
The Natufian Graveyard in Hayonim Cave

Anna Belfer-Cohen

Citer ce document / Cite this document :

Belfer-Cohen Anna. The Natufian Graveyard in Hayonim Cave. In: Paléorient, 1988, vol. 14, n°2. Préhistoire du Levant II. Processus des changements culturels. pp. 297-308;

doi : <https://doi.org/10.3406/paleo.1988.4476>

https://www.persee.fr/doc/paleo_0153-9345_1988_num_14_2_4476

Fichier pdf généré le 24/04/2018

Résumé

Le cimetière natoufien de la grotte d'Hayonim a livré de nombreuses informations touchant aux pratiques funéraires des Natoufiens. Des observations ont pu être faites concernant aussi bien la technique de construction des sépultures que la position des corps lors de l'inhumation, la distribution par sexe et par âge, ou le mobilier funéraire. Ont également été recueillies des données concernant les changements observés diachroniquement. Ainsi les sépultures où le corps était en position allongée semblent réservées à la phase ancienne alors que la phase récente voit apparaître l'enlèvement du crâne. Certains indices font penser que d'autres sépultures furent détruites après l'occupation natoufienne. Il apparaît néanmoins possible d'utiliser les données recueillies à Hayonim (sexe et âge) pour une étude d'ensemble de la population natoufienne.

Abstract

The Natufian graveyard from Hayonim Cave yielded much information concerning the burial practices of the Natufian people. The detailed observations revealed the construction methods of the graves, the burial-positions, the gender and age compositions, the material finds accompanying the burials as well as indications for changes through time. Thus it seems that extended burials were confined to the Early Phase of the Natufian Culture while a new custom of skull-removal was introduced in the Later Phase. Though there are clear indications of more burials that were destroyed post the Natufian occupation the composition of the burials as concerning the gender and age can be used for inferences applying to the Natufian population in general.

THE NATUFIAN GRAVEYARD IN HAYONIM CAVE

A. BELFER-COHEN

ABSTRACT. — The Natufian graveyard from Hayonim Cave yielded much information concerning the burial practices of the Natufian people. The detailed observations revealed the construction methods of the graves, the burial-positions, the gender and age compositions, the material finds accompanying the burials as well as indications for changes through time. Thus it seems that extended burials were confined to the Early Phase of the Natufian Culture while a new custom of skull-removal was introduced in the Later Phase. Though there are clear indications of more burials that were destroyed post the Natufian occupation the composition of the burials as concerning the gender and age can be used for inferences applying to the Natufian population in general.

RÉSUMÉ. — Le cimetière natoufien de la grotte d'Hayonim a livré de nombreuses informations touchant aux pratiques funéraires des Natoufiens. Des observations ont pu être faites concernant aussi bien la technique de construction des sépultures que la position des corps lors de l'inhumation, la distribution par sexe et par âge, ou le mobilier funéraire. Ont également été recueillies des données concernant les changements observés diachroniquement. Ainsi les sépultures où le corps était en position allongée semblent réservées à la phase ancienne alors que la phase récente voit apparaître l'enlèvement du crâne. Certains indices font penser que d'autres sépultures furent détruites après l'occupation natoufienne. Il apparaît néanmoins possible d'utiliser les données recueillies à Hayonim (sexe et âge) pour une étude d'ensemble de la population natoufienne.

INTRODUCTION

Excavations at Hayonim Cave, Western Galilee, Israel, conducted jointly by O. Bar-Yosef, B. Arensburg and E. Tchernov revealed a Natufian base-camp site (fig. 1) lying on top of preceding prehistoric occupations (1). The duration of the Natufian occupation encompassed both the Early and the Late stages of the Natufian culture, as evidenced by lithic and stratigraphic criteria and supported by two ^{14}C accelerator dates on seeds from the base of the layer ($12,360 \pm 160$ and $12,010 \pm 180$ B.P.) (2).

The architectural remains included dwelling structures and built graves, always separately located. At the early stages of the Natufian occupation, dwelling structures had been located in the cave's front with the graves located at the back. In later stages, represented mainly by burials indicating the termination of occupation in the cave, the graves had been located in the front with several flimsy dwelling structures located in the inner part of the cave (3).

All in all, 16 graves containing 48 burials were exposed though a larger number of burials must have existed, as borne out by numerous human bones and teeth scattered in the occupational deposits (fig. 1). A considerable number of the burials had been disturbed or partially destroyed during the successive stages of the Natufian occupation. In

several cases, the introduction of new burials and the rearrangement of the graves' contents (for example : Grave VI and the complex of Graves VIII-IX) caused considerable damage. In other cases, new graves had been dug into the soil of older ones (for example Grave I had cut Grave IV) or walls had been built on top of graves such as the wall of Locus 5, overlying Grave XIII. The graves of the latest Natufian occupation (Graves XII, XIV, XVI) had been disturbed by post-Natufian activities, mainly in the Byzantine period. The disturbances in that period are evidenced by the presence of a mandible (H.31) as well as many other bones, near the Byzantine furnace erected in the cave. Erosion from the drip-line towards the Terrace caused the disappearance of Grave II and perhaps of other remains as well.

Locus 4 which proved to be another concentration of sporadic human bones was also damaged by a recent collapse caused by modern herders and their flocks.

The information gained from the available burials is thus partially biased and incomplete. According to our observations, most of the finds (except for the personal adornments) are hardly related to the burials but in that they comprise part of the graves' in-filling.

Either shallow or deep, the graves were rarely paved with stones. Two graves (V and IX) were constructed entirely of limestone slabs. Others were covered with stone slabs, paved with small stones or marked with stone circles (Graves I, III, IV) similar to those observed in Eynan, Erq-el Ahmar, etc. Though no graves had been marked by 'stone-pipes' as in Nahal Oren or on the Hayonim Terrace (4),

(1) BAR-YOSEF and TCHERNOV, 1970; BAR-YOSEF and GOREN, 1973; BAR-YOSEF *et al.*, 1974; BAR-YOSEF, 1979; BELFER-COHEN and BAR-YOSEF, 1981; BELFER-COHEN, 1988; BAR-YOSEF *et al.*, in prep.

(2) HOPF and BAR-YOSEF, 1987.

(3) BAR-YOSEF, 1979; BELFER-COHEN, 1988.

(4) STEKELIS and YIZRAELI, 1963; VALLA, 1986.

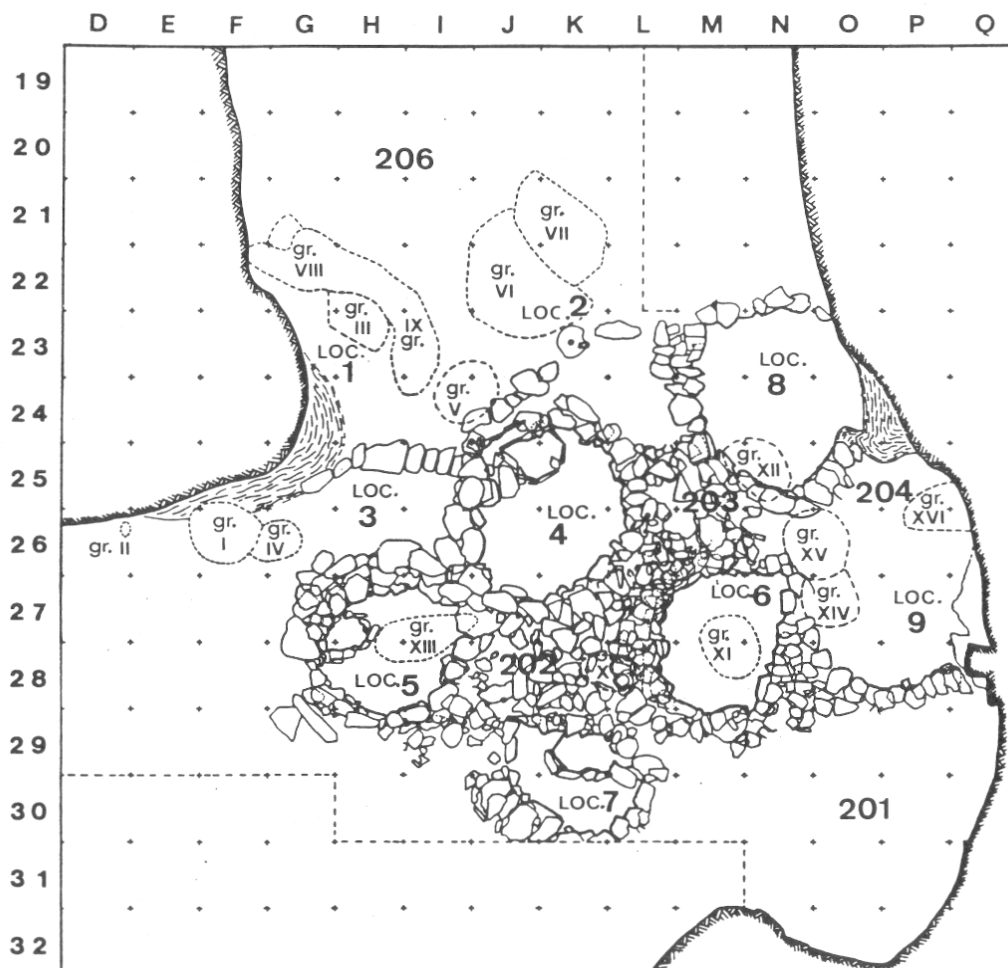


FIG. 1. — Hayonim Cave : general map of the graves and living areas.

some had small cup marks made in one of the stones above or beside them (infra).

Table 1 presents most of the basic data referred to herewith. Detailed descriptions of the graves' construction and their inventories as well as descriptions of the burials, their exact positions and their decorations are presented elsewhere (5). Detailed anatomical and anthropometric descriptions of the burials, outside the scope of the present discussion, will be published soon elsewhere (6). The only physiological references to follow are those bearing directly upon specific issues such as burial customs (presence or absence of the cranium), kind of burial — secondary or primary (bones in articulation), demographic issues (sex ratio, age-range) and presence of unique morphogenetic traits.

In several cases the sex or age of a buried person were impossible to ascertain due to a lack of diagnostic bones or to poor state of preservation. We used the following general age definitions : foetus =

embryo or a new-born; child = before the eruption of M2 (second molar); adolescent = between the eruption of M2 and the closure of the basio-occipital suture; young adult = the epiphyses of long bones are partially fused; adult = all epiphyses of long bones are fused.

THE BURIALS

1. Group and Single Burials

Most of the graves contained more than one skeleton, each. It is noteworthy that except in one case (H.33 in Grave XIII, possibly the earliest burial in the cave), all the single burials (H.28, Grave X; H.37, Grave XV and H.39, Grave XVI) belong to the later stages of the Natufian occupation in the cave. Grave II which yielded a fragmentary cranium (H.3) had been eroded to such an extent as to hinder any estimate concerning the number of burials it had originally contained.

(5) BAR-YOSEF *et al.*, in prep.; BELFER-COHEN, 1988.

(6) ARENSBURG *et al.*, in prep.

TABLE 1
The burials of Hayonim Cave.

GRAVE	PHASE	HOMO	SEX	AGE	POSITION	TYPE	BONES	ORNAMENTS
I	Early	1 2	F M	25-30 Adult	flexed	pr. sec.	skull + axial	
II	Early	3	C	4+			skull	+
III	Inter.	4 4a 4c	M ? C	20-25 Adult 1+	semi-flex.	pr. sec. sec.	skull + axial axial axial	
IV	Early	5 5a	M F	Adult Adult		sec. sec.	axial axial	+
V	Late	6 7 7a	M ? M ?	Adult Adult Adult		sec. sec. sec.	mandible mandible mandible	
general : axial bones								
VI	Early & Late	8 10 12 15 16 21 22 23 23a	M F ? C M C C C ? foetus	25-30 <17 6 Adult 3-4 7,5-8 4+ young adult		pr. pr. pr. pr. pr. pr. pr. pr.	skull + axial skull + axial skull + axial skull + axial skull + axial skull + axial skull + axial skull + axial axial	+
VII	Early	9 11 13 13a	F M C foetus	16-19 20-25 7,5-8	ex. ex. fl.	pr. pr. fl.	skull + axial skull + axial skull + axial	+
VIII/IX	Early	14 17 17a 18 19 20 26 24 25 27	C M C C M M ? M ? M M	5,5-6 20-25 <2 4-5 Adult 25-30 14-17 18-20 ca. 25 35-45	semi-fl. semi-fl. ext. fl. fl.	sec. pr. sec. pr. ? pr. pr. pr. sec. pr. pr.	skull + axial skull + axial axial skull + axial skull + axial skull + axial skull + axial axial skull + axial skull + axial general	+
X	Late	28	M	Adult	fl.	pr.	mandible+axial	+
XI	Late	29 29a 30	M F ? ?	17-18 19-21 Adult	fl.	pr. sec. sec.	mandible + axial mandible+axial mandible general :	+
XII	Late	32 34 35	C M M ?	6-7 Adult Adult		pr. ? sec.	teeth skull + axial teeth + axial general :	+
XIII	Early	33	M	<25		pr.	skull + axial	+
XIV	Late	36 36a 36b 36c	? ? ? C	Adult Adult Adult ?		sec. sec. sec. sec.	mandible mandible mandible General : a few axial bones axial general :	+
XV	Late	37	F	45-50	squat.	pr.	mandible+axial	+
XVI	Late	39	M	35-45	fl.	pr.	skull+axial	+

2. Primary and Secondary burials

Primary burials were defined as burials of complete or nearly complete skeletons in anatomical articulations. Disarrayed clusters of bones or isolated bones (for example the three mandibles from Grave V or the leg bones from Grave IV) were considered as secondary burials.

Out of sixteen graves, two (Graves V and XIV, both belonging to the last occupation phase) contained secondary burials only. Twelve graves contained primary burials with or without additional secondary burials. Another two (Graves II and IV) had been too heavily damaged to be included in either category. The graves with only secondary burials contained mandibles and axial bones (see Table 1). Grave XIV conveyed the impression of being a collective, secondary burial; the number of axial bones found was too small to match the three adult mandibles recovered from the grave. Some of the axial bones belong to a child, unrepresented by cranial parts. To a lesser extent, the same observations apply to Grave V where three broken adult mandibles were accompanied by a small number of axial bones. Most of the graves with multiple burials (for example Graves VIII-IX) contained both primary and secondary burials (see Table 1). Two such graves contained only primary burials: Grave VII, with three skeletons (not counting a foetus, H.13a) and Grave VI, with eight burials (not counting a foetus, H.23a).

It is noteworthy that while all primary burials from the earlier graves (I, III, VI, VII, VIII, IX) retained both the skulls and the axial bones, the primary burials of the last Natufian occupation (Graves X, XI, XV) contained only mandibles and axial bones, the only exceptions being H.39 (Grave XVI) and H.34 (Grave XII). Thus, it may be stated that in later burials (either primary or secondary) the skulls are usually absent (only in two out of 16 burials in seven graves were the skulls present). The cases of secondary burials when the crania are missing should be treated cautiously; those are most often underrepresented (mere presence of mandibles and few axial bones). However as they all belong to the last occupation of the cave, it is very possible that they too represent the new custom of skull-removal. In Grave VI though, all the burials (except H.23a, a foetus) including those belonging to the later Natufian occupation when the grave had been re-opened, had kept their skulls and the axial bones as well (Table 1).

3. Burial Position

Primary burials were either extended or more often semi-flexed or flexed (see Table 1). All extended burials (H.9 and H.11, Grave VII; H.20 and H.26, Grave IXa and H.33, Grave XIII) belong to the cave early Natufian occupation. While most of

the semi-flexed and flexed burials belong to the later Natufian occupation, some flexed burials (H.1, H.4, etc.) are earlier (see Table 1). It seems that the two flexed burials in Grave VI (H.8 and H.10) belong to its second stage of use. Mixed positions were found only in one Grave (Gr. VII): H.9 and H.11 were lying extended while H.13 deposited at their feet was flexed (fig. 2). Other graves, containing more than one undisturbed primary burial, adhere to a single position. Thus, in the complex of Graves VIII and IX, the extended burials of H.20 and possibly H.26 belong to the earliest stage, while all the other recognizable primary burials are flexed or semi-flexed (H.17, 19, 25, 27). In Grave VI most of the eight primary burials are disturbed and their positions except for the semi-flexed burials or H.8 and H.10 (see below) could not be recognized.

No correlations could be established between burial position and age or sex (see Table 1). Children burials were usually too fragmentary to let their positions being identified. Four out of five primary children burials from Grave VI were thus disturbed and their position unrecognizable. The only identifiable child burial was the flexed burial of H.13, in Grave VII.

Additional variability regarding burial position has been evidenced: supine burials, on a side, facing another person, facing the cave walls, with arms folded or stretched in different direction, etc.

Detailed descriptions of the graves' construction are beyond the scope of this article; some details though, related to burial customs or indicative of a differentiation between burials, should be noted. Thus in several primary burials, the heads were placed on piles of stones (H.1, Grave I; H.4, Grave III). Several burials had been covered with stone slabs, before the grave was filled in. In Grave I, the bones of H.2 were scattered above the skeleton of H.1 as well as on top of the stone slab covering the first use of the grave. Graves V and XI, built entirely of stone slabs, were also stone-covered. The large slab uncovered in the near proximity of Grave V had most probably been removed during the Byzantine period. Two early graves, I and IV, were paved with small stones and surrounded by a stone circle such as the one observed as well around Grave III.

4. Age and Gender

No correlations could be evidenced between gender and age composition among the various graves (Table 1). In several cases, the burials seem to have been intimately related. Thus Grave IX contains two male-couple burials: H.17, 20-25 years old, lies side by side with H.19, an adult; H.25, ca. 25 years old, lies on top of H.27, 35-45 years old, both in a flexed position. The burials in Grave VII form an intriguing combination: A male (H.11, 20-25 years old) and a pregnant female (H.9, 16-19

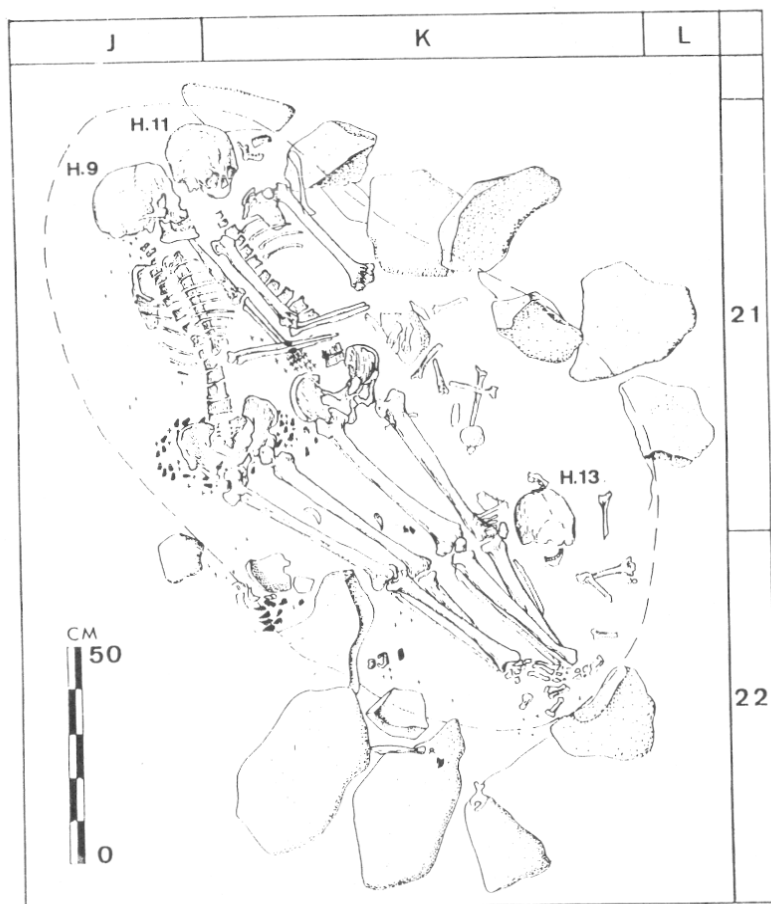


FIG. 2. — Hayonim Cave, grave VII. H.9 (pregnant female) and H. 11 (male) lying in extended position ; H. 13 (child) in flexed position.

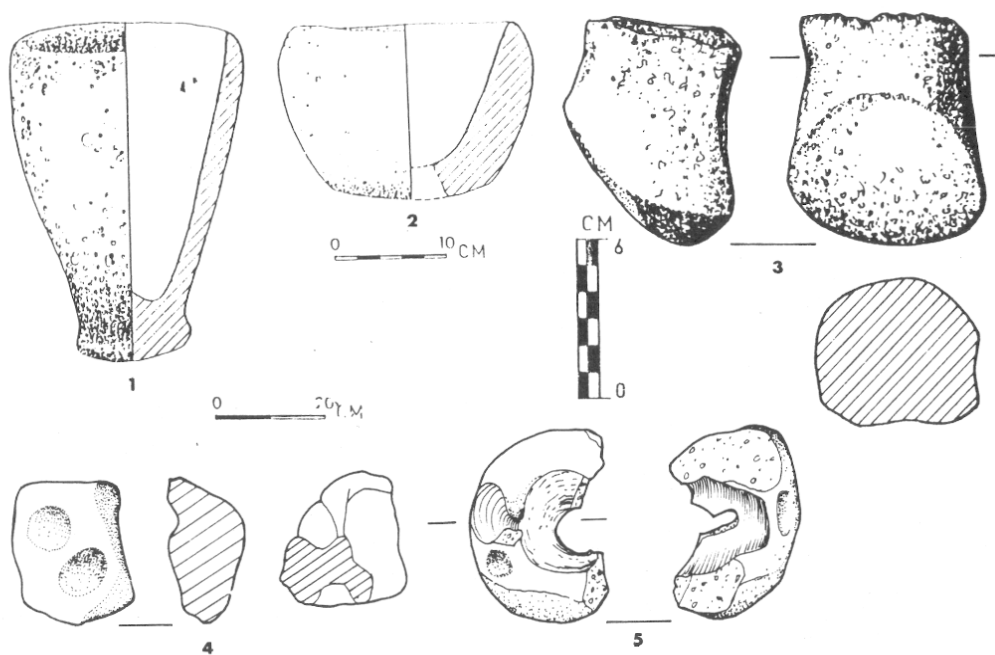


FIG. 3. — Hayonim Cave. Groundstone implements from the graves.

years old) lie side by side with a young child (H.13, 7.5-8 years old) at their feet (fig. 2). As ethnographic observations indicate that the average age of fertility among hunter-gatherers is ca. 15-16 years (7), the girl (H.9) could not have been the mother of H. 13, tempting as it is to see Grave VII as a nuclear family burial. Another significant fact is the congenital absence of M3 in the mandibles of both H.9 and H.11 which may well indicate a genetic link (8). The issue of "who was buried with whom" is much complicated by the re-use of graves (the most obvious example being the two stages of Grave VI) and by the frequent combination of primary and secondary burials.

Distribution of burials according to sex is as follows: Males — 41.7 %. Females (including an adolescent; probably female) — 12.5 %. Children (including the foetuses) — 29.2 %. Unidentified (adults and an adolescent from Grave VIII) — 16.7 %.

The low percentage of females — only five of the forty-eight skeletons — and the high percentage of children, are characteristic of Hayonim Cave in comparison with other Natufian cemeteries with the exception of Shukba (*infra*).

Another phenomenon observed concerns the age range of females versus the males. H.9 may have died while giving birth. The same is possible regarding H.10, an adolescent probably female, who may have been the mother of the foetus found in Grave VI. Small as this sample is, it still may indicate that females had died younger than males — often when giving birth.

The high percentage (31.1 % of the total) of children burials preserved is interesting, in light of the fragility of children's bones. If the burials are regarded as representing the mortality percentages of children at various ages, it is quite obvious that mortality had been highest at the crucial time of weaning (3-6 years). This phenomenon was recorded in many hunter-gatherers populations, where soft food is less common than in agricultural societies (9).

5. Decorated burials

The unadorned burials outnumber the adorned ones even if one takes into account the adornments found inside graves but that cannot be ascribed to a specific burial. Such ornaments might well be only part of the in-filling material instead of the integral part of a burial. This might be the case with isolated items such as the perforated fox teeth from Graves II and IV or the bone pendants from Graves XI and

XVI as well as the rare — one or two — dentalium beads from each of the Graves V, X, XII, XV.

The adornments are made of bone, teeth and dentalium shells. As the latter are easily dispersed, it was very difficult to associate dentalium beads recovered from a grave, with a specific burial. Such is the case with the 103 dentalium beads (and eight bone pendants) recovered from Grave VI, which probably represent personal jewellery. Another example are two partridge joint beads and 17 dentalium beads from Grave III.

The different frequencies of various ornament-types in the graves, are intriguing. Dentalium beads were found either in the hundreds (Grave VIII-155 beads, VI-103, VII-182, XIII-365) or less than five per grave (in Graves V, X, XIV, XV, XII, with nine beads in Grave IX, 12 in Grave XVI and 17 in Grave III).

The identifiable individual decorated burials are:

1. Homo 9, female (pregnant?), 16-19 years old, in an extended position, on her left side, facing H.11. Her right arm was bent at the elbow and outstretched towards H.11. She had a belt and a bracelet (or possibly two), both made of bone pendants and dentalium beads and a dentalium necklace. Two perforated fox teeth were found as well, one near her head and the other between her legs, perhaps also belonging to the belt (fig. 2).

2. Homo 25, male, ca. 25 years old, lying on his right side on top of H.27. His arms were folded across his chest, one of them adorned with a bracelet of 20 partridge tibia-tarsus beads.

3. Homo 17, male, 20-25 years old, lying on his back, in a semi-flexed position with his left hand resting on his mid-body and the right arm stretched along his body. Many dentalium shells (the majority of the 155, recovered from Grave VIII) probably the remains of a decorated garment were scattered near his arms.

4. Homo 33 (fig. 4), male, younger than 25; the exact position of the corpse was undeterminable as the legs had been cut off by the wall of locus 5. Both arms were stretched out along the body and the face was turned to the left, westwards. Hundreds (N = 365) of dentalium beads were found near his neck (a chest dress?), with a belt and an armlet of perforated fox teeth. A unique bone artefact was found under his left upper arm.

Twelve dentalium beads found in the fill of Grave XVI may indicate that H.39, (male, 34-45 years old), should also be included among the decorated burials.

All the decorated burials (with the possible exception of the burials in Grave XVI) and most of the isolated ornaments are coming from graves belonging to the early phases of the Natufian occupation. Only two bone pendants were found in Late Natufian graves (Graves XI and XVI).

(7) HARRISON *et al.*, 1977.

(8) SMITH 1973 and below.

(9) HARRISON *et al.*, 1977; STOTT, 1969; ACSADI and NEMESKERI, 1970.

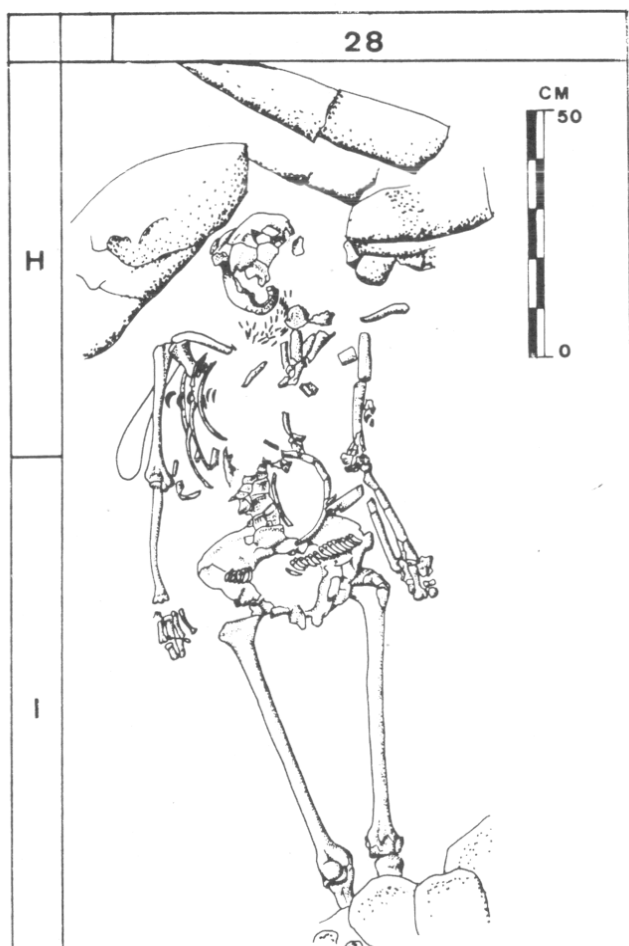


FIG. 4. — Hayonim cave. Decorated burial. H. 13 adorned with dentalium beads.

6. Endogamy

In the preliminary publications of the Hayonim Cave Natufian burials, a strong case for endogamy was proposed (10). It was based on the congenital absence of M3 in the mandible, that we were able to observe in 47 % of the sample. As this is a recessive genetic characteristic occurring in relatively low frequencies in normal populations, its high percentage among the Hayonim Cave population may indicate a significant degree of inbreeding. Unfortunately, this hypothesis could not be supported any more as soon as the human sample became larger. Only seventeen adult mandibles (including H.30, a complete mandible found off a grave) had the M3 area preserved; all the others being totally or partially crushed. Of these, only five (29.4 %) lacked M3. This percentage, though higher than in other populations (11), may not be significant enough for any definite conclusions.

(10) SMITH, 1973.

(11) *Ibid.*

FINDS FROM THE GRAVES

All graves had been dug into previous layers of occupation, mostly Natufian but also Kebaran, Aurignacian or Mousterian ones. Thus the objects recovered from the graves could have been part of the sediment which was either dug-up or filled in during the construction of the grave.

Flint implements

The artefact assemblages from the graves do not differ either technologically or typologically, from the rest of the Natufian industry. It does not seem that intentional display of flint artefacts in a grave, occurred. Only one case could be mentioned : in Graves XII two large bifaces were found lying side by side (fig. 5 : 13, 14); though two similar artifacts were present in an other area of the cave. Several items bearing ochre traces were uncovered; they do not differ from ochre-stained items found in Layer B. Polished picks were also collected in the graves : two items are coming from Grave VI and one from Grave IX.

Bone implements

Bone implements found in the graves could be divided into two groups. One consists of items belonging as an integral part to the burials. These are decorative elements, mainly beads and pendants probably used as personal adornments, or unique items such as the elongated spatula ('bone-dagger') found in Grave XIII. The other group is more heterogeneous and consists of various bone implements (awls, points, gorgets, fragments of artefacts) whose presence in the graves was, most probably, unintentional. They belong either to the levels accumulated before the construction of the grave, or constitute part of the filling sediment. The mixed nature of the assemblages in the graves is well illustrated by the presence of typical Aurignacian items, such as horn bi-points (12) found in Graves VI, VIII and IX, which had been dug into the Aurignacian Layer, or the polished teeth whose enamel has been removed before polishing, found in Graves I and VIII. The bone implements collected in the graves do not differ, either typologically or technologically from the bone artifacts found elsewhere in Layer B (13). Only one Grave (XII) was devoid of any bone implement and in three other graves — II, X and XIV — only one implement was found.

It is noticeable that numerous as the beads and pendants are, they are all concentrated in certain graves, while in others they are either absent or

(12) BELFER-COHEN and BAR-YOSEF, 1981.

(13) BELFER-COHEN, 1988; BAR-YOSEF *et al.*, in prep.

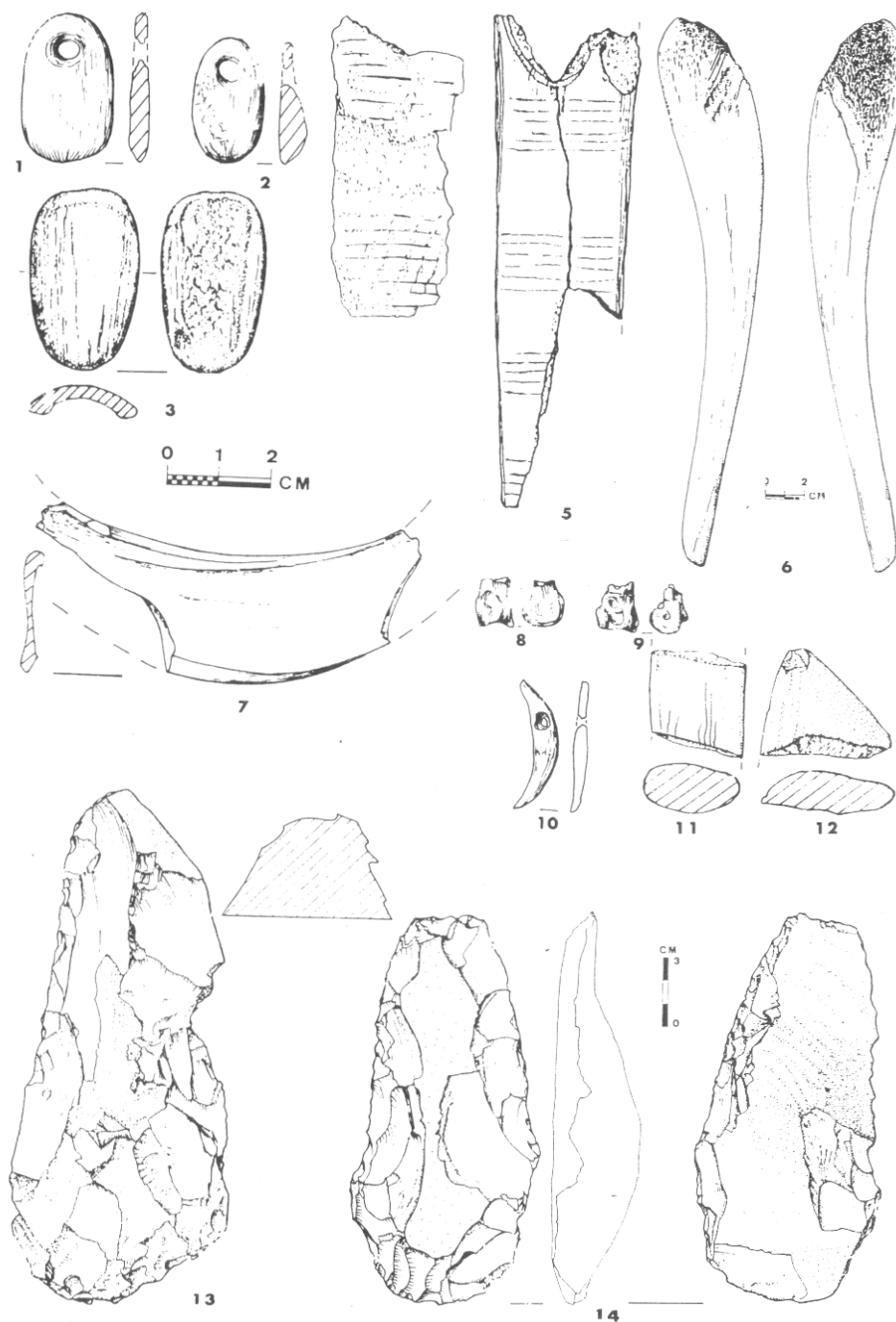


FIG. 5. — Hayonim cave. Flint and bone artifacts from the graves.

present in very small numbers. Thus out of sixty-four pendants (fig. 5 : 1, 2), fifty-two recovered from Grave VII (H.9.) adornments, eight were found dispersed in Grave VI, two in Grave VIII, one in Grave XVI and XI. Only four of them were broken, as opposed to many broken pendants recovered from living areas (31 out of 59). The same pattern is valid for the perforated fox teeth (fig. 5 : 10) : of the thirty-two found in the graves, twenty-eight formed the girdle ornament of H.33 (Grave XIII).

Single specimens were recovered in Graves II and IV and another two in Grave VII.

Beads made of partridge tibia joints (fig. 5 : 8, 9) were found only in two graves : twenty in Grave IX, were probably part of a bracelet worn by H.25; two were collected in the fill of Grave III. Fifty others were recovered from living areas. Other decorative items are rare : a boar tusk (fig. 5 : 7) was found in Grave IX, two flat decorated fragments of uniden-

tified items (fig. 5 : 4, 5) were recovered in Grave III and Grave V (14). Besides the pendants and beads, the only bone implement which could be considered as a burial offering is a large spatula (27.8 × 4.5 cm.) made of a bovine rib. This spatula was found under the upper right arm of H.33 (fig. 5 : 6). No similar item is known from any other Natufian site. Another unique find consists of two large unperforated plaquettes, found above Grave VII (fig. 5 : 3). Similar items had been used elsewhere to cover the eyes of the dead (15); thus it is quite possible that originally they constituted an integral part of a burial; then they might have been removed either as later Natufian construction activities were performed or during the internment of additional corpses.

Groundstone implements

Of the very few limestone or basalt objects found in the graves, most are undoubtedly part of the grave-fill, only a few may be associated with the burials. Limestone tools were found in ten graves and in three instances only a single object was recovered. Pounding utensils such as mortars and pestles, though rare, could as a rule be associated with the graves. A nearly complete goblet-type basalt mortar (reconstructed from five fragments) was found in the fill of Grave VIII above Grave IX (fig. 3 : 1). Several cupmarks were incorporated in the stone circle of Grave VI (fig. 3 : 4, 5). Another small cupmark occurred on a block of stone, on the edge of Grave V. Other small mortar fragments found in the graves undoubtedly belong to the general grave-fill, evidenced by two joint pieces of one basalt mortar one fragment of which was found in Grave VII while the other was collected seven meters away in locus 3 (fig. 3 : 2). Five pieces of a 'stone-pipe' were recovered from Locus 9 quite close to Grave XVI. Out of eight pestles, only one limestone item was complete. Four others, bearing ochre stains, may also have been associated with burial customs and ceremonies. Ochre stained pestles were found in the living areas of the cave as well. A fragment of a basalt pestle, shaped like an animal hoof (Grave VII, fig. 3 : 3) is unique in Hayonim Cave, though a similar specimen was reported from El-Wad (16).

Two tiny fragments of polished soft limestone, striated all over by scraping, were recovered from Grave V and Grave XVI. A third, similar item was recovered from Area 201. Reminiscent of the stone colours ('bloc colorant') found in French Upper Palaeolithic sites such as Lascaux (17), these items could quite possibly have been used for the same purpose at Hayonim.

COMPARISONS AND SUMMARY

Several conclusions concerning the Natufian population and its burial customs can be drawn from the previous analysis.

1. Burials

A diachronic change is indicated regarding burial positions. Thus, extended burials common in the earliest phases were replaced in later phases by flexed and semi-flexed positions. Similar observations have been made at El-Wad, where the extended burials inside the cave pre-date the flexed ones found at the cave's entrance and on the terrace (18). Another custom, introduced late in the Natufian cultural sequence, is skull removal. While in secondary burials a missing cranium could result from misplacement or other forms of disturbance, in primary burials the intentional nature of this practice is most obvious. Known from other Natufian sites such as Nahal Oren (19), Eynan (20) and Hayonim Terrace (21), skull removal was, however, not given enough attention, even though it flourished during the Neolithic and culminated with the plastered and modelled skulls of the PPNB period (22).

Though more common in the early phases, multiple burials were found in later phases as well. While most of the early multiple burials are primary ones and consist of the whole skeleton, the later multiple burials are usually either secondary (Graves V, XIV, etc.) or mixed : one primary burial, the rest of it being bones dispersed or secondary internments (Graves XI, XII, etc.).

In contrast to other Natufian cemeteries such as El-Wad, Eynan, Nahal Oren, Kebara, etc., no examples of stones placed over the heads, bodies or limbs, have been observed. Stones placed under bodies or heads have been evidenced in two or three burials of the early occupation (*supra*).

No correlations were found between the way of burial (primary or secondary) the position of the bodies (extended or flexed) and the age or gender. Natufian extended burials have been reported so far only from two caves, Hayonim and El-Wad (23). In the other published Natufian cemeteries, extended skeletons are not present. A squatting position, similar perhaps to that of H.37 (Grave XV), is mentioned (24) among the burials of the Final Natufian in Eynan. No relationship could be proved

(14) BAR-YOSEF and TCHERNOV, 1970.

(15) VALLOIS, 1960.

(16) GARROD and BATE, 1937 : pl. XV.

(17) LEROI-GOURHAN and ALLAIN, 1979 : fig. 120.

(18) GARROD and BATE, 1937; WRIGHT, 1978.

(19) STEKELIS and YIZRAELI, 1963.

(20) VALLA, 1981.

(21) VALLA, 1986.

(22) CAUVIN, 1972.

(23) GARROD and BATE, 1937; WRIGHT, 1978.

(24) VALLA, 1987.

TABLE 2
Distribution of sex ratios in Natufian cemeteries.

	ADULTS*		MALES	FEMALES	INDET.	CHILDREN	
	N	%				N	%
El-Wad (1*)	64	74%	35	23	6	23	26%
Hayonim Cave	34	71%	20	6	8	14	29%
Nahal Oren (2*)	34	76%	12	7	15	11	24%
Shuqbah	28	62%	16	9	17	17	38%
Eynan(3*)	70	74%	19	14	37	24	26%

*Including adolescents

(1*) The sex assignment of the burials in El-Wad is according to that published by Garrod and Bate (36) and is different from the one published in Wright (37).

(2*) While Crognier and Dupouy-Madre (38) state that the

proportions of males and females are equal, in the detailed description the ratio is as presented here, i.e. seven females and 12 males.

(3*) According to Soliveres (39).

to exist between the burials in any given grave and no correlation could be traced between the mode of burial and the grave's structure. All the graves are generally built in the same way and, as in Eynan (25), they all have been built outside the living quarters of the contemporary occupations. The use of a site as a graveyard when it is abandoned and not used any more as living quarters has already been suggested for the Final Natufian at Eynan (26). 'Stone-pipe' fragments such as the grave markers found at Nahal Oren (27) were also discovered in Hayonim Cave; they were incorporated in the walls of Loci 4 and 6, obviously used as building stones. Other 'stone-pipe' fragments have been found in Locus 9, also in a secondary deposit. Other grave markers have been noticed, such as the cupmarks incorporated in the stone circle of Grave VI or the stone circles around Graves I, III and IV.

Even though beads and pendants were found in all the graves (see Table 1), only four burials may be defined as 'decorated'. These three males and one female, all young adults, were adorned with individual ornaments, different from one skeleton to the other. This could conceivably indicate social stratification, or merely reflect burial rituals. The young age of the persons bearing ornaments might be regarded as an indirect hint of the existence of social stratification as it is most improbable that they have had enough time to gain high status which could be indicated by the ornaments by their own merit. Yet, as we have no knowledge of the spiritual sphere of Natufian existence, it is quite possible that the adornment of the dead does not reflect status differences (28) but stems from ceremonial reasons. Decorated burials or burial-offerings are known from other Natufian sites (29), all belonging to the Early Natufian occupation, as is also the case with

the ornaments found in the Hayonim Cave graves. Only a few beads and pendants were recovered from graves which belong to the later Natufian occupation of the cave. The ornaments are similar to those found in other Natufian burials. Pierced fox teeth, bone pendants and tibiotarsus beads were found also in El-Wad burials though there the bone pendants were of a slightly different shape and pierced fox teeth were rare (30). Dentalium beads were found in nearly all Natufian burials (31). Most other finds collected from the graves, such as flint, limestone and bone implements, constituted either part of the matrix into which the graves have been dug or of their filling. Only a few items seem to have been put intentionally into the graves as burial offerings, as was probably the case in other Natufian cemeteries too (32).

2. The population

Bearing in mind that the Natufian burials recovered in Hayonim cave represent a long and repeated use of the same site, the issues of age and gender ratios should be cautiously approached. Information from other Natufian cemeteries is limited, and data concerning age ranges is not available. Comparative studies dealing with anthropometric and morphological differences between various Natufian populations remain also scarce (33). A study dealing with differences in pattern and intensity of tooth attrition (34) encompassed only a limited sample of the known Natufian populations. As the few burials studied and published in detail do not represent the actual number of known Natufian inhumations (35), any comparisons are of necessity rather cursory.

(30) GARROD and BATE, 1937; pl. XVI.

(31) FIEDEL, 1981; 112.

(32) Nahal Oren : CAUVIN, 1972; El-Wad : GARROD and BATE, 1937; Erq el Ahmar : NEUVILLE, 1951; etc.

(33) But see FEREMBACH, 1977; SOLIVERES, 1976.

(34) SMITH, 1972.

(35) See ARENSBURG, 1973; ARENSBURG *et al.*, 1975; FEREMBACH, 1977.

(25) VALLA, 1981.

(26) VALLA, 1987.

(27) STEKELIS and YIZRAELI, 1963.

(28) WRIGHT, 1978; *in* : FIEDEL, 1981.

(29) NOY and BRIMMER, 1980.

The burials in Hayonim Cave are characterized by an under-representation of females and to a lesser extent, by the high percentage of children.

The age distribution reveals that a critical age for children had been that of 3-5 years when, according to ethnographic data, children shift from mother milk and soft food to solid food. To a lesser extent, the age of 5-7 years was critical as well. Though the oldest person found in the cemetery (H.37) was a ca. 50 years old female, males lived on the average older than females who died young (possibly often, when giving birth).

Detailed anatomical observations (40), yield no indications of stress or patterned pathological finds. Several skeletons show some evidence of arthritis and osteophytes, as well as strong tooth attrition which are more pronounced in the older individuals (41). As agenesis of M3 was observed in 29.4 % of the complete mandibles, as opposed to the previous estimation of 47 % (42), the proposed case for endogamy is yet unresolved.

ACKNOWLEDGEMENTS

This paper is partially based on an unpublished Ph.D. thesis written by the author, Institute of Archaeology, Hebrew University.

I would like to thank O. Bar-Yosef, E. Tchernov and B. Arensburg for the permission to study and publish the material presented in this paper. All the anatomical and anthropometric observations presented herewith were done in the Dept. of Anatomy and Anthropology, Sackler Medical School, Tel-Aviv University, under the supervision of Prof. B. Arensburg. Special thanks are due to him for his guidance, patience and support as well as for his permission to incorporate in the present article physical anthropological data which are part of the final report on the human remains from the Hayonim Cave excavations.

Anna BELFER-COHEN,
Hebrew University,
Jerusalem, Israel

BIBLIOGRAPHY

ACSADI G. and NEMESKERI J.

1970 *History of human life span and mortality*. Budapest : Akademiai kiado.

ARENSBURG B.

1973 *The People in the land of Israel from the Epipalaeolithic to present times : a study based on their skeletal remains*. Tel-Aviv University : Ph.D. thesis.

(36) GARROD and BATE, 1937.

(37) WRIGHT, 1978.

(38) CROGNIER and DUPOUY-MADRE, 1974 : 110.

(39) SOLIVERES, 1976.

(40) ARENSBURG *et al.*, in prep.

(41) SMITH, 1972.

(42) SMITH, 1973.

ARENSBURG B., BELFER-COHEN A. and RAK Y.

n.d. The Human remains in Hayonim Cave. In : BAR-YOSEF O., ARENSBURG B. and TCHERNOV E. (eds.) *op. cit.* (in preparation).

ARENSBURG B., GOLDSTEIN N. and NATHAN N.

1975 The Epipalaeolithic (Natufian) populations in Israel. *Arquivos de Anatomia e Antropologia* 1 : 205-217.

BAR-YOSEF O., ARENSBURG B. and TCHERNOV E.

1974 Hayonim Cave; Natufian cemetery and settlement remains. In : YEDA'AYA M. (ed.) *Bemaaravo shell Hagalil*. Regional councils of Sulam Zor and Ga'aton.

BAR-YOSEF O., and GOREN N.

1973 Natufian remains in Hayonim Cave. *Paléorient* 1 : 49-69.

BAR-YOSEF O. and TCHERNOV E.

1966 Archaeological finds of the fossil faunas of the Natufian and microlithic industries at Hayonim Cave (western Galilee), Israel. *Journal of Zoology* 15 : 104-140.

BELFER-COHEN A.

1988 *The Natufian Occupation in Hayonim Cave*. Jerusalem, Hebrew University : Ph. D. Thesis.

BELFER-COHEN A. and BAR-YOSEF O.

1981 The Aurignacian at Hayonim Cave. *Paléorient* 7 : 19-42.

BRAINARD J.

1986 Differential Mortality in Turkana Agriculturalists and Pastoralists. *American Journal of Physical Anthropology* 70,4 : 19-42.

CAUVIN J.

1972 *Religions néolithiques de Syrie-Palestine*. Saint André de Cruzieres, Paris, Lyon : Publications du Centre de recherches d'écologie et de préhistoire.

CHAPMAN R.W.

1981 The Emergence of Formal Disposal Areas and the « Problem » of the Megalithic Tombs in Prehistoric Europe. In : CHAPMAN R., KINNES I. and RANDSBOR K. *The Archaeology of Death*. Cambridge : Cambridge University. Press.

CROGNIER E. and DUPOUY-MADRE M.

1974 Les Natoufiens de Nahal Oren, Israël. Etude anthropologique. *Paléorient* 2 : 103-121.

FEREMBACH D.

1977 Les Natoufiens de Palestine. *Eretz Israel*. 13 : 240-251.

FIEDEL S.R.

1981 *Intra- and inter-cultural variability in Mesolithic and Neolithic mortuary practices in the Near East*. Ann Arbor : University Microfilm Press.

GARROD D.A.E.

1957 The Natufian Culture : the Life and Economy of a Mesolithic People in the Near East. *Proceedings of the British Academy* 43 : 211-227.

GARROD D.A.E. and BATE D.M.A.

1937 *The Stone Age of Mount Carmel, excavations at the Wadi Mughara*. Oxford : Clarendon Press.

HARRISON G.A., WEINER J.S., TANNER J.M. and BARNICOT N.A.

1977 *Human Biology*. Oxford : University Press (2nd edition).

HENRY D.O. and LEROI-GOURHAN Arl.

1976 The excavation at Hayonim Terrace. An interim report. *Journal of Field Archaeology* 3 : 391-406.

HENRY D.O., LEROI-GOURHAN Arl. and DAVIS S.

1981 The excavation of Hayonim Terrace : an examination of terminal Pleistocene climatic and adaptive changes. *Journal of Archaeological Science* 8 : 33-58.

HOPF M. and BAR-YOSEF O.

1987 Plant Remains from Hayonim Cave, Western Galilee. *Paléorient* 13 : 117-120.

LEROI-GOURHAN Arl. and ALLAIN J.

1979 *Lascaux Inconnu*. Paris : CNRS.

NEUVILLE R.

1951 Le Paléolithique et le Mésolithique du Désert de Judée. *Archives de l'Institut de Paléontologie Humaine*, 24. Paris.

NOY T. and BRIMER B.

1980 Adornment of Early Natufian Burials. *The Israel Museum News* 16 : 55-64.

SMITH P.

1972 Diet and Attrition in the Natufians. *American Journal of Archaeology* 37 : 233-238.

1973 Family Burials at Hayonim. *Paléorient* 1 : 69-72.

SOLIVERES O.

1976 *Les Natoufiens de Mallaha (Israël). Etude anthropologique du squelette post-céphalique*. Paris, Université Paris 6, Pierre et Marie Curie : Thèse de doctorat.

STEKELIS M. and YIZRAELI T.

1963 Excavations at Nahal Oren. *Israel Exploration Journal* 13 : 1-12.

STOTT D.H.

1969 Cultural and Natural Checks on Population. In : VAYDA A.P. (ed.) : *Environment and Cultural Behavior* : 90-120. New York : The Natural History Press.

UCKO P.J.

1969 Ethnography and Archaeological Interpretations of Funerary Remains, *World Archaeology* 1 : 262-80.

VALLA F. R.

1986 De Nouvelles Structures Natoufiennes sur la Terrace d'Hayonim. *Mitekufat Haeven* 19 : 90-92.

1987 Chronologie Absolue et Chronologie Relative dans le Natoufien. In : AURENCHE O., EVIN J. and HOURS F. (éd.). *Chronologies in the Near East : BAR Int. Ser. 379*, Oxford.

VALLOIS H.V.

1961 Le crâne humain magdalénien du Mas d'Azil, *L'Anthropologie* 65 : 21-45.

WRIGHT G.A.

1978 Social Differentiation in the Early natufian, In : REDMAN C.L. et al. (eds) : *Social Anthropology* : 201-223. New York : Academic Press.