Chapter 3

USE OF THE CAVE IN THE 20TH CENTURY

Although not directly related to the Natufian remains at el-Wad, the following discussions may prove important for the understanding of cave-use in general and as a background for future research at the site. Significantly, our finds, together with previous observations regarding the el-Wad cultural sequence (see below, Chapter 7, "Natufian Use of the Site"), highlight the potential of the site for the recovery of later prehistoric remains, i.e., Neolithic and Chalcolithic.

El-Wad Cave seems to have been used repeatedly from prehistoric to very recent times. Following the rich Natufian assemblages, with the prominent Early Natufian, the finds indicate a scarce Neolithic-Chalcolithic occurrence, with evidence augmenting through time (see also below, Appendix I). Ceramics reveal human presence in the cave during the Bronze Age, Iron Age, and Hellenistic and Roman periods. A Greek terra-cotta figurine of Aphrodite was unearthed by Garrod, "near the entrance to the long corridor" (Garrod and Bate, 1937:29). The goddess stands on a rough pedestal, with one arm resting on an Ionic column and the other (now missing) raised above her head (also missing), and is dated to the late 4th or 3rd century BC (Iliffe, 1933). The cave's Byzantine habitation is by far the most important, as evidenced by the abundant potsherds, including many lamps. Most probably the hewed door, the stone wall at the entrance to the cave (Figs. 5,14), and the floor levelling in Chamber I, intended to "...profiter autant que possible de la protection du mur qui fermait l'entrée" (Garrod 1930b:156) and in Chamber III (see below, Chapter 5), all belong to this period, as do the long walls that ran along the lower part of the terrace and across the wadi (Fig. 15). This endeavour is probably Byzantine and part of the vast construction activity that went on in the area during that period, often associated with agricultural, wine and oil industries (Lahav and Farkash, 1986). The water cistern, basins and wine pressing installations in front of the cave and towards the south, recorded by Mülinen (1908), may also have belonged to the same period. However, it remains unclear what the exact use may have been of the cave itself throughout the years, i.e., whether it served domestic purposes, the penning of herds, or other activities.

Fig. 14. General view of the Nahal Me'arot caves at the beginning of the first excavations, 1929. Left: el-Wad; centre: Jamal; right: Tabun. Skhul, located further left, is not visible.

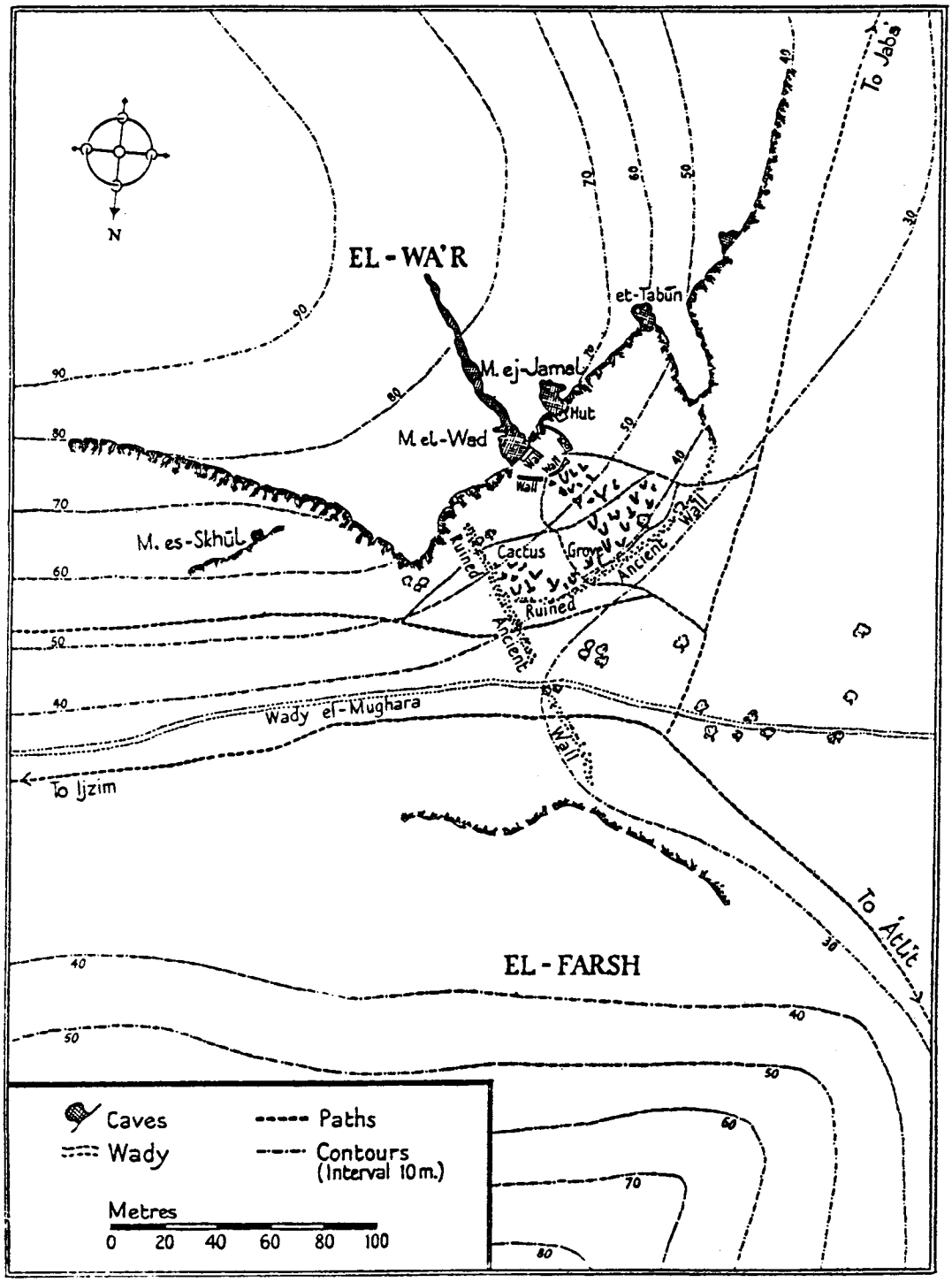

Fig. 15. Map of the lower end of Nahal Me'arot (Wadi el-Mughara), showing the position of the caves.

Clues regarding the likely uses of the cave in the past can be gleaned from data concerning the use that has been made of it in recent times. Such information can be gathered from two sources: former investigations, and interviews with people who have actually used the cave themselves. Since the sediments of the outer chambers of the cave and the higher terrace were thoroughly excavated by Garrod, no archaeological or zooarchaeological studies could be performed. There is little doubt that such studies present valuable research avenues for a comprehensive and reliable reconstruction of the mode of exploitation and subsistence strategies the inhabitants of such sites had recourse to (see, e.g., Arter, 1990). Equally unfortunate, it was impossible to conduct any sedimentological analyses, which have proved to be highly reliable in the identification of former stock-penning in sites (Brochier et al., 1992).

Former Investigations

Three types of evidence are provided by former investigations: studies on cave climate, data regarding the use of other caves in the area, and reports and indications for the use of el-Wad itself.

Cave Climate

Studies of cave climate are aimed at demonstrating the advantages of habitation in caves (Legge, 1972a; Ronen, 1984). In the past, no temperature and humidity measurements were ever carried out systematically in el-Wad, and recent development of the site for the purpose of tourism prevents detailed studies of the cave's microclimatic conditions from being performed today. Yet, the climatizing effect of the cave was acknowledged easily during our excavations in the cave in autumn (September, 1988) as well as in winter (February-March, 1989).

The — admittedly subjective — feeling of comfort the cave offers has been expressed more objectively by the results of microclimatic studies in two other Mount Carmel caves: Sefunim (Ronen, 1984) and Kebara (Legge, 1972a). In the first, measurements of temperature and humidity were taken in March 1969, in 4 measuring points extending from outside the cave to its rear part. The readings were taken over a period of 10 days, three times a day. The results (Fig. 16) indicate clearly that both temperature and humidity vary little across the entire length of the cave, but differ from the outside measurements, especially in extreme conditions (for example on March 17 and 25-26). Measurements over 24 hours in Kebara, compared with an open air site in the Haifa area (Fig. 17), indicate clearly that climatic conditions in the cave remained stable throughout the day. Regrettably, though we do have evidence of winter use of the caves (e.g., Mülinen, 1908, for Sefunim Cave), no winter measurements have been reported from Israeli sites, but here Greek sites can help us out where the climatizing properties of caves and rockshelters were demonstrated clearly (Legge, 1972a; see also Wickens, 1986 for a discussion of cave-climate properties).

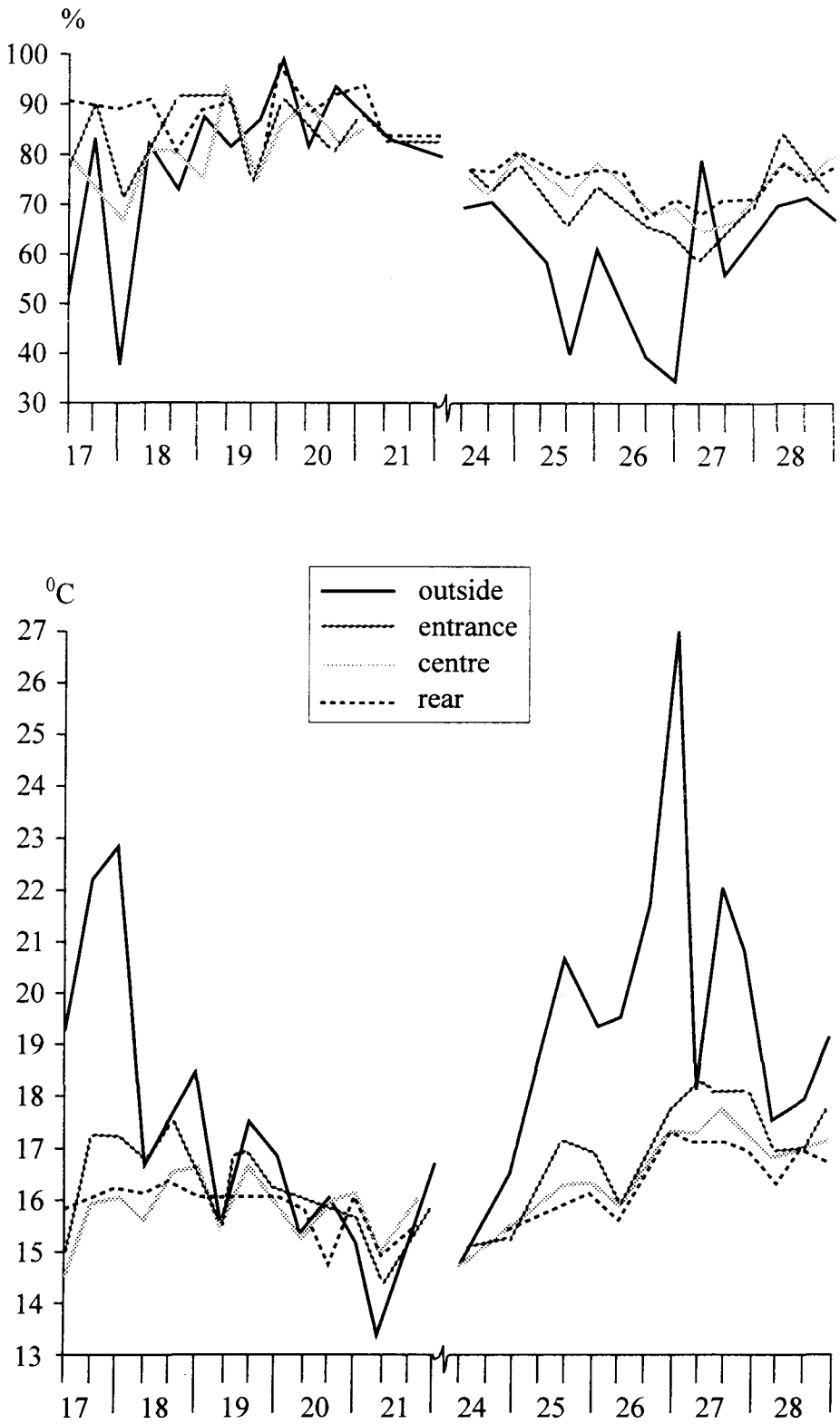

Fig. 16. Sefunim Cave, temperature and humidity 17-28 March 1969.

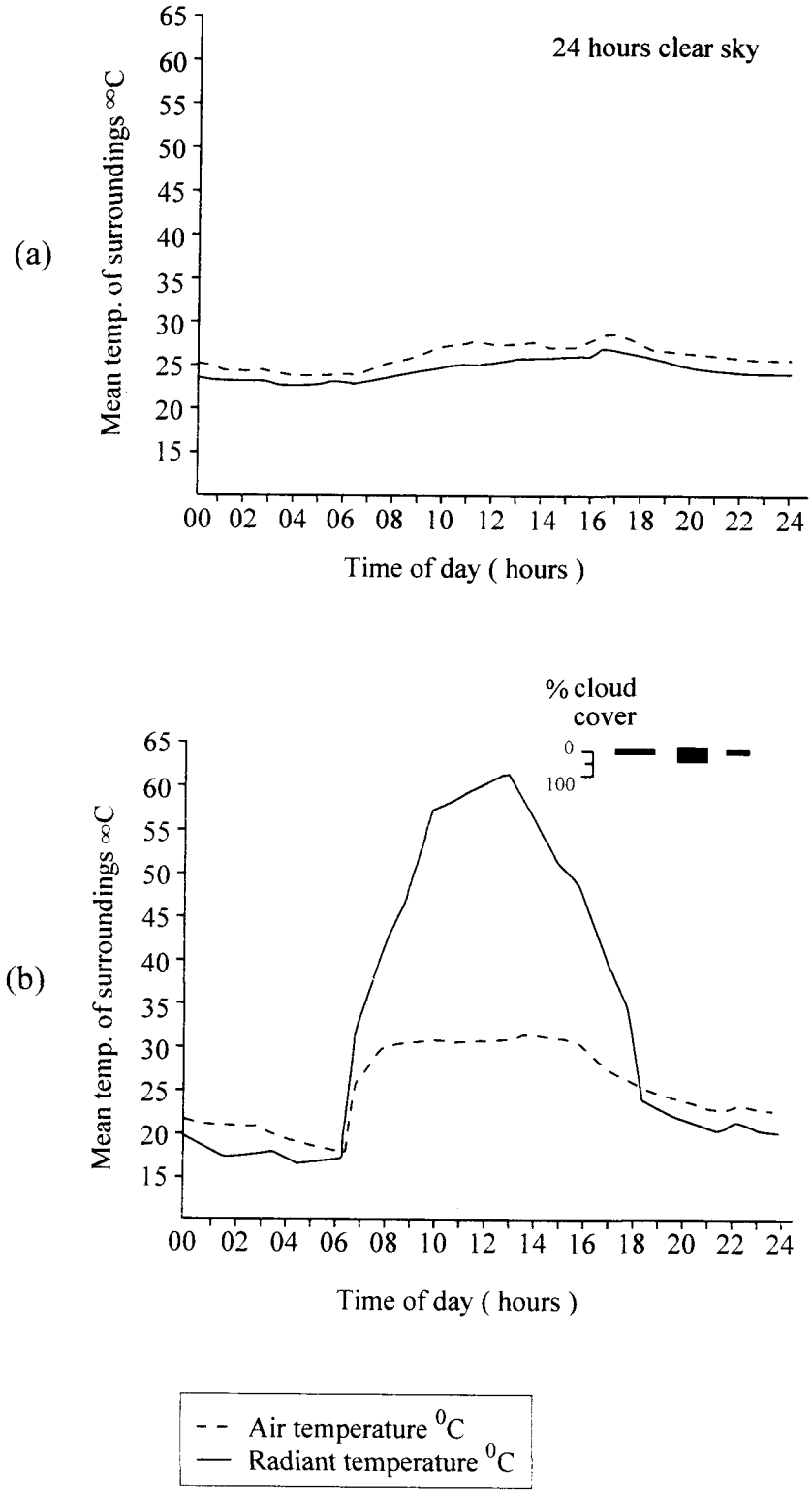

Fig.17. (a) Radiant and air temperatures in Kebarah Cave, at rear (summer); (b) Radiant and air temperatures in the open air at sea level near Haifa (summer).

Temperature measurements were conducted in el-Wad on March 26, 1995, 10.30am, during the last day of the latest cold spell of the year. The results indicate but minor variations along the NW/SE axis of the cave, from the platform area immediately outside the cave to Chamber V at its rear (Fig. 18). However, unlike the area outside the cave, the inner chambers were clearly protected from the joint chilling effect of both low temperatures and strong winds, resulting in a markedly enhanced feeling of comfort inside the cave.

Measurements of temperature and relative humidity were carried out in August 29, 1995, at 13.30pm. Average values are given in Fig. 18. A cooling effect was felt immediately as one entered the shade of Chamber I. An even more obvious change in temperature was registered with the passage to the inner part of the cave, starting from Chamber II. However, because there was a light breeze at the entrance to the cave and the rear part of the cave was always very humid, the lower temperatures in the latter did little to give one a greater feeling of comfort.

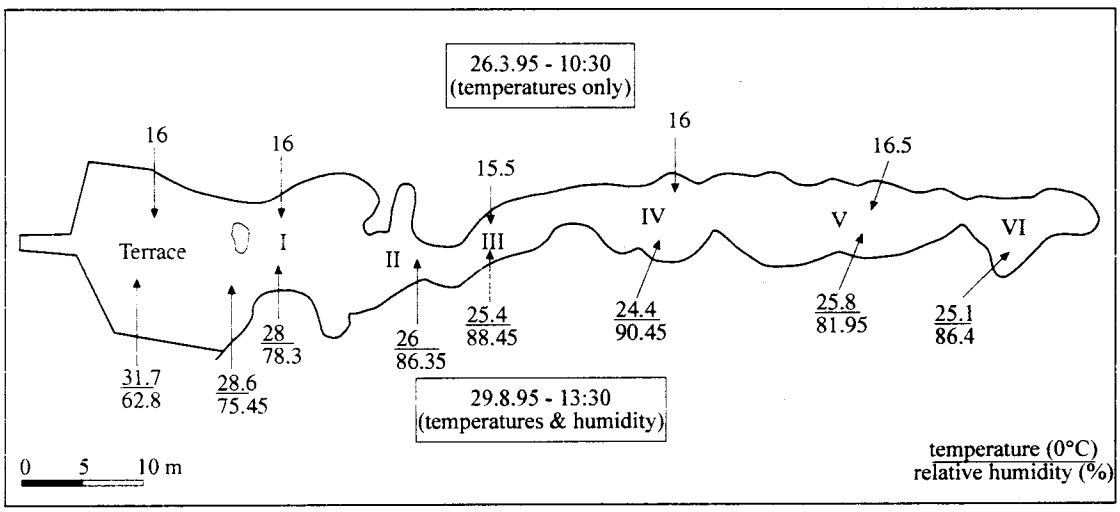

Fig. 18. Temperature (spring and summer) and humidity (summer) measurements in el-Wad.

That the cave modifies the effects of the external environment is due to the heat capacity of the enormous amounts of rock surrounding it (Legge, 1972a). These large rock masses are not subject to the short-term, daily fluctuations in temperature, and even seasonal differences in temperature are modified to a considerable degree. Legge concluded that, as long as the cave is not subjected to any excessive air exchange with the outside, the interior temperature will be higher in the winter and lower in the summer than that prevailing outside. In el-Wad, however, no meaningful differences were encountered in the low temperatures measurements, while in summer significant differences were detected in humidity as well as in temperature (Fig. 18).

The Use of Other Caves in the Area

To date no systematic studies concerning the use of caves in the Mount Carmel area have been conducted. Some indication regarding the mode of the exploitation of the Nahal Oren area by its Arab pastoral population is given by Vita-Finzi and Higgs (1970) and Higgs and Vita-Finzi (1972). A modern subsistence pattern, projected upon a suggested catchment area for the Nahal Oren cave (Fig. 19), while taking into account some distorting factors such as topography, availability of water and intrusion of neighbouring territories (idem), allows for some insight into the range and nature of exploitation and its seasonal distribution.

Nahal Oren's 5km-radius catchment area is divided into five types of terrain, according to their potential uses (Fig. 19): arable (8%), good grazing/potentially arable (7%), rough grazing (55%), seasonal marshes (27%) and negligible areas of sand dunes (3%). Whilst arable lands were probably used by the local villagers, grazing areas were exploited by goat and cattle herds based in the Nahal Oren caves. Some higher elevation grazing occurred in winter, mainly along the bed of the wadi and its tributary valleys. In summer, goats made use of the good grazing areas along the foothills, and goat as well as cattle herds were set out to graze on the seasonal green pastures in the dried-out marsh areas. Both goat and cattle herds were apparently kept in a summer corral near the Oren Cave. Altogether, summer and winter potential grazing lands cover between 85-92% of the catchment area discussed (more than a third of it good grazing lands). A rather similar distribution of potential land uses within the el-Wad catchment area (Fig. 20) would suggest a comparable pattern of exploitation.

Evidence of Recent Activities at el-Wad

Starting with the initial documentation of the cave one finds various walls, structures and secondary features mentioned, both within the cave and on the terrace. All writers report the wall of big limestone blocks across the cave's entrance (Fig. 5). Garrod describes in detail the window to the NE of the entrance, which had been artificially enlarged to make a doorway, "presumably at the time when the wall was built" (Garrod and Bate, 1937:6), with a well-cut level threshold and a door-socket on the SW side. In addition, Graf von Müllinen (Müllinen, 1908:281) noticed "the foundations of an inner gate, made of well hewn sandstone", in the early 20th-century entrance to the cave, as well as several partly built fire-places. The el-Wad terrace was enclosed by a rough stone wall of recent date (Figs. 15, 21), "built by the goatherds who kept their flocks in the cave" (Garrod and Bate, 1937:6). A similar enclosure wall, together with a small hut, existed at the entrance to the adjacent Jamal Cave (Figs. 14, 15).

El-Wad was highly regarded by the local shepherds. "The reason for this [preference] lies in the belief that she-goats here wintered produce twins and never suffer from abortion" (Director of Antiquity, 1928:7). Although, according to the same source (1928:6-7), "none of them use, or will willingly enter, the tunnel (which is supposed to be without end) there is considerable competition for the use of the cave itself for wintering their flocks of goats". This seems to accord well with his

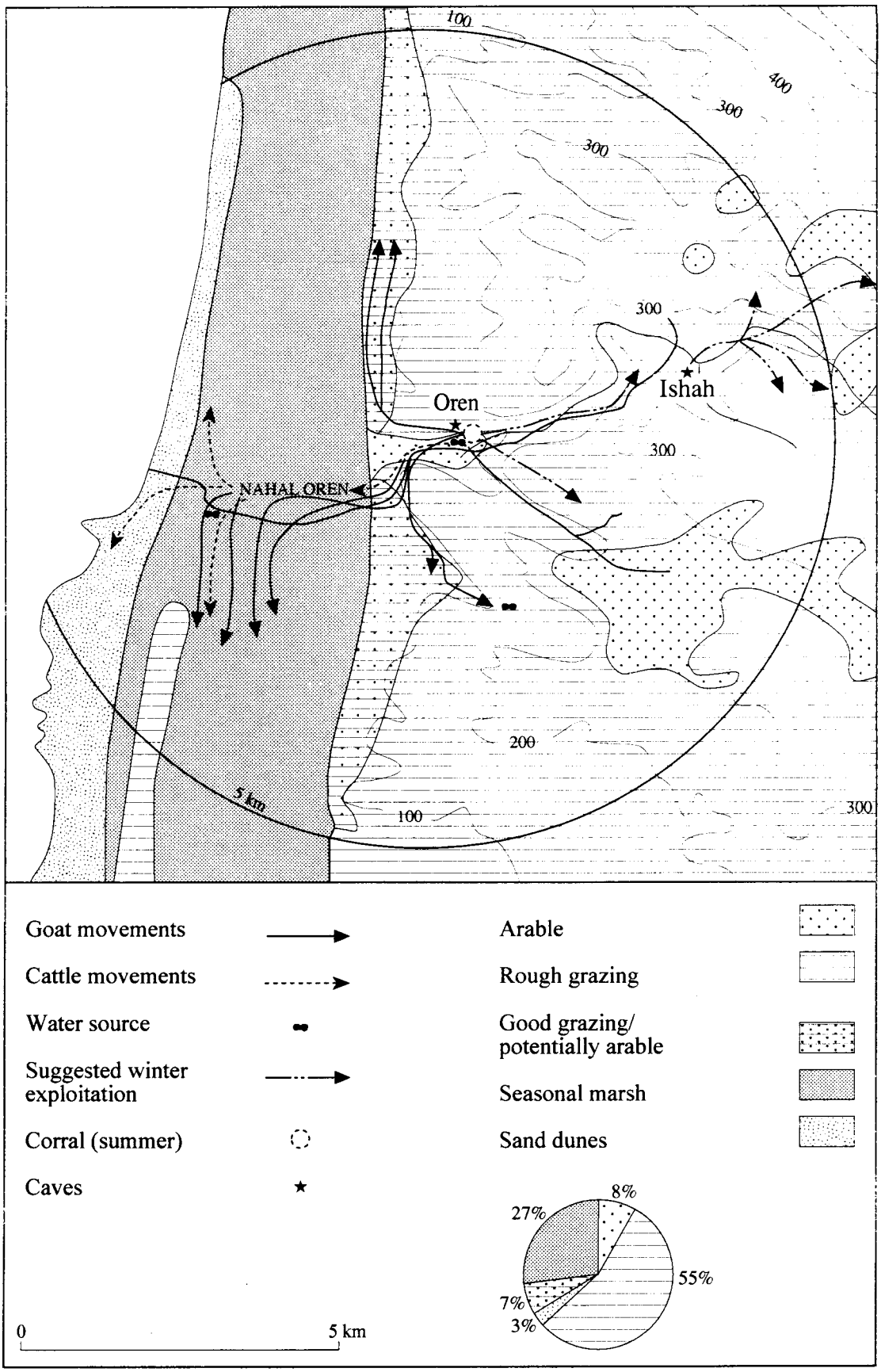

Fig. 19. Territorial analysis of Nahal Oren Cave, within a radius of 5 km, with the modern Arab, sedentary, pastoral exploitation.

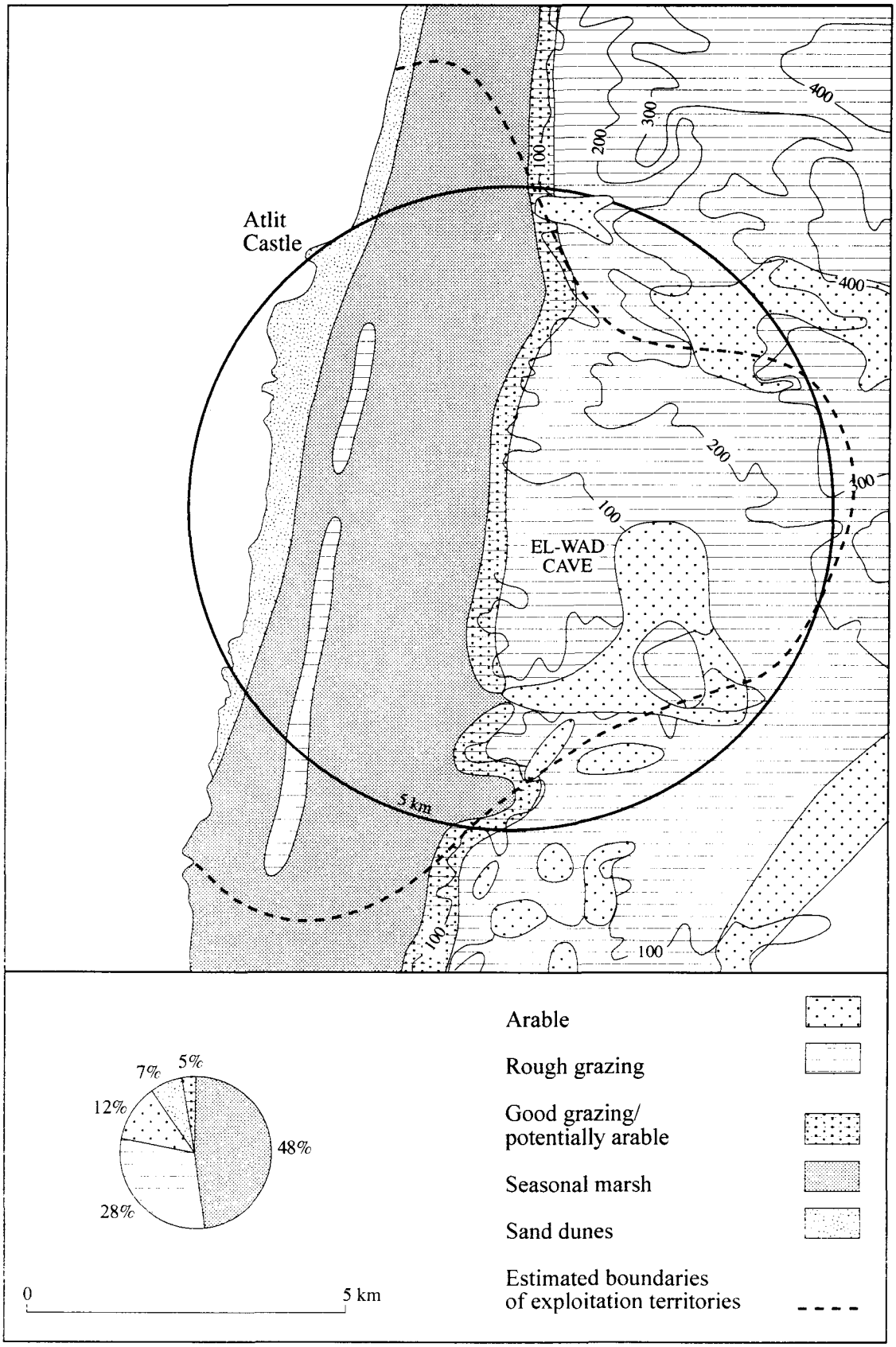

Fig. 20. Territorial analysis of el-Wad Cave, within a radius of 5 km.

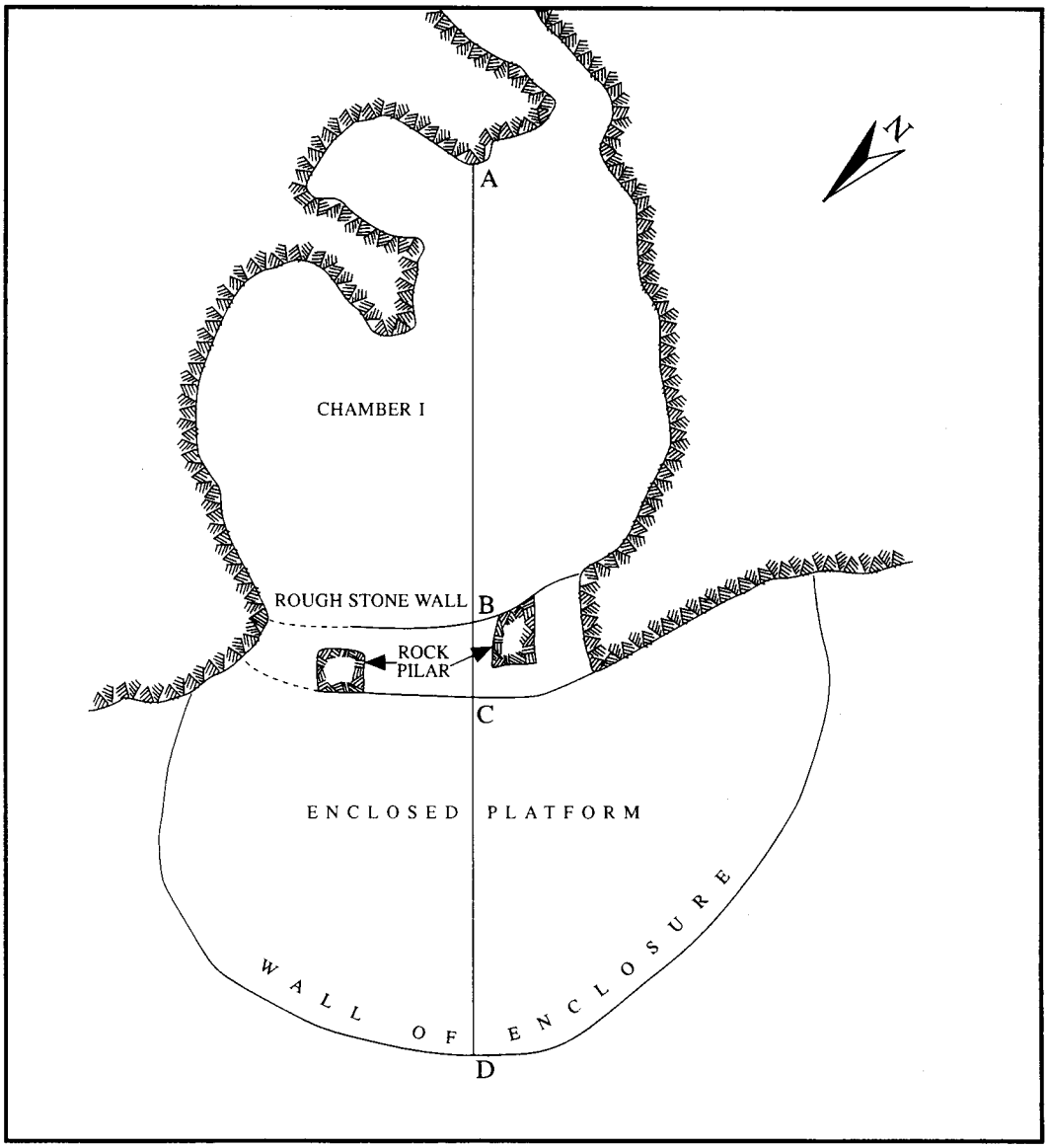

Fig. 21. Chamber I of el-Wad Cave and the enclosed terrace in front of it. Lambert's trenches 1-3 were set along the A-D line.

observation that "[t]he floor of the cave and of the tunnel is formed of stones and boulders. Among and, to some extent, over these, are, in the tunnel, bat-droppings and, in the large chamber, goat as well as bat droppings" (Director of Antiquities, 1928: 5).

Interviews

Interviewing was done by Salman Abu Rukun, over a period of a decade (1983-1993). Interviewed were seven men old enough to have been familiar with animal husbandry, herding and cave use. All of them had dwelled in caves with their herds. In some cases their ancestors had specifically used the Nahal Me'arot caves for wintering their goat herds. At the time of the interviews the men were between 61 and 95 years old. The shepherds came originally from Ijzim (Kerem Ha-Maharal), Isfiya and Daliyat al-Carmel (Fig. 22).

The questions posed focused on several major issues relating to the various aspects of the use of caves namely: suitability, ownership rules, seasonality, family participation, pasture and herd mobility. The emerging picture is summarized below.

Choice of Caves

The preferred cave is spacious, dry, located in the Lower Carmel, and with good winter pastures nearby. Good accessibility by donkeys, horses and camels is considered an important factor. The Lower Carmel, which is composed of limestone and dolomites, is bound with large, karstic caves. These are less endangered by rock falls than the caves in the upper, more chalky mountain. Their location in lower altitudes renders them warmer than caves located further up on the mountains.

A large cave made it possible to include the whole herd. Such a cave provided protection from the rains and the cold, as well as from predators. The entrance to the cave was fenced off with stones, topped with thorny branches of *Calicotome spinosa*, *Genista fasselata* and *Rhamnus palaestinus*. In many caves fences made of thorny bushes sufficed. These fences prevented the animals from dispersing and served the purpose of keeping wolves, jackals, mongooses, etc., out. A similar practice has been documented for Cretan, Greek and Sicilian stock-penning caves, for example (Faure, 1964; Wickens, 1986; Brochier et al., 1992).

Since the number of suitable caves was limited, shepherds eager to winter their flocks of goats would compete for their use. This was not necessarily won on a "first come first win" basis. Rather, aggressive fights developed on many occasions. Some territoriality seems to have existed, based on a shepherd's village of origin. Thus, the caves in Nahal Haruvim (formally known as Wadi el-Nahal), one of the up-stream tributaries of Nahal Me'arot, were used exclusively by shepherds from Ijzim, while el-Wad and the adjacent caves were used by shepherds from Jaba and El-Mazar (Fig. 22). Competition for the privilege of having their flocks winter in the cave was even stiffer because, as already mentioned, people believed it would keep the nanny-goats from miscarrying and induce them to bear twins.

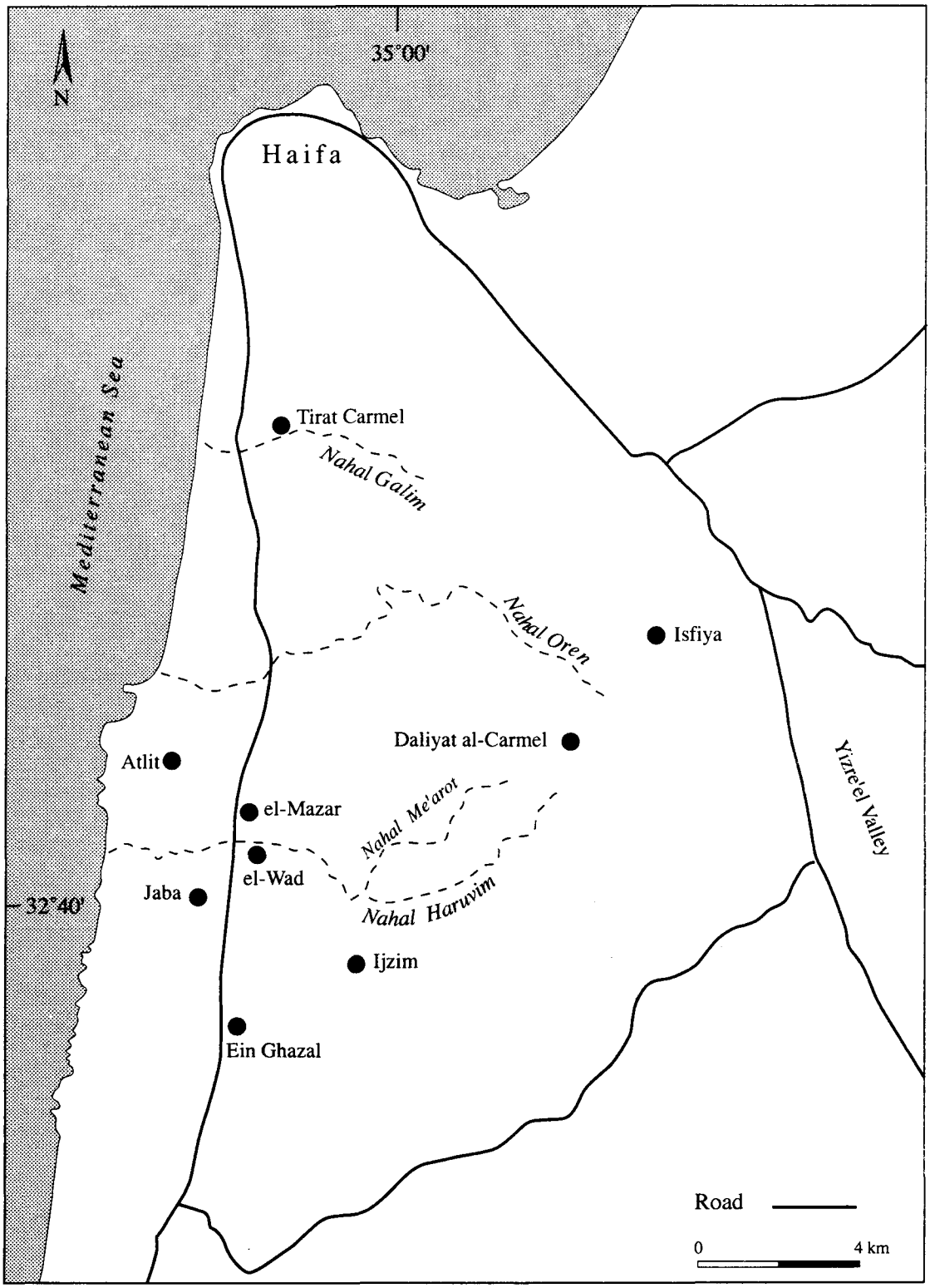

Fig. 22. Location map of villages of origin of the herdsmen.

Seasonal Occupation

The goat herds entered the caves in late October – beginning of November, i.e., soon after the first rains. Any first strike of sudden cold weather, at the end of autumn, would be critical for pregnant goats as it resulted in numerous miscarriages. The most prosperous herds were those who managed to stay in caves throughout the winter: the goats were healthier and the birth season passed without miscarriages. There was a common belief that successful herding depended on where the goats winter "and the best are the cave goats".

Usually the herds left the caves again in April. Only in rare cases did they stay in caves throughout the summer. In one case, in the Isah caves in Nahal Oren (Figs. 19, 23), such permanent habitation was made possible by water springs in the immediate vicinity. A stone building was constructed in front of the caves (Fig. 23) together with a stone enclosure at or near the cave entrance, for the summering of the herds. A similar situation existed in the Oren Cave, as late as the 1980s, whereby the goats' herd wintered in the cave itself and in the summer stayed within an enclosure, built near a hut, not far from the wadi bed (a water source). In both cases summer grazing was ensured. The herds grazed on stubble and on annuals that grow in the lowlands during summer. These summer pastures developed in areas which were covered with shallow waters in winter, creating seasonal marshes. The last Nahal Oren shepherd had two wives, one of whom stayed in a building constructed near the cave's entrance, while the other lived in the hut near the wadi bed. The stone enclosure on the high terrace of el-Wad (Figs. 15, 21) may indicate a summer stay in this cave too. In general, winter (between November and March) is the common stock-penning season in many caves within the western Mediterranean region as well (Brochier et al., 1992). Naturally, the dependency of herds on summer grazing of barley and wheat stubble is more crucial in the less favourable, more arid zones (e.g., Levy, 1983).

The Shepherd and his Family

There seems to have been no clear rule as to whether the shepherd was joined by his family. When the goatherd entered the cave with his goats only, he would built for himself a wooden cot, on an elevated spot, where he would be protected from winds and rains, but would also have a good view over the entrance to the cave. A fire-place was built near the sleeping area, and the family supplied food and clean clothing.

In cases when the goatherd was joined by his family a family tent was built near or at the entrance to the cave. A "tabun" (a traditional stone oven) or a "saaj" (a convex baking tin) was constructed, for bread baking, cooking, washing and heating. Small stone huts were occasionally built at the entrance to the cave (Fig. 14), for the storage of various working tools such as milking equipment and cooking accessories. Other small stone huts were built near the caves, for the family hens, often strengthened with an extra fence made of either barbed wire or spiky plants, for protection against wolves, jackals and mongooses.

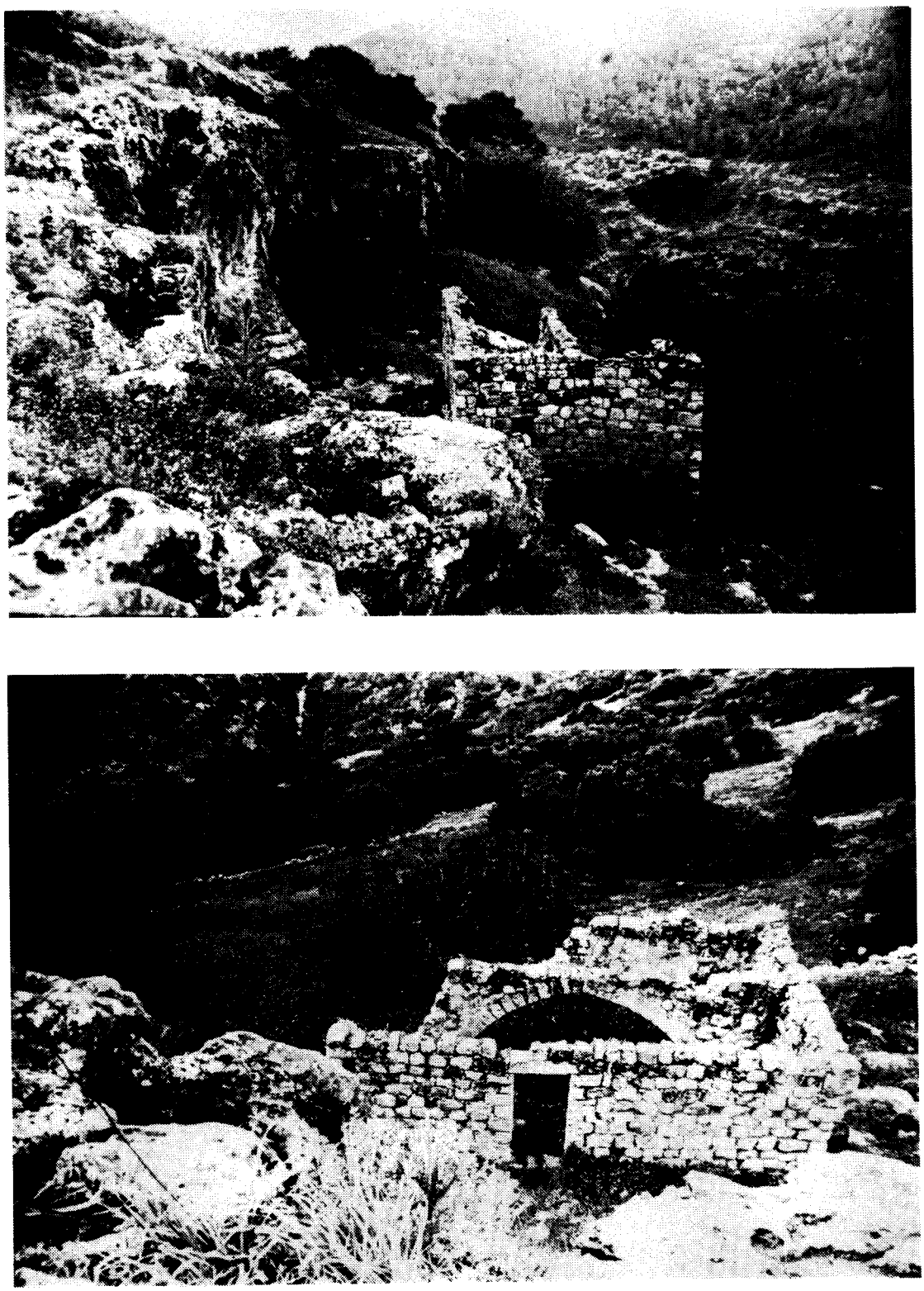

Fig. 23. Permanent stone constructions at the entrance to Isah Cave, Mount Carmel, towards the SW (above), towards the NW (below).

Fodder and Food

In winter, the herds made use of the maquis areas on the mountain, and fed on *Quercus calliprinos*, *Rhamnus* sp. and *Phyillyrea latifolia* soft leaves, and on acorns. Herds would move uphill, up to 5km from the site. In stormy days or during snow fall the goatherds gathered tree branches and brought them into the cave. Carob (*Ceratonia siliqua*) fruits were also stored in sacs to serve as staple food during the harsh winter days.

The winter of 1950 was remarkably harsh. Heavy snows prevented the shepherds from bringing food into the caves. Cold and starvation led to many deaths amongst the goats and kids, and there were many miscarriages.

Dairy products — milk, yoghurt, cheese and butter — were the main foods consumed by the shepherd and his family. When the goatherd was joined by his family, the menu was enriched with eggs and chickens, and with many gathered wild plants, e.g., *Cichorium pumilum*, *Centaurea* sp., *Gundelia tournefortii*, *Scolymus* sp., *Eryngium creticum*, *Foeniculum vulgare*, *Rumex* sp., *Malva* sp., *Reta vulgaris* and *Majorana syriaca*.

Dried dates and figs were a luxury. When alone in the cave, the men were equipped with canned foods, mainly sardines. When occasionally an injured goat would be slaughtered, the other men from the neighbouring caves were invited to come and take part in the festive meal, where sitting around the fire place they would also be given a drink of hot herbal tea, spiced with *Salvia fruticosa*, *Micromeria fruticosa* and *Satureja thymbra*.

Waste was thrown out of the cave, near the cave's entrance. Waste that could not be recycled, including empty tins and core horns, was buried near the fireplace. Such tins, some with chicken bones still inside, were unearthed in the large pit at Jamal Cave (Weinstein-Evron and Tsatskin, 1994), which was filled with goat droppings, burnt branches, potsherds, metal nails, and broken Marseilles tiles (the latter were typically used by the Jewish settlers in the area at the turn of the 19th century and the beginning of the 20th [Ben-Artzi, 1988]). Sediments from earlier, historic or late prehistoric, periods were not preserved in the cave, the archaeological sequence of which includes only Lower Palaeolithic and Middle Palaeolithic material (Weinstein-Evron and Tsatskin, 1994).

Milk Products

During the winter birth season, most of the goat milk was consumed by the newly born kids. Only in early spring, when the weaned kids were separated from their mothers, was the extra milk used for the production of cheese and butter, to be distributed and sold in the Haifa market. The milk products were carried to the markets on donkeys or camels. More than 100 camels were reported to have come in one season from the village of Ijzim alone.

The Use of Small Caves

In large enough caves, the separation between mother-goats and kids could be achieved through the construction of a fence, built of stones and covered with thistles, within the cave. Where this was not possible, the kids were transferred to another, smaller cave, the entrance of which was enclosed with a stone fence, also set off with spiky branches (*Calicotome spinosa*, *Genista fasselata* and *Rhamnus palaestinus*). Significantly, signs of recent use by goat herds were also found in a small cave in the cliff north of Nahal Me'arot (Fig. 24). Similar procedures regarding herd management were observed in the Sicilian caves (Brochier et al., 1992).

Good Pasture, Seasonality and Ranges of Herd Mobility

When it comes to ensuring grazing, animals' well-being and successful birth-giving, diversified pasture is the most adequate. Such grazing includes trees, for the leaves and fruits they provide, as well as annuals, mainly grasses and legumes. This kind of heterogeneity is found in the lower areas where the mountain meets the coastal plain (Figs. 19, 20).

Winter grazing would mainly take place not in the plain but on the mountain, where the goats could enjoy tree leaves and fruits. The herds of the lower caves, such as el-Wad, also had access to the good grazing grounds that stretched along the foothills, areas free of winter ponds and marshes but with many trees as well as annuals. The bare (Figs. 24, 25), muddy coastal plain was largely unfit for winter grazing while the mountain's arable lands were used by the villagers to grow their crops. Carob fruits, barley grains, straw and stubble were also stored for harsh winter days, when the herds were prevented from leaving the cave.

Summer grazing depended largely on cereal stubble and vegetable leaves left behind in the arable lands after the harvesting of the crops. Important grazing grounds were the muddy areas of the coastal plain which dried up in spring — the late sprouting of annuals here made for green pastures throughout the early summer. When necessary, these were enriched with tree branches and leaves the shepherds brought from the nearby maquis. The available foods enable the herds to stay in the lowlands throughout the summer. The el-Mazar, Jaba and Ein Ghazal herds roamed the coastal plain, from the Atlit area to Tirat Carmel, some 10km north of el-Wad. The Isfiya and Daliyat al-Carmel herds headed towards the Yizre'el (Escadrelon) Valley, taking advantage of the grazing areas on the north-eastern foothills. Significantly, the arable lands around the villages provided enough summer food for several herds who did not have to start roaming but could stay uplands throughout the summer too.

Interesting furthermore is that the interviewed shepherds claimed their habitual range of pastoral exploitation was some 5km from the cave, largely similar to the values suggested by Higgs and Vita Finzi (1972). Rough topographical settings, dense maquis and harsh weather conditions explained why they did not go beyond this range.

Fig. 24. A view of the Carmel Caves from the coastal plain, in 1929; the western cliff of Mount Carmel is dissected by the Valley of the Caves (Nahal Me'arot). An arrow marks the small cave north of el-Wad in which there are still signs of herdsmen use.

Fig. 25. The bare coastal plain in 1934, a view to the north. Garrod's excavations camp is at the foreground. Note the road that runs from the west towards the SE; the arrow marks a camel caravan.

In summary, el-Wad was undoubtedly one of the caves in the area that offered the best advantages. The largest of the Nahal Me'arot caves, its main use was in winter. That it was well sought after because of the warm wintering shelter it provided is indicated clearly by the nickname it has in Arabic, "el-Hammama", "the warm one". Then, also, almost mystical powers were ascribed to it, since it guaranteed the safety of the herd and there was a strong local belief that it favoured multiplication of the herd. El-Wad is located in an ecotonal setting, between the mountain, wadi and coastal plain, ideal to ensure good pastures throughout the year: winter grazing on the mountain and within the transitional belt between the mountain and the plain; summer grazing in the coastal plain. It is also located within easy reach of smaller caves, necessary when nanny-goats have to be separated from their kids. The cave is accessible from the main roads that lead to the villages of origin and to the markets where the local products could be sold (Fig. 25). Obviously, to avoid the muddy coastal plain in winter, several of the paths leading to the villages in the area passed not far from the cave (Fig. 15).