chamber, where there were two complete lambs or kids, together with other joints in the bowls and wooden platters, and of baskets with toilet equipment along the rear wall, must all have belonged to skeleton E, for convicted criminals would hardly have been provided with much in the way of grave goods. Some of the wooden furniture, for instance tables 54 and 20 and stool 21, seem certainly to have been in decay when the later burials were put in, for they are considerably disarranged. The fine stool 6 seems however to be in the position in which it decayed, and the table 2 must have been moved and placed on top of skeletons F and G (Kenyon 1965:390).

There are a number of difficulties with Kenyon's interpretation of the material. She offers three hypotheses, the first of which she dismisses on grounds which are more than adequate, to which we may add the observation that the funerary sacrifice of retainers is otherwise unknown in the Middle Bronze culture of the Levant. The second she dismisses without giving any reasons at all. I believe that she is correct in this, for the following reason: while we do have a reference, in the story of Achan (Joshua 7:24–6) to the execution of a whole family for the crime of one member, in this case the victims of the punishment were buried in a special way reserved for felons (Joshua 8:29, 10:27; II Samuel 18:17). Had one or more of the executed people been responsible for the death of E, it is inconceivable that the family and friends of E would have wanted them to be buried in the honoured tomb of their relative – it is far more likely that the murderers would have been given some separate, and obviously dishonourable burial. This same objection also applies to Kenyon's third, and favoured hypothesis. In addition, in her support of this latter thesis, she introduces a circular argument, when she assumes that all of the grave goods in the tomb belong to skeleton E, since tomb-robbers would not be given many grave goods. While it does seem that tables 54 and 20 and stool 21 probably belonged to skeleton E, and that hers was a rich burial, it is difficult to associate any of the other grave goods, including table 2, which lay over skeletons F and G, with either the earlier or the later interments with any degree of certainty, and such an association must be proven, not assumed. What is clear is that the bulk of the grave goods were not disturbed by the insertion of the later burials, since bones of the meat offerings were in no way disarrayed. It is worth pointing out in this connection that the knife (Kenyon 1965:408 and fig. 111:17) was found 'lying on table 2, beside a joint of meat' (Kenyon 1965:408). There is, therefore, every reason to believe that some, and possibly the

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bulk, of the grave goods accompanied the six later burials, not the earlier one. There are a number of other weaknesses in Kenyon's argument. The assertion that the disturbance of skeleton E is similar to that produced by tomb-robbers in tomb P21 is irrelevant, since many other examples of skeletons disturbed by later burials may be found in the Jericho tombs. Her tomb-robbing hypothesis depends on the original, and undemonstrable, presence of precious objects with skeleton E, a situation not paralleled in even the richest of the other MB tombs at Jericho or anywhere else in the Levant. She lists numerous small ornaments worn by the six later burials, but it is unlikely that they would have been allowed to keep their own ornaments when they had stolen those of skeleton E. Finally, while cutting off the hand of a thief is a well-attested Near Eastern custom in both ancient and modern times, it is not normally associated with capital punishment. All of these points indicate that Kenyon's third hypothesis is not tenable.

One of the problems with Kenyon's analysis of this material is that she has not considered a type of behaviour which is known to have resulted in dead bodies missing their right hands, namely, the cutting off of the hands of the enemy dead as a means of tallying their casualties. This custom is well attested from periods later than tomb P19, in which there is no indication that it was an innovation (Pritchard 1969:233, footnote 8; Yadin 1963:260, illustrated on 258). Bearing this custom in mind, I offer the following hypothesis as an explanation of the behaviour which resulted in the facts observable in tomb P19: this tomb was the vault of a wealthy family, in which one burial had been made. Some time after this event, there was an enemy raid on the city, which did not result in its destruction, in which the members of the family of the deceased were caught outside the city walls, perhaps working in their fields, and killed by the maces of the enemy, and the hands of the males, and only the males, were cut off as proof that their killer(s) had killed one of Jericho's fighting men. After the attackers had been driven off, the relatives of the deceased recovered their bodies, and buried them with lavish offerings and due ceremony in their family tomb. No further burials were made in the tomb.

This interpretation of the material, like Kenyon's, depends on an argument of relevance (Binford 1983: 157–67), and can no more be 'proven' than could Kenyon's. It does, however, have the advantage that it accounts for all of the observed facts without any of the problems inherent in Kenyon's interpretation. There may be other models which could also account for the observations made on tomb P19. If and when these are advanced, it will be necessary to evaluate them in terms of Occam's razor, namely, whether they are the simplest model which can account for all of the observed facts.

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The Lifting Operation of the Kinneret Boat, and Some Aspects of the Conservation

ORNA COHEN

Project Conservationist

Two brothers from Kibbutz Ginosar discovered an ancient boat on the banks of the Sea of Galilee in January 1986. A salvage excavation was conducted by the Israel Department of Antiquities and Museums by the Inspector of Underwater Antiquities, Shelley Wachsmann, and his colleague Kurt Raveh.¹

The excavation revealed an approximately two-thousand-year-old boat, measuring 8.2m long, 2.3m wide, and about 1.3m high. The remains were buried in heavy clay, the uppermost edges having been exposed by the receding waters of the lake.

The boat's wood was technically speaking 'waterlogged' – the inner parts of the wood's micro-structure had deteriorated due to the action of micro-organisms (bacteria and fungi), and had been replaced by water. Any evaporation of water from such wood is dangerous. As the water which supports the micro-structure disappears, the cell walls may collapse. Sometimes the loss of water creates a vacuum effect, which increases the damage. Consequently the wood shrinks and fragments, and cannot be restored to its former structure. Wood in such a state is soft, without the structural strength of normal wood, and like a sponge.

Since the wood of the Kinneret boat was about 30–40 per cent waterlogged, it had to be kept moist at all times. During the excavation it was sprayed day and night, covered with wet sponges and polyethylene sheets, and shaded from direct sun.

The inside of the boat had to be excavated from a specially built bridge to prevent any pressure on the wood. Bit by bit the mud was removed with small tools, then with bare hands. On removing the mud which had supported the sides of the boat, fibreglass and polyester resin frames were constructed, and the whole boat filled with polyurethane foam. This material has many advantages: it is sprayed on directly; it swells and sets hard; it does not allow any evaporation; is very light; and it floats on water.

The same technique was used for the outside of the boat. Trenches were dug under the boat, from one side to the other. Fibreglass frames, connecting to the inside frames, were set. Then the trenches were filled with the foam. The end result was that the boat was encased within a single block of foam without having been moved or shifted.

The great moment arrived on the eleventh day of excavation, when water was pumped into the pit surrounding the boat. As the craft began to float, a steam shovel



Plate 1. The boat 'sails' for the first time in two millennia, safe inside its polyurethane cocoon.

cut through the protective dike. The boat was sailed onto the open lake and towed 500 metres north to Kibbutz Ginosar (Plate 1). A crane lifted it onto the shore, and later placed it into a specially built pool. There the foam was laboriously stripped off, support legs constructed, and the pool filled with water (Plate 2).

Future conservation treatment involves soaking the boat in a material that will penetrate the wood, replace the water in the cells, and eventually allow exhibition and study in a dry environment. Polyethylene glycol (PEG) will be added to the water in the pool. Slowly increasing the concentration and the temperature over a period of five to seven years, this synthetic wax will penetrate into the cavities of the deteriorated wood.

Acknowledgements

Photographs by Danny Friedman, courtesy of IDAM.

Note

1 See accompanying article by Shelley Wachsmann, "The Excavation of the Kinneret Boat", pp. 50–2.

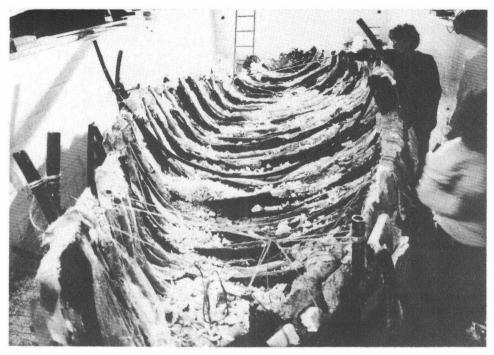


Plate 2. The boat, in its conservation pool, immediately following the removal of its polyurethane cover.

Book Review

Yadin, Y., and Geva, S., Investigations at Beth Shean: The Early Iron Age Strata, Qedem: Monographs of the Institute of Archaeology, The Hebrew University of Jerusalem, Jerusalem, The Institute of Archaeology, The Hebrew University of Jerusalem. 1986.

The short season of excavations presented in this commendably prompt final report was designed by the late Professor Yadin to provide new information for the solution of problems concerning the stratigraphy of Beth Shan (Arabic 'Beisan', biblical 'Beit Shean') and the history of the northern part of Palestine between the thirteenth and tenth centuries BCE. The report has been written by Shulamit Geva from Yadin's records and their discussions of the material. I have a special interest in Beth Shan, as my first archaeological mentor, the late Dr Frances James, devoted all her archaeological career to unravelling its extremely problematic stratigraphy.

This site was first occupied in Early Bronze Age I (c. 3500 BCE), and, apart from a break in the Early Bronze Age IV (EB-MB or MB I, c. 2180-2000 BCE) and Middle Bronze Age I (c. 2000–1800 BCE), continuously until its destruction by Tiglath Pileser III in 735 BCE. There were renewed occupations in the Hellenistic, Roman, Byzantine and Arab periods, with the latest buildings erected on the tell dating to the nineteenth century (Rowe 1930:44-56). The first excavations at Beth Shan were those of the University of Pennsylvania, under the direction of Dr Clarence S. Fisher, which began in 1921 and continued until 1933. A. Rowe directed the excavations in 1925-7, and the final three seasons, in 1930-3, were directed by G.M. Fitzgerald. Four volumes of the final report, all of them preliminary and partial in nature, were published down to 1940, before the War brought the publication programme to a halt. The final report on the Iron Age strata, Levels VI to IV (c. 1304–735 BCE), was published by Dr James in 1966, and that on Levels IX to VII (c. 1469–1304 BCE, also by Dr James, will be appearing shortly (McGovern 1985:14, note 7). The excavations here were particularly important, as this was the first major excavation undertaken after the First World War. In it, Fisher made a major advance over the prewar recording techniques of everyone except Reisner, with the introduction of the traditional 'locus', or room number (Aharoni et al. 1973:119-20; Chapman 1986:10-14).

One of the first points to be noted in this report concerns the surveying. Judging from the plans, particularly figures 4 and 5, the Yadin expedition succeeded in re-

establishing the original site-grid of the Pennsylvania expedition. It would have been very interesting to know how this was done. It would also have been interesting to have had a proper indication of the location of the excavated area on the general site plans, figures 2 and 3 (which were taken, without acknowledgement, from figures 75 and 77 of Dr James' book), instead of the curious circle which presently appears there. It would also have been instructive to have had the Lower Level VI = 'Stratum 4' walls projected on a plan with those of the previous excavations. The original excavators did not present a contour plan of the site; an omission which makes their published plans difficult to relate to the topography. It seems inexplicable to me that Geva has not included such a plan in her report. Although the levels on the top of the mound have been altered by the previous excavations, to have a plan of the slopes would have been of immense value.

Much of this report is taken up by an analysis of the stratigraphy which, since the reliability of all cultural analysis in archaeology rests on that of the precedent stratigraphic analysis, deserves to be considered in some detail. First, I will consider the section drawings, as these supply the evidence for the composition of the phase plans. There are six section drawings (figures 14–19). They are never referred to in the text, and were evidently not used in the stratigraphic analysis or the composition of the phase plans. They are, however, quite informative. A word of comment is in order on Sections II (figure 15), IV (figure 17), and V (figure 18). The lines of these sections were laid out along the faces of walls so that they show little more than the elevations of the walls. It is difficult to understand why they were so placed. It would have been far more useful to have drawn and published the sections created by the baulks of all of the squares.

Turning to Geva's 'Stratum 1', it is hardly surprising that she was able to make so little of this. More could have been done, however, if she had made more use of the plans of the previous excavators. It is evident that W18 belongs to Level IV (Fig. 1 opposite). The reasons for this are both its horizontal position and its relation to the underlying Room 2518. It is clear from the plans of the Level V and IV structures which overlie the rest of the area of Yadin's excavations (James 1966:71, 74, figures 75, 77) that W17 cannot be later than a late phase of Upper Level VI or an early phase of Lower Level V, and probably the former. W35 may belong to one of the later Levels, I to III. Walls 38 and 39 cannot belong to Levels V or IV, nor can they belong to Lower Level VI. They must underly Room 1514 of Level IV (see figure 1) and be later than W26. They are very difficult to account for. W21 in square C2, which is not mentioned in the text, could belong almost anywhere.

'Stratum 2' consists of Room 2518 and its walls. This appears to be Room 1520 of the Philadelphia excavations (Geva 1986: Figs 4 and 5). The slight discrepancy in the positioning of the two rooms in the square may be due to errors in the Pennsylvania surveying or in the re-establishment of the site grid. Dr James did not feel able to decide whether 1520 belonged to Upper or Lower C (1966:77–78).

'Stratum 3' requires somewhat more comment. It is evident from Geva's comments (pp. 28, 38–9) that she and Yadin believed that in this scrappy squatter occupation following the destruction of Lower Level VI they had uncovered a stratigraphic phase

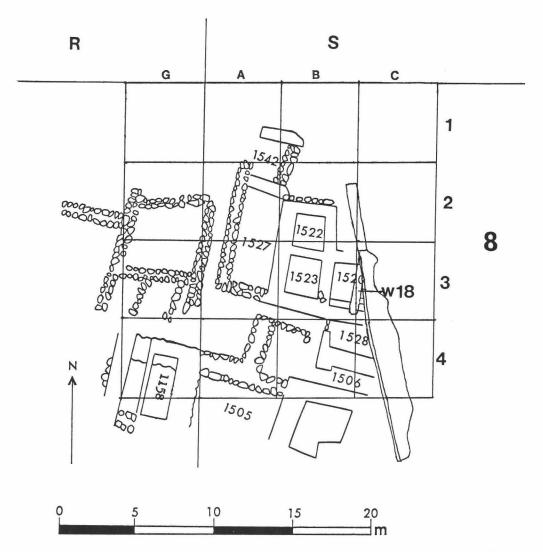


Fig. 1. Beth Shan: Excavated area (Squares G2–3 to C2–3) showing Room 1520 = 2518 (Level V) and W18 (Level IV). (After James 1966:71 and 74.)

unknown to those who had excavated the site, and to Dr James who published the material. This is not, in fact, the case. Fitzgerald described this phase as early as 1932 (p. 142), and he (Fitzgerald 1930:11), Rowe (1930:30–1; 1940:19–20) and Dr James (1966:19–22, 27–8, 150, 178–9), dealt with it extensively. To successive phases of this stage, Upper Level VI, belong W17 and W26. These are very significant, forming as they do the boundary walls between two properties of some kind, since they are along the same line as walls 23 and 32 of the underlying stage, Lower Level VI. This

demonstrates that the property boundary formed by the alleyway between Walls 23 and 32 in Lower Level VI continued to exist in Upper Level VI, and that the same local Canaanite population, reduced and impoverished, continued to occupy the site. This conclusion is supported by the architectural and ceramic evidence on the rest of the site (James 1966: see ref. above). The pottery associated with this 'stratum' by Geva comes from two pits, 2525 and 2529. Only one of these, 2525, appears in a section drawing (figure 17-Section IV). It is clear from this drawing that the surviving top of the pit is not the original top of the cut, and that the pit has been truncated, probably by the Pennsylvania excavations. It seems likely that this is also true of pits 2529, 2559 and 2560. Certainly Photo 20 appears to show 2529 reaching the present surface, which is the base of the Pennsylvania excavations, minus erosion plus debris. None of these pits, therefore, date earlier than the latest phase of Upper Level VI or the earliest phase of Lower Level V. Geva makes much of the pottery from these pits, especially that from 2529, as evidence for seasonal nomadism, and as having been deliberately placed for recovery and reuse (pp. 30, 38-9). An examination of this pottery (figures 11-12) shows that it consists largely of sherds. Pit 2529 did not contain a single substantially complete vessel. It seems highly unlikely that this material was anything other than rubbish, and even less likely that it was deposited with the intention of recovery and reuse. She cites no reasons for interpreting the 'stratum' as due to seasonal nomadism, other than its poor and fragmentary structural remains, which seem an inadequate justification for such an interpretation.

'Stratum 4' phase may be equated with Lower Level VI of the earlier excavations. It was violently destroyed, a fact recognized by Rowe (1930:30) and Dr James (1966:150, 178–9), and which has been taken into account by scholars studying the Egyptian presence in Canaan in this period (Weinstein 1981:23). This piece of evidence somehow escaped the attention of Geva (p. 89).

Geva correctly suggests that Yadin's building 2522 is the northern part of 'Building 1200' (Rooms 1201, 1205–6, 1208–9) of the Pennsylvania excavations (p. 48). The alignment between W22 and the western wall of Rooms 1201 and 1206 is not exact, but, as with the correlation of Rooms 1520 and 2518, this may be due to error by the earlier surveyors, or in the re-establishment of the grid. There may also be an offset in the line between the two. Geva insists that W33 is an integral part of the phase of Lower Level VI exposed by Yadin (pp. 42–5). This is not, however, borne out by the section drawing (figure 17–Section IV), in which this wall is clearly shown to be stratigraphically earlier than W19.

This last point brings me to the final weakness of Geva's stratigraphic analysis. Section I (figure 14) clearly shows that Locus 2522, the threshold of the entrance of building 2522, rests on the debris overlying a floor c. Im below the floor of Room 2524, and that this lower floor itself overlies an earlier layer of debris. It seems that this earlier floor was associated with an earlier wall on the same line as W23 (p. 48). This appears at the base of the sondage shown on Section II (figure 15). Section III (figure 16) also shows a floor c. Im below that of Room 2527, but shows what may be either a tip-line or a badly sloping floor, probably the former, in between. The same lower floor also appears in Section VI (figure 19). This earlier phase is nowhere

mentioned by Geva, nor are any of its artefactual contents presented. It is probably Upper Level VII of the earlier excavations.

On the basis of this small excavation Geva believes that a finer taxonomic division of the pottery of the period 1200–925 BCE is possible (pp. 1–2). This seems unlikely. Firstly, the stratigraphy in this area is too badly disturbed. Secondly, this would only be possible if the pottery evolved more rapidly than it appears to have done. Thirdly, Beth Shan in the first part of this period was a major Egyptian base, and therefore was not typical of the rest of the country. Whatever may be true of Beth Shan, therefore, is not necessarily true of the rest of the country. Fortunately, Geva has chosen to break with much current practice and publish *all* the finds from the excavations (p. 11), not just those which support her preferred dating. For this she cannot be commended too highly.

The discussion of the stratigraphy and pottery of the excavations is followed by a short chapter (one complete page of text) on the small finds other than pottery (pp. 90–1). These are referred to as unstratified. However, several of them come from the loci discussed in the main text, and therefore do, in fact, have stratigraphic contexts. It seems a pity that the latter were not discussed in connection with the pottery from these loci, as they are as much a part of the assemblages from them as the pottery. It is especially sad that there is no mention in the text of the querns shown on figures 38–9. These are very revealing as to the activities carried out in the loci concerned. It is also worth noting that some of them (e.g. figures 38:7, 12, 13; 39:1, 6) appear from the side view shown (which appears to be upside down) to be lower stones, although the cross-sections shown with them appear to be those of upper quern stones. If these really *are* upper stones, they must have been used on convex lower stones, which are otherwise unknown. The one quern found *in situ* with its upper stone resting on its lower, in Room 2527 (photo 48, figure 13), appears to be of the usual concave variety.

I will close with a set of unanswered questions raised by some of Geva's terms: What does she mean by an 'authentic assemblage' (p. 11)? What does she mean by 'spiral stratigraphy' (p. 22)? What, in her view, *does* count as 'reuse' (p. 22)? What *does* she count as a 'phase', and how would she identify one (pp. 22, 42–5)? These are not merely 'semantic' (p. 89) or rhetorical questions: If we are going to use technical terms we must *always* either define them or refer to an available definition, or we will descend into complete confusion. All of these terms have been used before, but Geva's comments make it clear that her understanding of their meanings is not the same as that of her colleagues, at least in Britain.

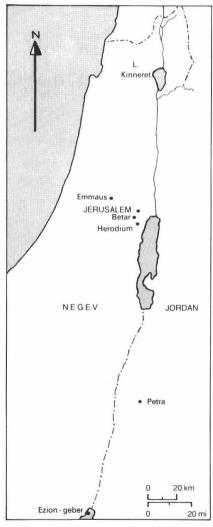
Rupert Chapman

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Summaries of Lectures Given in 1986–7



Sites mentioned in the lecture summaries.

The Search for Ezion-geber, King Solomon's Red Sea Port

Alexander Flinder

Two biblical passages describe the joint naval ventures of King Solomon and King Hiram of Tyre. In 1 Kings 9: 26-8 and 2 Chronicles 8: 17-18 we read in very similar words that ships were built at Ezion-geber near Eloth on the Red Sea in Edom and that Israelite and experienced Tyrrhian soldiers made the long voyage to Ophir and brought back gold to King Solomon. But where is Ezion-geber? With the exception of some guesses made by eighteenth- and nineteenth-century Sinai travellers, the whereabouts of Ezion-geber remained a mystery until 1938 when Nelson Glueck, the eminent archaelogist and Director of the American School of Oriental Research, announced that his excavations at Tel el-Kheleifeh, a small mound just to the west of Agaba, had convinced him that this was indeed the site of Ezion-geber. Glueck's identification was based entirely on his interpretation of the site as a large coppersmelting refinery incorporating a substantial furnace room with a complicated system of flues. Furthermore, Glueck pointed out that the site was part of the vast Arabah valley mining area which Glueck had named 'King Solomon's Mines'. In his words Eziongeber was the 'Pittsburgh of Old Palestine'.

Glueck's conclusions were accepted by his peers and the identification of Ezion-geber with Tel el-Kheleifeh found its way into every book on biblical archaeology for the next twenty years. But doubts lingered; the most important being raised by W.F. Albright who, having accepted Glueck's conclusions, nevertheless made the following point - 'just how production of copper was accomplished remains a mystery to specialists in metallurgy who have studied the problem'.1 This question was taken up by Beno Rothenberg, who had served as Glueck's chief assistant and photographer in his original expeditions. Under the auspices of Tel-Aviv University Dr Rothenberg carried out his own series of extensive surveys and excavations in the western Arabah, and in 1962 he published the results of his first survey. Subsequent work by Rothenberg in the Arabah and at Timna led Glueck to withdraw from his position. But even if Glueck had remained unchallenged on metallurgical grounds there is no doubt that his theory would have been seriously disputed on maritime grounds alone. The coastline at Tel el-Kheleifeh comprises a sandy beach with shallow water, totally unsuitable for the safety of small craft, let alone a substantial merchant fleet; and it is inconceivable that Hiram's naval commanders would have given it a second glance. The Bible is quite unambiguous; Ezion-geber was the port from which a great fleet sailed and returned. and it is in the context of a safe harbourage that the site would be found.

In 1967 the author in company with Dr Elisha Linder and divers from the University of Haifa's Department of Maritime Studies visited the island of Jezirat Fara'un (Coral Island) on the east coast of the Sinai Desert, some ten miles south of Eilat. Our purpose was to carry out a preliminary search of the seabed terrain for archaeological remains. In the following year I directed an Anglo-Israeli expedition which continued this search and undertook an underwater survey. It was during this period that my interest was drawn to the island itself, both for its physical characteristics and for the remains of the buildings and structures which appear to extend over various archaeological periods. In this I was assisted by the observations of Dr Rothenberg who, with the architect Avia Hashimshoni, had made some extremely interesting observations and prepared an accurate plan of the island. The structures on the island, however, needed detailed and careful study, and it was with this in mind that I returned frequently in the following years for further research.²

It soon became apparent to me that the one fundamental feature relating to the island from which its historical development had sprung is the fact that the 200m-wide strip of sea between the island and the mainland is the most perfect natural harbour that any sailor could hope for. This was borne out by many 19th-century travellers, and indeed the British naval sailing chart for the Gulf of Agaba has this as the 'Fara'un Island Anchorage'. It is indeed the only haven suitable for the safe harbourage of vessels of any size in the entire northern part of the Gulf, and it is this one fact alone which must make the island a prime contender for the site of Ezion-geber.

The extensive buildings and maritime installations on the island are all probably of later periods, but they testify to the importance of the island to generations of mariners, both for trading and defence purposes. The remains of the castle surmounting the higher of the two peaks are of the 11th century CE, built during the Crusader period. Other buildings on the south hill and in the dip between are of the Byzantine era. There are also remains of a substantial casemate wall around the whole perimeter of the island incorporating defensive towers and embracing a small enclosed harbour. In the absence of archaeological evidence it is difficult to establish the age of this wall, but the concensus is that it is of Byzantine origin, although an earlier date is not impossible. On the mainland facing the harbour our expedition discovered the remains of two landing stages clearly intended to serve traffic between the island and the mainland.

The island with its buildings in relation to the natural anchorage presents a magnificently impressive maritime complex, but this might be quite irrelevant when considering Jezirat Fara'un as a candidate for the site of Ezion-geber. The most convincing argument lies in the fact that both the natural formation of the island and its geographical location are ideal. It is my view that the stretch of casemate wall which seals the small harbour was originally built on an entirely artificial foundation enclosing what had been a small natural bay. Thus, in its most primitive form we have an island with a small protected bay separated from the mainland by a natural anchorage. If we study the configuration of ancient harbours in the Mediterranean we see that these characteristics are typical of the harbours built by the Phoenicians at Tyre itself, Sidon, Arvad, Atlit and Motya. In each case the maritime settlement had been established on an anchorage between either an off-shore island as at Jezirat Fara'un or an offshore reef. Usually these natural features were improved on by additional installations, either in the form of harbours on the island or by protective sea walls which projected from it. The similarity between Jezirat Fara'un and these typical Phoenician Mediterranean harbours is quite unmistakable. In the Red Sea a prerequisite for any major naval enterprise is a safe anchorage. Without such an anchorage the joint venture of Solomon of Israel and Hiram of Tyre would never have taken place. Tel el-Kheleifeh did not possess one, but Jezirat Fara'un did so to perfection.

The prime role of Ezion-geber was as a port, but its situation was less suitable for the storage and distribution of merchandise. A likely location for this would realistically be at the head of the Gulf, coinciding with the traditional trade and incense route between Syria,

Egypt and Arabia. The ten-mile journev between the port at Ezion-geber and the storage facility at Eloth at the head of the Gulf illuminates the biblical account which stresses that they were separate entities - 'Ezion-geber which is beside Eloth', and 'Solomon went to Ezion-geber and to Eloth'. Tel el-Kheleifeh might have fitted in with this concept on the basis of both Glueck's and Rothenberg's assumption that the earliest levels at the site date to the tenth century BCE and King Solomon. But as Rothenberg later pointed out in his lecture to this Society in 1983, the ASOR analysis in 1982 of Glueck's excavated material proved that none of the pottery was earlier than the eighthfifth centuries BCE.3

The Eloth of the Bible remains somewhere beneath the sands of modern Eilat or Akaba, but the site of Eziongeber is surely at the island of Jezirat Fara'un.

Notes

- 1 See Albright, W. F. *The Archaeology of Palestine* (London 1963) (rev. ed.) 128.
- ² Flinder, A. *The Island of Jezirat Fara'un*, International Journal of Nautical Archaeology, 1977.
- 3 For Rothenberg's most recent summary of findings from Tel el-Kheleifeh see *Bulletin of the Anglo-Israel Archaeological Society* (1982–3) 49–51 and bibliography there.

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Archaeology and the World of the Bible

Alan Millard

(This paper includes only part of the material presented at the lecture.)

In many respects the Bible seems to show us a world of physical circumstances and mental outlook very different from our own, a world in which miracles and theophanies were not almost inconceivable occurrences. It is very hard today to enter into the minds of the people of those times and appreciate their understanding of the world in which they lived.

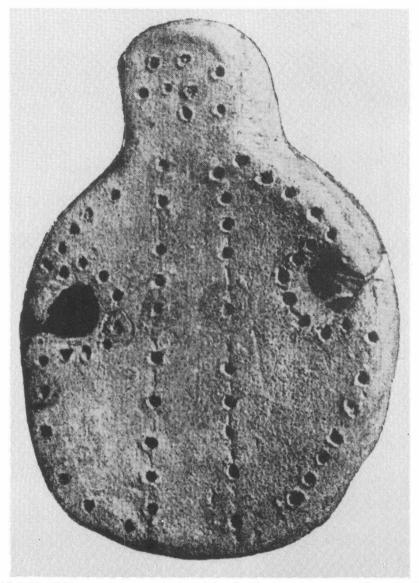
In order to learn about the world of the Bible it is necessary to draw on all the sources of information available: comparing discoveries made at one site with things found at another, setting objects in their cultural contexts, and most especially, taking full account of ancient written documents. A great deal of the most useful material comes from sites outside Israel; indeed Israel is relatively poor in archaeological finds when viewed in the context of the Near East as a whole. Inscriptions, sculptured slabs, objects of precious metal, the things considered as evidence of high culture found in Egypt, Mesopotamia, Syria and Anatolia, are all but non-existent in Israel.

Sometimes a single discovery will clarify a biblical text. A well-known case is 1 Samuel 13: 19-21. The Authorized Version's 'yet they had a file for their mattocks' compares very unfavourably with the Revised Standard Version's 'and the charge was a pym for the ploughshares'. Although the words for agricultural implements cannot be defined precisely, the fact that the Israelites had to pay the Philistines to have them sharpened emerges from the recovery of several small stone weights inscribed in early Hebrew script with the letters pym. This seems to be a term for two-thirds of a shekel, because the stones are approximately two-thirds of the weight of the one-shekel stone weights. Since the same letters occur in *I Samuel* 13:21 the proposal that this was the charge levied for mending the tools has won general acceptance.

This is the sort of advance which comes about by chance discovery, others are the result of detailed research. But interpretations need to be rigorously tested against the range of relevant knowledge, and possible alternatives should receive unbiased scrutiny. Failure to do this can bring about distortion and error, as the following case shows.

Excavating at Gezer in the early years of this century, R. A. S. Macalister unearthed a curiously shaped object of baked clay. It is a flat slab, in outline like the body of a fat violin, with a small knob for a 'head'. Around the circumference, and in lines down the centre, are small holes. What could it be? In his publication of 1912 the excavator labelled it 'Degenerated Ashtoreth Plaque', that is, a figure of the Canaanite mother goddess (Pl. 1). A few years later a German scholar prepared a handbook on Palestinian archaeology which became a standard work. There he reproduced the photograph of the object, with the caption 'Flat Idol of Astarte'. How many students had their ideas of Canaanite religion coloured by this object can never be known. Macalister's identification of it was wrong, and evidence for its correct identification was available when he wrote. Things of the same shape had been found in Assyria and were known in Egypt both from actual specimens and from tomb paintings. Others have been found since Macalister's work at Gezer, including two fine pieces carved in ivory from thirteenthcentury Megiddo. Nobody doubts that these objects were game boards. Players moved a series of small pegs over the surface from hole to hole. The game is called 'Fifty-five Holes' after the number usually present; regrettably no rules for play survive. No religious connotation is required to explain the

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Pl. 1. The 4½" long terracotta gaming board described by its excavators as a 'degenerated Ashtoreth plaque' from Excavations at Gezer II (1912) 416.

object from Gezer: it was made for amusement, not for worship.

Worship is the context which modern Europeans will commonly associate with incense. Today incense belongs in churches or temples, or in particular religious rites. Consequently archaeologists who dig up incense burners frequently assume they have a religious function. Certainly some incense burners were used in religious ceremonies in temples and shrines:

Exodus 30 gives instructions for making both an incense altar and the incense itself in the context of the Tabernacle in the wilderness. Small cubical clay or stone incense burners, with tiny feet and a recess in the top, are found all over the Near East.2 They date, for the most part, from the first millennium BCE. Are all these simple pieces, recovered from a variety of contexts, religious objects? The answer is almost certainly no! Evidence from different sources points to a much wider use of incense. The smells of antiquity usually elude the archaeologist; they were surely pungent and often foul. Incense was used, I believe, much as air fresheners are used today, to counter bad odours and sweeten air in private houses and on any occasion, sacred or secular.

Two famous bas-reliefs include incense burners. A small one from the palace of Ashurbanipal at Nineveh presents the king reclining on a couch while the Queen sits on an upright chair beside him, in a leafy bower. At the head and the foot of the couch stands an incense burner, a basin on a stand with a cone of incense in it. Of the fifth century BCE are two reliefs which decorated the palace of the Persian emperors in Persepolis. Both show the Great King enthroned, with the Crown Prince standing behind him. Mede Α approaches the king, with his hand on his mouth in a gesture of respect. Before the king, but no doubt intended to be understood as standing on either side of him, are two incense burners. They are practically the same as the Assyrian examples, but more elaborate. Over each cone is a cover, pierced to allow the smoke to escape and insulate the king from any odours emanating from his subjects. Doubtless incense burners fit for royal palaces were made by the finest craftsmen to the highest standards. In both sculptures the burners seem to stand about three feet high. No examples of that size have been found, but some have been discovered in Anatolia which are about a foot high. It may be assumed that they

were made to be placed on a table or a stool. They are of beaten silver, and have covers remarkably like those shown on the Persepolis reliefs. Taken by themselves these superb pieces might have been thought the property of a wealthy temple. In the context of the ancient world it is evident that this need not have been the case.

In the light of these observations the command of Nebuchadnezzar that incense be offered to Daniel (Daniel 2:46) need not be interpreted as treating the wise man as a god, the interpretation which many commentators favour. Rather, the king was honouring Daniel with virtually royal treatment.

The world of the Bible held many more practices and attitudes which are strange to modern man. Research in archaeology and ancient texts, conducted with honest recognition of the presuppositions and cultural limitations we bring with us, can often improve our understanding of the Bible. Since the Bible is a product of its world, the opposite is also true; it is itself an important aid for the interpretation of other ancient books and for the information recovered by archaeology.

Notes

- 1 On the *pym* weight see the standard Bible dictionaries, and D. Diringer in D. Winton Thomas (ed.) *Documents from Old Testament Times* (London 1985) 229–30.
- 2 For incense burners see the essays of my former student, M. Fowler, 'Excavated Incense Burners: A Case for Identifying them as Sacred?', *Palestine Exploration Quarterly* 116 (1984) 25–9 and 'Excavating Incense Burners', *Biblical Archaeologist* 47/3 (1984) 183–6.

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Betar: The Last Stronghold of Bar-Kochba

David Ussishkin

The Second Jewish Revolt against Rome took place during the reign of Hadrian in 132-5 ce. The rebellion was led by Bar-Kochba (alternatively called Ben-Kosiba), with Rabbi Akiva providing the spiritual force behind it. Eventually the Romans succeeded in crushing the nationalist movement, and Jewish settlement in Judea came to an end. The final action took place in 135 CE at the stronghold of Betar, where Bar-Kochba met his death. A description of the subsequent massacre appears in the Talmud. Thereafter the focus of Jewish life in Palestine shifted to the Galilee.

We possess little historical information about the events of the Revolt, other than accounts by Dio Cassius and Eusebius, and from Talmudic sources. Archaeological remains of the period are scarce, apart from coins minted during the Revolt, and finds from the caves of the Judean Desert where refugees hiding from the Romans lived for a while and hid important documents, which luckily have survived.

It is known that Betar was Bar-Kochba's main stronghold and administrative headquarters. It is usually identified with Khirbet el-Yahud, near the village of Battir, which perpetuates its name. It is situated on a rocky spur 8km southwest of Jerusalem, overlooking the Rephaim valley. The remains of a Roman siege wall and two outlying camps seem to support the identification, confirmed during the recent excavations by a general second-century CE date for the settlement. The 1984 season was conducted by the author on behalf of Tel-Aviv University, and it is hoped that this preliminary work may lead to more extensive excavations in the future.

The site was chosen as Bar-Kochba's headquarters for several reasons.

Firstly it is close to Jerusalem, desolate since the Roman sack of 70 CE. Secondly it overlooks the important Jerusalem—Gaza road through the Rephaim valley, and finally it is easily defensible and has a good water supply from a nearby spring. The site spreads over about ten acres, and had perhaps a population of 1000–1500 people; although in the final days of the Revolt their numbers must have been greatly swelled by refugees from the surrounding countryside.

The hill is surrounded by steep slopes, except on the south where a natural saddle connects it to the next hill. Possibly at this point there was a road up to the settlement. On this neighbouring hill are the remains of two roughly rectangular Roman siege camps, which, like the siege wall traced around the site, are generally similar to those at Masada. It has even been suggested that a siege ramp existed in the area of the saddle, again like that at Masada, built about sixty years earlier. A photograph taken in the 1930s, now in the archives of the Israel Department of Antiquities and Museums, shows either a siege ramp overlying the southern part of the fortification wall, or else the remains of later agricultural activity. The village of Battir has expanded considerably since 1967, and the area of the siege ramp is now largely built over, making investigation very difficult.

There are also aerial photographs showing the two camps: the larger is a rough oval, the smaller squarish. The latter is relatively well preserved. The circumvallation can be traced as a line of rubble which is almost continuous around the site. The perennial spring lies to the east, and like the people of Battir today the ancients probably used it to irrigate their fields, although during the siege they must have relied on water stored in cisterns within the settlement. Several of these are known to have existed. A Latin inscription was found, carved in the rock face close to the spring. It was first studied by Clermont-Ganneau in the late-nineteenth century and mentions the Macedonian 5th legion and the Claudian 11th, so it seems likely that men of these units participated in the siege. As Hadrian was forced to bring these legions from the northern part of the Empire it is obvious that the Romans must have been in some difficulty.

Previous surveys traced the entire line of the ancient defences. Access to the settlement was probably from the southeast, with a road linking it to the spring and the irrigated fields. The wall has at least six semicircular towers and three square ones. Two probes were conducted by the excavators, the main one contiguous to the western wall where sections of the ancient curtain walls were exposed, and a second one along the southern wall, but little was found. Clandestine digging modern agricultural activity have taken their toll. At some time the fortifications were incorporated into the terraces built for dry farming, which extend around the hill on all sides.

In the main excavations, the curtain walls and two semicircular towers built of fieldstones were unearthed, and one square tower. The latter was founded on bedrock and was built partly of fieldstones and partly of squared ashlars with smooth faces, in alternating courses of headers and stretchers. The curtain walls were built like terracing and masked an artificial fill of limestone chips, soil and debris, dating to before the second century CE, since it contained Iron Age pottery, including a lemelech jar handle. Substantial ashlar walling also came to light in front of the curtain wall, between the two semicircular towers. Founded on bedrock, the wall consists of two rows of stretchers with flattish bosses and smooth combpicked margins. The style is generally similar to ancient fortification walls known in Jerusalem. The structural relationship between the wall and the rubble-built curtain wall behind it needs further clarification.

Most of the pottery dates to the

second century CE. A number of coins were found, but none is of the time of the Revolt, which is surprising since Betar is considered to be the main source of the 'Bar-Kochba' coins which turn up on the antiquities market. Sixteen limestone ballistra sling-stones were found on one of the rectangular towers. Probably they were part of the defensive ammunition, along with two arrowheads found on another tower. These are identical to examples from the Judean Desert caves.

It is hoped that future excavations will determine the general layout of the settlement, with its houses and streets. Substantial reconstruction of the site, following more extensive investigation, would make Betar an important site for visitors. This in turn would benefit the local people.

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The Excavation of the Kinneret Boat

Shelley Wachsmann

A two-year drought in Israel caused the Sea of Galilee (Kinneret) to recede. In January 1986 two brothers discovered the outline of a ship's hull in the mud on the newly exposed beach. The site was on the western shore of the lake, near the ancient town of Migdal. An investigation by the Israel Department of Antiquities and Museums (IDAM) revealed mortise-and-tenon joints on the uppermost strake of the buried boat. This form of ship construction was used in the Mediterranean from at least the second millennium BCE to the end of the Roman period, thus indicating the boat's antiquity.

My colleague, Kurt Raveh, and I conducted a two-day probe excavation in which it was determined that the craft measured 8.2m by 2.3m and was

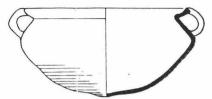


Fig. 1. The cooking pot (casserole) found next to the boat.

in an excellent state of preservation. A cooking pot (casserole), dating from the first century BCE to the first century CE was found upside down, outside the boat (fig. 1). An oil lamp dating from the first century BCE was found inside the hull, level with the top of the remaining stern (fig. 2).

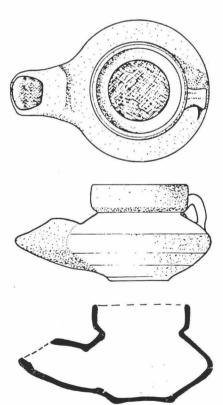


Fig. 2. The oil lamp found inside the boat.

The salvage excavation, organized in three days, began on 16 February 1986 (pl. 3). Its objectives were to uncover the boat and its immediate surrounding area; to study the craft *in situ*; and, if possible, to remove it for conservation. Professor J. Richard Steffy of the Institute of Nautical Archaeology, Texas A&M University, arrived to study the hull's construction. People from all over Israel volunteered their time and equipment, and the Kinneret Authority built a dam to prevent the rising lake from inundating the site.

Working day and night, mud was removed by hand from inside the hull. As the internal supporting mud was removed, the sides of the hull were bolstered with padded wooden staves, and a metal scaffold with a suspended platform was erected over the site. The waterlogged wood was moistened continuously to prevent its decomposition. All parts were tagged, drawn and recorded. Thin white plastic tubing was pinned to the outlines of each stake to enhance photographic records.



Plate 3. The boat as it appeared on the second day of excavation.

Leaving a wall of mud and sandbags to support the outside of the hull, a pit was dug around the boat. Portions of two additional ancient boats and various loose pieces of wood were uncovered. The new finds were photographed, drawn and recorded; and samples were taken. The remains were protected with sandbags and reburied for possible future excavation.

The mud from the excavation was collected in boxes, numbered by location, and dumped in separate piles to dry. The piles were later examined for additional artifacts. An iron arrowhead, possibly dating from Roman times, was found in one such pile.

After Professor Steffy completed a preliminary examination of the hull, the boat was prepared for removal to a conservation site nearby. The excavation and transfer of the craft were completed in eleven days. Orna Cohen, the project's conservationist, reports the removal procedures and the preservation techniques in another article in this issue (see pp. 34–6).

Excavation Results

A number of the boat's members, including the stempost and the sternpost, were carefully removed in antiquity. The forward portion of the keel appears to be in secondary use, having an extra row of mortise-and-tenon joints beneath its present connection with the garboard strakes. Research by Dr Ella Werker of the Hebrew University indicates that at least seven different types of wood were used in the boat's construction and repairs (mainly cedar and oak; with single examples of jujube, Aleppo pine, hawthorn, willow and redbud). This suggests a serious lack of boatbuilding timber, at least within the financial reach of its owners.

Professor Steffy's study indicates that the construction techniques parallel those of the Mediterranean in the first century BC and the first century CE. The boatwright was experienced, and probably learned his craft on the Medi-

terranean coast or was limited by a shortage of quality timber.

Steffy reports that the boat was probably used for fishing and transport, and was both sailed and rowed. It was repaired many times and finally retired after a long working life. The site appears to have been used for building and repairing boats, as evidenced by the number of hulls of different ages and the apparent removal of usable parts in antiquity.

Wood samples from the boat were submitted to Y. Carmi of the Weizmann Institute for Carbon-14 dating. The results received were 70 BCE ± 90, thus corroborating the estimated age based on pottery samples and construction techniques.

The boat is a most significant artifact. As the first ancient craft discovered in the Sea of Galilee, it contributes much to our understanding of literary references to seafaring on this inland lake during the time of the New Testament and the First Jewish Revolt against Rome.

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Archaeology in the Negev

Rifka Gonen

Extensive archaeological surveys and salvage excavations have been carried out in the Negev Desert by the Archaeological Survey of Israel and the Israel Department of Antiquities and Museums, under the overall supervision of Rudolf Cohen (see BAIAS 1985-6 pp. 10-11). This archaeological work became necessary due to the redeployment of the Israeli army in the Negev following the signing of the peace treaty between Egypt and Israel. Since the survey began in 1978, at least half of the Negev region has been investigated by numerous teams, leading to the discovery of about 1100 new archaeological sites; a quite outstanding result when compared to the mere 500 or so which were known prior to the recent work.

The Negev Desert covers an area of about 4630 sq. kms, roughly 60 per cent of the total area within the political frontiers of the State of Israel. The boundaries of the region are determined by either topographical or climatic factors, except for the western border which is an arbitrary line, running from the Mediterranean coast to Eilat, which was defined in 1906 as the frontier between the Ottoman Empire and Egypt. The Negev can be divided up into six subregions, of which the Beersheba Plains and the Negev Uplands are the largest.

The northern Negev was first settled during Chalcolithic times – during the fourth millennium BCE. Settlements are known at Tel Abu Matar, Horvat Betar and more recently at Shiqmim (see BAIAS 1983–4 pp. 36–41). These Chalcolithic people were mainly pastoralists, but they also participated in a number of craft activities and were involved in trade. Chalcolithic sites have not been found in the Negev Uplands.

The earliest post-prehistoric signs of human occupation in the Negev Uplands date from the Early Bronze II from the early-third millennium BCE. The settlements consist of curvilinear rooms grouped about rounded courtyards, which were probably used as pens for sheep and goats. Following the EB II the Negev Uplands remained unoccupied for some 800 years. During the EB IV or MB I period (about 2000 BCE) the Uplands were reoccupied, and quite a few settlements with curvilinear structures have been found, including Har Yeruham. Hundreds of stone heaps, known as 'tumuli' can also be dated to this period. They were used for burial, but many of them were found to be empty.

Following another gap of about 1000 years the Negev was repeopled at the beginning of the Iron Age. Many settle-

ments were established at this time at Beersheba, Arad, Kadesh Barnea and elsewhere. The extent of the Iron Age settlement in the Negev has been clearly defined during recent surveys. The wide distribution of sites from the Iron Age I came as a surprise, because it was thought that the main thrust of Israelite settlement in the Negev took place during the Iron Age II. However, it is now clear that organized settlement within the Negev began during the Early Iron Age and stemmed from the north. Its exact date, however, is still a matter of controversy; dates in the eleventh or tenth centuries BCE are being debated. Examples of small farms dating from this period are known, for instance at Horvat Halugim. A system of watchtowers and small fortresses was also built at this time to protect the farms and their fields. The assumption that organized agriculture in the Negev. with the construction of dams in the valleys to control flood waters, only dates from the time of the later Judean monarchy can no longer be accepted. Organized agriculture now appears to date back to the Early Iron Age. Very few of the Iron Age settlements in the Negev continued to exist down to Hellenistic and Early Roman times; in fact most survived for a very short time only – perhaps no more than fifty years.

The longest period of continuous human settlement in the Negev took place between the first century BCE and 750 CE. The Nabataeans are known to have controlled the caravan routes leading across the desert. They were an Arabic-speaking people who used an Aramaic script. Their religion was pagan and their capital was originally at Petra in Jordan. Six towns in the Negev are usually said to have been founded by the Nabataeans: Shivta, Mamshit, Avdat, Halutza, Nizzana and Rehoboth. However, excavations at these sites have revealed very little that could definitely be associated with them, suggesting that they may originally not have been towns, but only campsites. The towns date in the main from the Byzantine period, that is from the sixth and the early-seventh centuries CE. Furthermore, the agricultural field systems in the areas surrounding these towns are also apparently of Byzantine rather than of Nabataean date. Settlement in the Negev ended in 750 CE and was only renewed during the nineteenth century when nomadic tribes began moving into the area from Arabia

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The Bath-house at Emmaus

Mordechai Gichon

The Roman bath was introduced into Judea by King Herod, who habitually copied Roman fashions, and thanks to whom the most modern Roman balneary techniques, such as floor and wall heating (hypocaustum and tubuli) appeared in Judea as early as Augustan times. But it was not just the instinct to copy rulers' fashion and lifestyle that ensured the rapid spread of bathhouses all over ancient Israel. Biblical law prescribed daily and other ritual ablutions, stressing the inter-relatedness of spiritual and bodily cleanliness. In consequence the Jews were particularly receptive to Roman ideas about bathing, and baths were soon built all over Judea, and were, also throughout Byzantine times, found even in many small villages - which seems not to have been the case in most other parts of the Roman Empire. In fact, the existence of a bath-house became such a common phenomenon that it was counted among the requisites of a place fit for a scholar to settle in, together with other amenities such as a school for his children, a synagogue and a kosher butcher.

In pre-Roman times, bathing was, especially in the Hellenistic world, regarded as a necessary activity, and was performed in a functionally furnished and usually limited space. In the East, at least the wealthy enjoyed the cooling effect of bathing in tubs and pools during the long, often extremely hot summers. This was the case also in Judea, where tubs and small pools are to be found in the private dwellings of the wealthy - such as in Beth Zur and Jerusalem - and where the Hasmonaeans established large swimming pools in their palaces, such as at Jericho. Indeed, excavation of Hasmonaean sites demonstrates the interaction between traditional Jewish ritual bathing and bathing or swimming for leisure. Ritual baths (migvaot) have been excavated in the Hasmonaean palaces adjacent to swimming pools. The same holds true for Herodian palaces, and frequently it is difficult to differentiate between the two. It seems that the cold bath (frigidarium) in Jewish balnea was constructed so that it would answer the specifications of a miqueh, and did in fact serve as such.

The Roman bath (balneum) was of course much more than a simple bathhouse. From the first century BCE onwards, when bath-houses began to be heated (and therefore called thermae), the municipal baths evolved into a kind of club house and recreation centre for the community. People spent many hours at a time in the thermae and their ancillary gardens or courtvards, which often contained an openair swimming pool (natatio). Gossip, conversation and other pastimes made the visit to the bath-house a long one. Bathing itself had developed into a lengthy ritual, which, according to changing fashion and medical opinion, included, in varying order, a bath in tepid, hot and cold water, and often a plunge into an open-air pool, as well as perspiring in a sweatroom (sudatorium or laconium).

Fairly extensive information about bathing and bathing habits is to be gleaned from rabbinic literature. It is evident that the Rabbis were among the leaders of those who introduced bathhouses into Judea. Later they were forced to make concessions for the use of the *thermae* on the Sabbath day, by permitting the water to be pre-heated on Friday. On the other hand they seem to have been successful in their attempt to curb the habit of making the bath-house the place for serious disputation on religious and related matters among scholars and laymen.

The southern thermae at Emmaus were excavated by the Department of Classical Studies of Tel-Aviv University from 1978 onwards. They were built in the Severan period, possibly when Emmaus was granted a city charter by Elagabalus (in 220 CE), under the name of Nicopolis. The thermae are therefore the product of a lengthy development, during which bathing had become a common habit. It is, however, interesting to note that this third-century bath-house follows the same architectural pattern as firstcentury ones, such as at Ein Gedi or Masada. Indeed it continued to operate in the same way as Herodian bathhouses for over three centuries. although considerably diminished in size

The Emmaus thermae are the first of their kind to have been discovered in what had been a health resort of some renown in antiquity. The waters were held to be salubrious, and accredited in Byzantine times with special healing qualities because of the association of Emmaus with the resurrection of Christ. As a matter of fact the name 'Emmaus' is the Greek form of Hamath or Hamta, meaning 'hot baths' or 'spa'.

The main importance of the find is not its size, but the fact that the edifice has been preserved in near complete form up to and including the Roman cupola over the *frigidarium*. Byzantine reconstructions of barrel vaults in other rooms have also been preserved. The building is constructed of massive and excellently cut and fitted ashlar. Its

present size is 14m × 11.5m (with apses) \times 7.2m to the highest point. The three rooms, from north to south, were the cold room (frigidarium), with a cupola composed of four spheric segments; the cool room (tepidarium), with niches for the tubs: and the hot room (caldarium) with similar niches. The fourth room was built over a sunken furnace chamber (praefurnium). The hot air passed into the hollow between the lower and the upper floor of the caldarium, which rested upon a series of arches and had a pavement of marble slabs set up in geometric pattern. From there the hot air went up the hollow tubes covering the walls and escaped through air ducts which pierced the roof. The fourth room had a wellpreserved barrel vault. In the first phase it may have housed a miqueh. Further excavation will clarify this point. At a later stage it housed the hot-water tank and may also have served as a sweat room. (See the plan in fig. 1.)

The thermae comprises four phases. In phase 1 the building extended to the north, perhaps for a considerable distance. An earthquake (possibly during the fifth century CE) destroyed this part. In phase 2 the thermae operated on a reduced scale: what formerly had been the tepidarium became the frigidarium and one of the two former hot rooms was made into the new tepidarium. Phase 2 ended with the Arab conquest in 636 CE. Phase 3 is the reuse of the abandoned building by the Crusaders. who turned it into a storehouse. Finally, in the fourteenth century, the Mamelukes turned the still wellpreserved building into a sanctuary, consecrated probably to Abu Ubeida, Commander-in-Chief of the conquering Arabs, who had succumbed to the plague here at Emmaus in 636 CE. Nineteenth-century earth slides covered most of the site and left only a narrow opening into the silted-up interior. which had become a sheep pen prior to its abandonment.

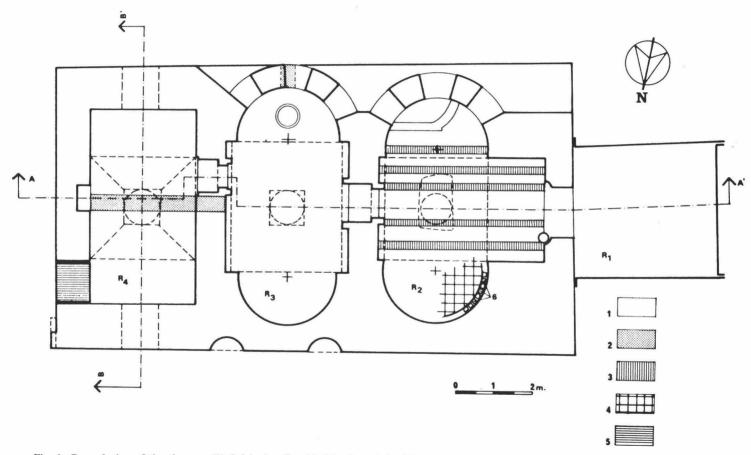


Fig. 1. Ground plan of the thermae: (1) Original walls with Islamic-period additions; (2) Channel; (3) Suspensurae; (4) Floor of pottery tiles; (5) Blocked doorway; (6) Tubi.

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Herodium – Herod's Summer Palace and Burial Place

Ehud Netzer

Herodium (Arabic: Jebel el Fureidis) lies 13 km south of Jerusalem and 6 km southeast of Bethlehem, on the edge of the Judean Desert. It was built by Herod the Great (37–4 BCE) and comprises a cone-like artificial mountain with palatial buildings in its 'crater', and 100m below it, to the north, a substantial complex of monumental structures (fig. 1).

According to Josephus two momentous events occurred in the King's life in the area where he was later to build Herodium – the only one of his works to which his name was attached. In 40 BCE Herod was forced to flee Jerusalem, when Mattathias Antigonus of the Hasmonaean dynasty conspired with the Parthians against Rome and Hyrkanus II, the Hasmonaean client king of Judea, whom Herod supported. At about this time Herod's mother narrowly escaped serious injury in the vicinity of Herodium when she fell under the wheels of her own chariot, and Herod was apparently so upset by the episode that he threatened suicide. It was here too that he gave successful

battle against his pursuers, and ultimately reached Rome, where he himself was created king of Judea by the grateful Romans. These two episodes made such an impact on Herod that he determined to create his burial estate in this area rather than in his capital, Jerusalem; but it was only seventeen years later (c.23 BCE) that he implemented his plan.

Several purposes were achieved at Herodium. It served as a summer retreat for the royal family and the court (in the same way that the palace at Jericho served as their winter resort); as a monument to his name; as a symbol of his victory here which effectively put him on the throne; as the capital of an administrative district, or toparchy, which was moved here from Beth Zur about 10 miles away; as the king's burial estate: and finally as a fortress. which is contained within the 'cone' of the artificial hill and was to serve the needs of Herod and his immediate family at any time of danger. In this it differs from the rest of the series of palatial fortresses built by Herod, such as Masada, Machaerus, Hyrcania and Alexandrium, which were all, incidently, founded by the Hasmonaeans, whereas Herodium was not begun until the time of Herod himself.

The moderate summer heat, superb views of the Judean Desert and the presence of an adequate water supply (the king built a 6-mile-long water channel from a spring near Bethlehem), as well as its proximity to Jerusalem, made Herodium an ideal summer palace for himself and his court.

The mountain palace-fortress combined the functions of royal villa, a fortress and a monumental landmark visible for miles around (fig. 2). The 'cylinder' or casemate perimeter wall, once finished, was partially covered by artificial fill, which today gives the site the characteristic look of a volcanic cone. Parallels to the mountain palace-fortress have been drawn in Jerusalem's Antonia fortress, and the group of three high towers – Phasael, Hippicus

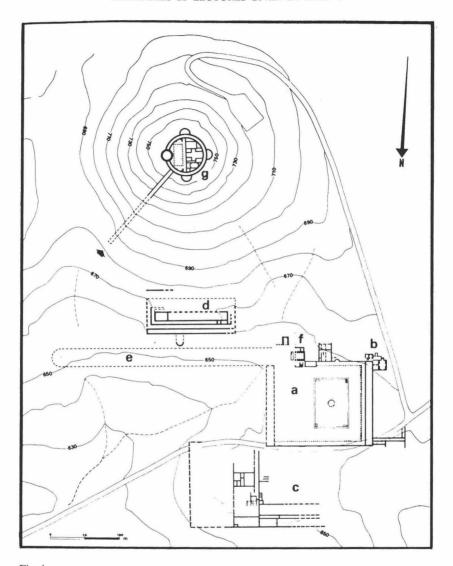


Fig. 1

Plan of Greater Herodium:

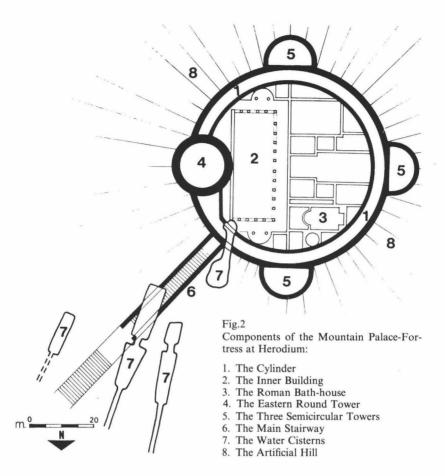
- a. The Pool Complex
- b. The Central Bath-house
- c. The Northern Area

and Mariamne – which served as the western citadel of the city. The eastern, solid, round tower of Herodium (the other three are semicircular) was no doubt similar in concept to the so-

- d. The Large Palace
- e. The Course
- f. The Monumental Building
- g. The Mountain Palace-Fortress

called 'David's Tower' there. Other scholars cite Augustus' mausoleum in Rome as a parallel, but the present author sees a much closer source of inspiration in the Antonia. On the

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other hand he can see no justification in the use of the term 'chateau' as applied to Herodium (cf. BAIAS 1985-6, pp. 56-68), since the term is taken from the totally distinct context of the French Renaissance. The mountain palace-fortress was an integral part of the whole multi-purpose complex, designed for the specific needs of Herod himself.

Lower Herodium is a well-planned complex of buildings, pools and gardens, with a single homogeneous grid pattern and a system of architectural axes and focal points which includes the mountain palace-fortress. It spreads over about 37 acres, or about 15 hectares. There is a large building,

probably a palace, which is poorly preserved at the foot of the hill itself, but the central feature of Lower Herodium is a colonnade, around three sides of the formal garden which enclosed the pool. The buildings were constructed on three sides of this pool. So far only small sections of them have been uncovered, but these include parts of two luxurious dwellings (perhaps for the administrators of the toparchy), service and storage wings and a large bathhouse in Roman style.

Herod's tomb has not yet been found, but a series of structures between the pool complex and the large palace probably has relevance to it. 'The Course' is an artificially levelled

terrace, 350m × 25m wide, built, perhaps, for Herod's funeral procession as described by Josephus. The 'Monumental Building' possibly served as a triclinium (dining hall), and may have parallels in the triclinia of Petra. It originally had five entrance doors and a barrel vault and this author would tentatively restore a monumental roof above it. A group of well-carved ashlar blocks, re-used in a Byzantine church next to this building, may come from another monumental structure nearby. Some of these ashlars bear a Doric frieze in Roman fashion and others have floral patterns. These motifs are known elsewhere in contemporaneous Jewish tomb monuments. A huge ceremonial ritual bath with a double entrance was found near the 'Monumental Building' and may be related to it, but until the tomb itself comes to light this hypothesis must rest.

Over the coming years excavations will, of course, concentrate on locating Herod's tomb. Meanwhile, within the framework of the National Parks Authority, the site is being restored for visitors. The ruins have been partially reconstructed and gardens are to be integrated into the pool complex, thus echoing the ancient splendours of Herod's outstanding summer palace and burial estate.

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The Bedul in Petra

Piotr Bienkowski

Petra in southern Jordan was the capital of the far-flung Nabataean trading empire. Since its rediscovery by Burckhardt in 1812, Petra has become one of the major tourist attractions of the Near East. For the last 150 years or so

it has also been the home of a tribe of Beduin called the Bedul (see Bienkowski 1985; Ohannessian-Charpin forthcoming). The author spent two seasons (1983 and 1986) surveying their architecture. This work was supported by the British School of Archaeology in Jerusalem, the British Institute at Amman for Archaeology and History, the Palestine Exploration Fund, the University of Liverpool and Liverpool Museum, with the cooperation of the Department of Antiquities of Jordan.

Beduin Architecture in Petra

Beduin are popularly thought to be tented nomads wandering with their herds in search of pasture. While this may be true of some tribes in certain areas, throughout history Beduin have lived on the outskirts of settlements, and townsfolk and Beduin have been mutually dependent on each other. In recent years, changing conditions and government pressure have forced many of them to settle permanently and the traditional Beduin lifestyle is fast disappearing.

The Bedul are an example of a Beduin tribe which has lived traditionally in one place, though individuals and families occasionally move from one part of Petra to another. Although some of the Bedul claim that the tribe has lived in Petra since the time of the Nabataeans, it is unlikely that they have been there longer than about 150 years.

Some live for at least part of the year in the traditional Beduin 'black tent'. One family lives in a tent situated on a slope giving a commanding view of the central area of Petra, much appreciated by the inhabitants. The area of the tent is defined by a stone wall, which varies from one to four courses in height. Much of the 'wall' is merely a single line of stones defining the edge of the tent. This does not form a physical barrier, but rather defines a boundary. Until 1984 this family of five moved here every summer for several years, while

during the winter months they lived in a cave elsewhere in Petra.

Other families stay in the same place throughout the year. They live in cavelike dwellings cut by the Nabataeans about 2000 years ago. These 'caves' generally have elaborate carved façades and were substantially worked inside, some being very spacious indeed. Usually, the Beduin have adapted the 'caves', and the constructions can be very sophisticated. In many instances where the soft sandstone façade has eroded, the Bedul have constructed a stone wall with door and windows across the front (Plate 1). Many families have planted gardens outside their homes, where they grow flowers and herbs such as mint and parsley. In one large complex there is a system for catching run-off rainwater, using a stone-built channel to divert the water into a rock-cut well.

Some 'caves' are used primarily as living quarters, with areas for cooking and storage. The walls of living rooms tend to be whitewashed inside, occasionally with multi-coloured painted designs. Living rooms all tend to be similarly furnished with piles of mattresses, chests and suitcases cupboards. arranged around the sides. Often during the summer a tent is set up outside the dwelling, and the focus of family life shifts there. Large families have separate rooms for older children and their families, and also separate kitchens, storerooms and animal pens. Other 'caves' are used only at certain times of the year, for instance during the harvest. They are situated near fields, and are used as work areas or storage spaces for equipment and food. Some of the Bedul have inherited the Nabataeans' skill as water engineers. One enterprising Beduin dug down several metres into the ground to find water, constructed a well, and now irrigates a huge garden which produces olives, beetroots, aubergines, peppers, tomatoes, lemons, oranges, loquats, figs, pomegranates and apricots.



Plate 1. Terrace and stone wall with door and windows across the front of a cave.

The New Village

Most of the Bedul have now been moved from Petra by the Jordanian Government to the nearby new village of Umm Saihun. This is part of the reorganization of Petra along more commercial lines, in an attempt to improve facilities for tourists. Many of their former homes have already fallen into disrepair. In some cases evidence of gardens and painted walls is already disappearing after only two years. This is the sort of detail that might cautiously be inferred on a larger scale for the Nabataean period than present archaeological remains suggest.

In the new village, smaller rooms, running water, several shops and the siting of the village by a road are all factors contributing to a change in family life which is already noticeable. The houses are very close together, compared with the spaciousness of Petra, which seems to be leading to a very deliberate demarcation of space. The attitude of the Beduin, always pragmatic, is very positive. Those who can, are building extensions to the basic houses provided by the government. usually for use as guest rooms or shops. The building of a new school and easier access to medical facilities, among other factors, are evidence of a certain improvement in the quality of life.

Archaeological Implications

The architecture of the Bedul may help us to interpret how Petra might have been used in ancient times. The sparse evidence we have for Nabataean domestic occupation suggests that they lived in adapted caves. In 1936–7, Murray and Ellis excavated a Nabataean cave complex which had been used as residential quarters (1940, 3–12 and pls XVI–XXIV; cf. also Hammond 1973, 54). Their results showed that the Nabataean inhabitants constructed a wall, with door and windows, across a natural cave mouth. At some point the cave was enlarged by pick-work, and

refinements such as terrace ledges and boundary walls were introduced. It is very likely that this practice was widespread – all over Petra there are traces of Nabataean rock-cuttings related to natural caves. Furthermore, no extensive domestic settlement area within Petra has vet been identified. Some large houses have been excavated, together with small 'shops' along the edge of the paved street. Of course, much remains to be excavated, but it is likely that the caves with less elaborate facades and without 'burial niches' inside, which tend to be away from the central area of Petra, were used for some of the domestic occupation, not as tombs.

Related to this is the whole question of the exact nature of Nabataean domestic occupation. In Jordan until now, the only Nabataean structures outside Petra to be properly excavated have been temples. It may well be that the domestic structures remain to be discovered. However, the huge Israeli survey in the Negev, which has studied many Nabataean sites, has found practically no evidence for widespread Nabataean domestic architecture. The architecture associated with known Nabataean temples seems to be later -Byzantine, not Nabataean. Apart from temples, Nabataean 'architecture' in the Negev seems to consist of flimsy stone structures, which may have defined areas for temporary structures, such as tents. This is more to be associated with nomads than town dwellers. and might be explained by the Nabataeans' way of life as traders, constantly on the move. Indeed, there are certain similarities with the 'walls' associated with Beduin tents in Petra. Nabataean expertise in rock-carving and water management has encouraged us to suppose that they must have lived in fairly substantial dwellings. While this may well be the case in some instances, we must now give serious consideration to the growing evidence that their way of life perhaps retained seminomadic characteristics.

SUMMARIES OF LECTURES GIVEN IN 1986-7

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(Piotr Bienkowski is responsible for Egyptian and Near Eastern Antiquities at Liverpool Museum. He is the Editor of Levant and the author of Jericho in the Late Bronze Age, 1986.)

Grants Given by the Society

In 1986–7 the Society awarded five grants. Brief accounts of the results achieved by three of the recipients will be found below. At the time of going to press no word had been received from Kathryn Gleason on her participation in the excavations at Jericho and Herodium, nor from Fanny Vitto who was to attend the Symposium on Ancient Synagogues in Israel in May at which she was to give a paper.

Shelley Wachsmann

The financial assistance of the Anglo-Israel Archaeological Society and the Nautical Archaeological Society enabled me to attend a three-day conference in Oxford in January 1987 on 'Seaborne Trade in Metals and Ingots'. The conference was jointly sponsored by the Nautical Archaeological Society and the Maritime Archaeological Research Unit of Oxford University. Experts from the two disciplines of nautical archaeology and metallurgy were brought together for a valuable exchange of opinions. Chronologically the material presented ranged from the Late Bronze Age to modern times, concentrating on Europe and the Mediterranean Basin. A main topic of discussion was oxhide ingots of the Late Bronze Age, which is of particular importance to my research. I gave a paper entitled 'The Seaborne Late Bronze Age Trade in Retrospect', which dealt with several recent discoveries and excavations which have changed our understanding of the extent and mechanics of the trade in metals of those times.

During my stay in England I was also able to lecture twice on the excavation of the Kinneret boat, once to a joint audience of the Anglo-Israel Archaeological Society and the West London Synagogue and once at the culmination of the Oxford conference (see report pp. 50–2). I am most grateful for the assistance of the Society and for the many courtesies extended to me during my visit.

Orna Cohen

The Kinneret boat presented numerous problems in conservation. It is the largest project of conservation of waterlogged wood ever undertaken in Israel. After meeting the immediate needs of the emergency excavation and studying the available information for long-term conservation, the author was grateful for the opportunity provided by the Anglo-Israel Archaeological Society to confer with experts with practical experience. Discussions with Ms S. V. E. Heal. Head of the Archaeological Department of Ships and Antiquities, and Mr Christopher Gregson, Head of Archaeological Conservation at the National Maritime Museum, Richard W. Clarke, and Ms Janet Squirrell were very helpful. Consultations with Ms Mary McQueen and Dr Mark Jones at the Mary Rose Project were also enlightening.

Shimon Gibson

During the spring of 1987 a survey and trial excavation, were conducted at

GRANTS GIVEN BY THE SOCIETY

Sātāf in the Judean Hills some 10 kilometres west of the Old City of Jerusalem. The work was carried out by S. Gibson with Dr Amos Kloner from the Israel Department of Antiquities. A grant was received from the Anglo-Israel Archaeological Society, for which I am very grateful. The workforce for the trial excavations was provided by the Keren Kayemet le-Israel. The site is on a hillside overlooking the Soreq Valley, and contains an irrigated system of agricultural terraces covering an area of about 16 acres. There are two springs of water at the site: cEn Sātāf and 'En Bechorah. Water collected within large plastered pools, and then flowed along an elaborate system of irrigation channels to the terraces. Rows of ceramic jars, in the base of the pool of cEn Bechorah, suggest that it may have served as a fishpond during Early Roman or Byzantine periods. Five overflow water-collection pools were also surveyed. The northern part of Pool 3 was sectioned. Two trial pits (Nos 1 and 4) revealed the remains of the Early Roman settlement, below a system of Byzantine agricultural terraces to the east of cEn Bechorah. The terrace system at Sātāf was apparently substantially renovated during Ottoman times. An agricultural terrace dating from this period was sectioned.

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