The Tree Shelter, a Holocene Site in the Red Sea Moutains

By P. M. Vermeersch[1], P. Van Peer[1], J. Moeyersons[2] et W. Van Neer[3]

LOCATION AND STRATIGRAPHY

In the large depression cut by wadi Sodmein (Moeyersons, Vermeersch & Van Peer 2002), a small wadi tributary, characterised by a canyon-like deep incision in the Thebes limestone (fig. 1). A lonely acacia tree marks the location of the wadi tributary mouth in the large depression. In the tributary slopes, characterised by harder and softer limestone layers, a number of shelters and caves have formed. Because of the tree near the canyon entrance a small shelter was called « Tree Shelter ». The Tree Shelter is a small rock overhang at the southern side of the wadi bed (fig. 2), where it joins the wadi Sodmein. The floor area is about 20 m^2. The shelter roof and the rock cliff upstream and downstream are composed of Thebes Limestone.

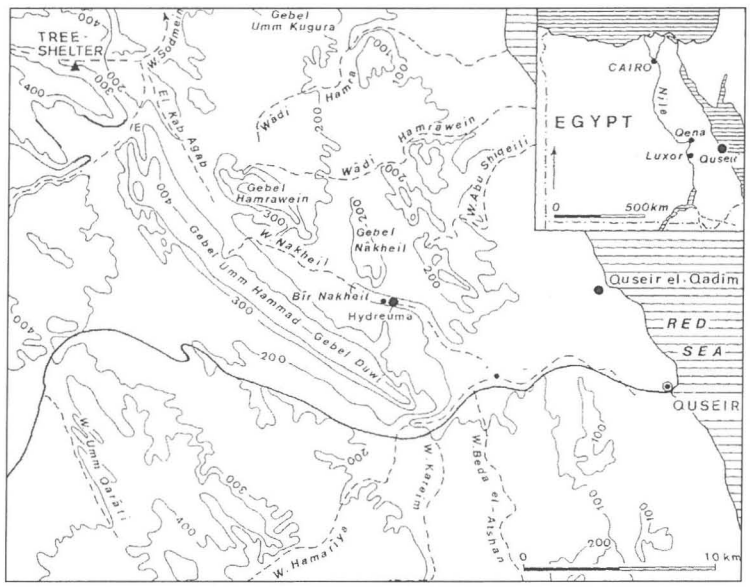


Fig. 1

Location map of the Tree Shelter.

The stratigraphic succession (Moeyersons e.a. 1999) comprises three members from top to bottom (fig. 3) : The A-member is a layered sandy complex supplied by a karstic tunnel system. The B-member is essentially of colluvial origin. The C-member comprises contains intercalated rockfall debris (C) and river gravel. The deposits suggests the presence of three arid periods. Before 8.1 ka BP, bedload aggradation points to occasional but heavy rains. Later precipitation de-

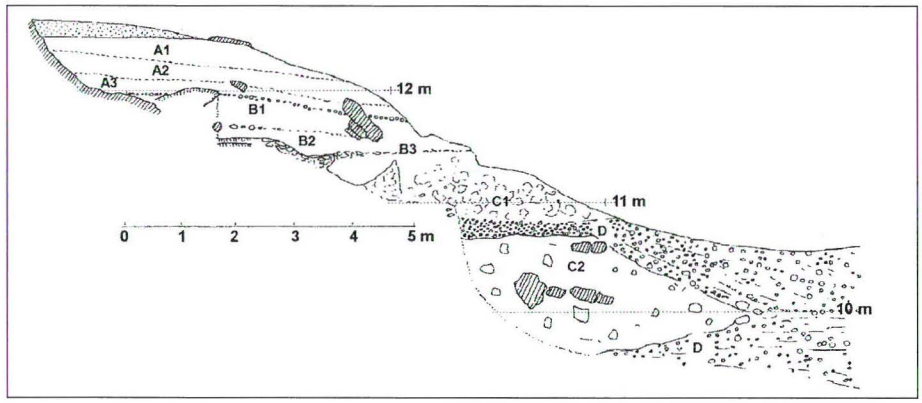
1. Katholieke Universiteit Leuven, Laboratorium voor Prehistorie, Leuven, Belgium.
2. Royal Museum for Central Africa, Tervuren, Belgium.
3. IUAP 05/09, Royal Museum for Central Africa, Tervuren, Belgium.

Fig. 2

View of the wadi, the excavation trenches (centre of the picture) and the rock overhang at the southern side of the wadi bed.

Fig. 3

South-North section of the Tree Shelter deposits.



creased in intensity, but in a wetter precipitation regime. Two humid pulsations are distinguished within this period. The first occurs at 8 ka BP, the second between 6.6 and 6.8 ka BP. After the last wet period, the climate gradually became drier. At ± 5 ka BP, present climatic conditions are believed to be established, resulting in a lateral truncation of the deposits.

ARCHAEOLOGICAL REMAINS

From the stratigraphical succession it appears that what we excavated is probably only a small remnant (fig. 3) of a much more extensive occupation area, which after 5000 BP has been eroded. Two stratigraphically and archaeologically different groups of occupation remains are still present : an upper and a lower one.

The lower occupation levels

The remains from the lower occupation levels are restricted to the B-sedimentary layers. The lithic material is vertically scattered in the colluvial deposits, suggesting the occurrence of several short time occupation periods. This is confirmed by some hearths and charcoal concentrations (fig. 4) found inside the deposits. The oldest human presence in the shelter is represented by a date of 8120 ± 45 BP (KIK-656/UtC-5389), whereas younger dates are found higher in the B-deposits : 7910 ± 90 (KIK-516/UtC-4193) and 7790 ± 70 (KIK-655/UtC-5388). The dates of the human presence, in the lower level at the Tree Shelter, span a period of 600 years (fig. 13), during which apparently several visits to the cave took place.

The archaeological material (tab. 1) is very rich and characterised by the utilisation of a fine red-brown flint of very good quality, whose source is about

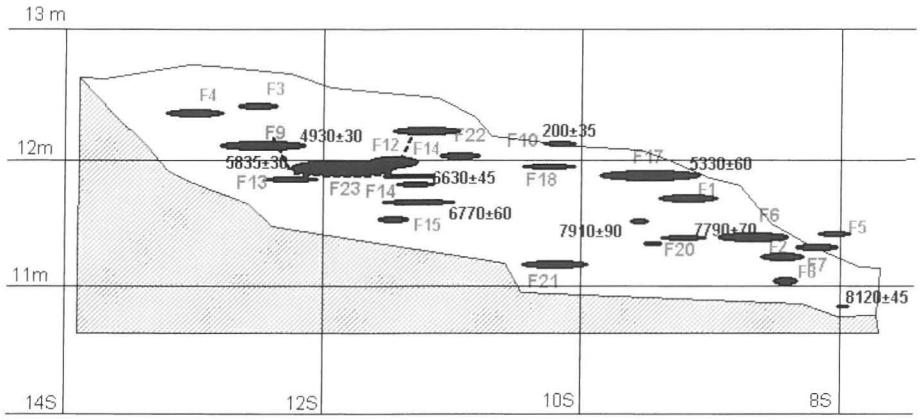


Fig. 4

Schematic profile of the deposits with position of the hearths and charcoal concentrations with available ^{14}C dates in BP.

3 km from the shelter. Knapping was clearly oriented towards the production of fine bladelets, mainly from single platform cores (fig. 5). Tools are well represented. Large end-scrapers (fig. 6), as well on flake as on blade (fig. 7), are numerous. Most tools have bladelets as blanks. They consist mainly of very elongated backed bladelets such as pointed straight backed bladelets, curved backed bladelets, partially backed bladelets, shouldered bladelets and shouldered points (fig. 8). Ouchtata bladelets have been recorded. Some geometrics (fig. 8), such as elongated scalene triangles, are present. The microburin technique with mainly right lateralisation, has been extensively used. Very typical are some finely denticulated bladelets (fig. 8).

TABLE 1 - TOOL INVENTORY (PRELIMINARY) FROM LOWER HORIZON

Tools (400)	%
End-scrapers	18
Piercers	3
Backed blades and bladelets	28
Notches and denticulates	22
Truncated pieces	2
Geometrics and microburins	18
Piece with continuous retouch	9
Total	100

Numerous perforated ostrich eggshell beads have been collected. Molluscs comprise species from the Nile (cf. *Aspatharia*) and Red Sea species (*Cypraea* sp., *Ancilla* sp., *Conus* sp. and *Nerita polita*). No ceramics are found in these horizons.

Interpretation of the lower occupation levels

First appearance of humans after the Late Glacial Maximum (LGM) in the Red Sea area (Van Peer *e.a.* 1996) coincides with a wet Holocene period from 8300 to 7700 BP, substantiated in the Nile Valley and the western desert by Hassan (1987). In the nearby Sodmein cave, the earliest Holocene human occupation is dated 7800 BP (Vermeersch *e.a.* 1994, Vermeersch *e.a.* 1996). The discovery of the lower occupation levels in the Tree Shelter documents the presence of humans a millennium earlier. The lower assemblage of the Tree Shelter belongs to another cultural group than that of Sodmein Cave. It can be attributed to the Elkabian, an Epipalaeolithic industry from the Nile Valley, dated around 8000 BP (Vermeersch 1978). Technology and typology of the

Fig. 5
Cores from the Lower occupation levels.

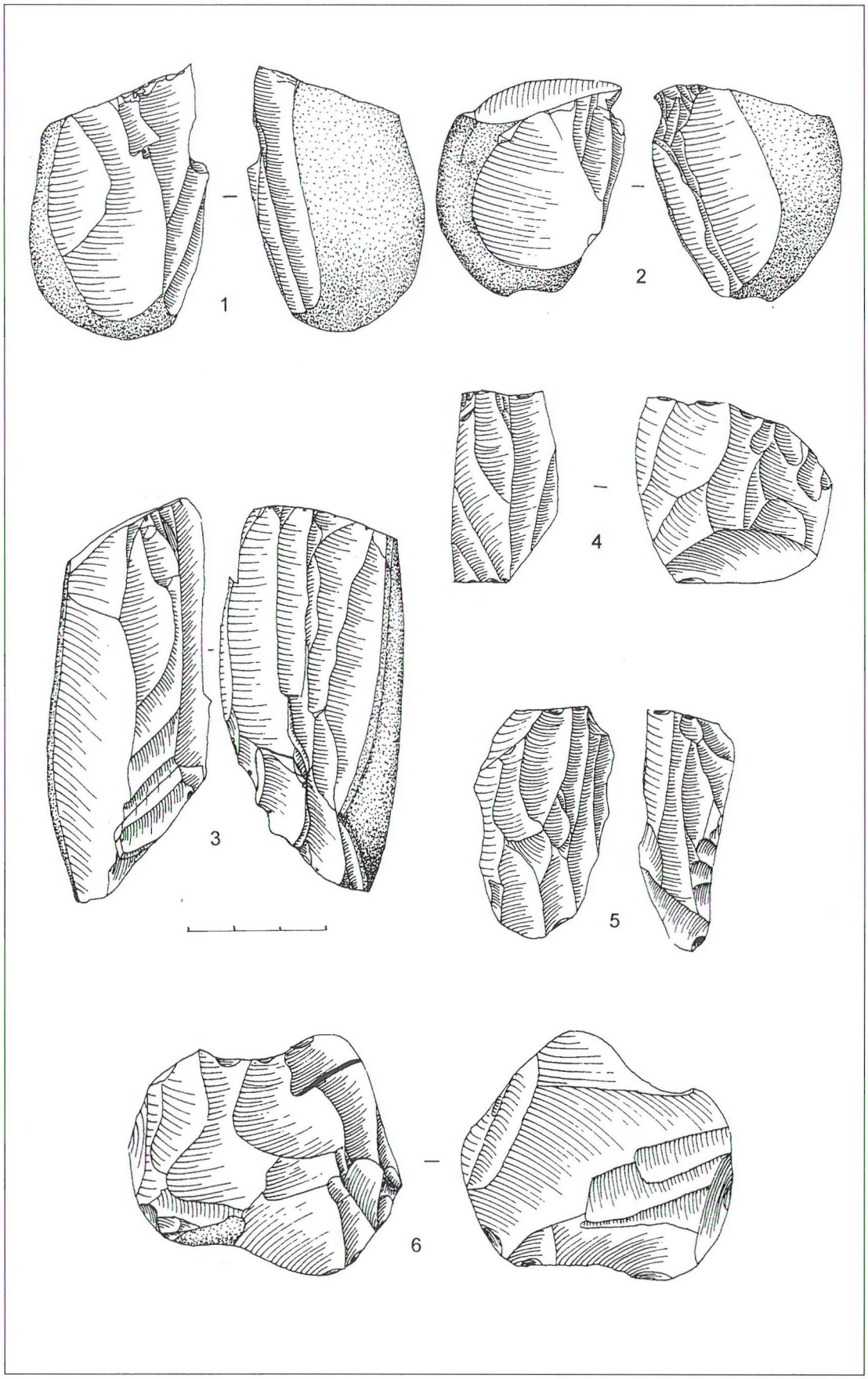
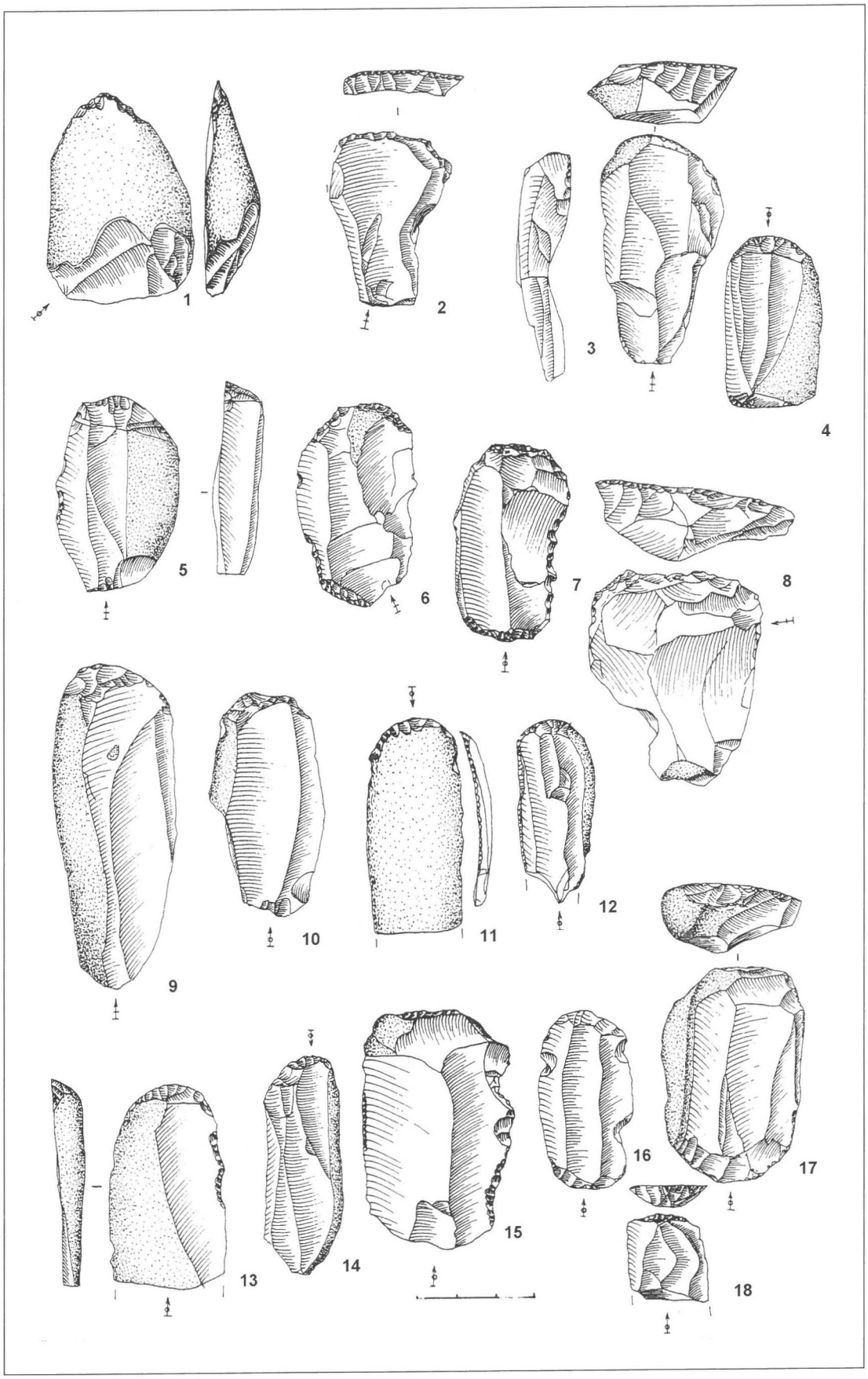


Fig. 7
End-scrapers from the lower occupation levels.



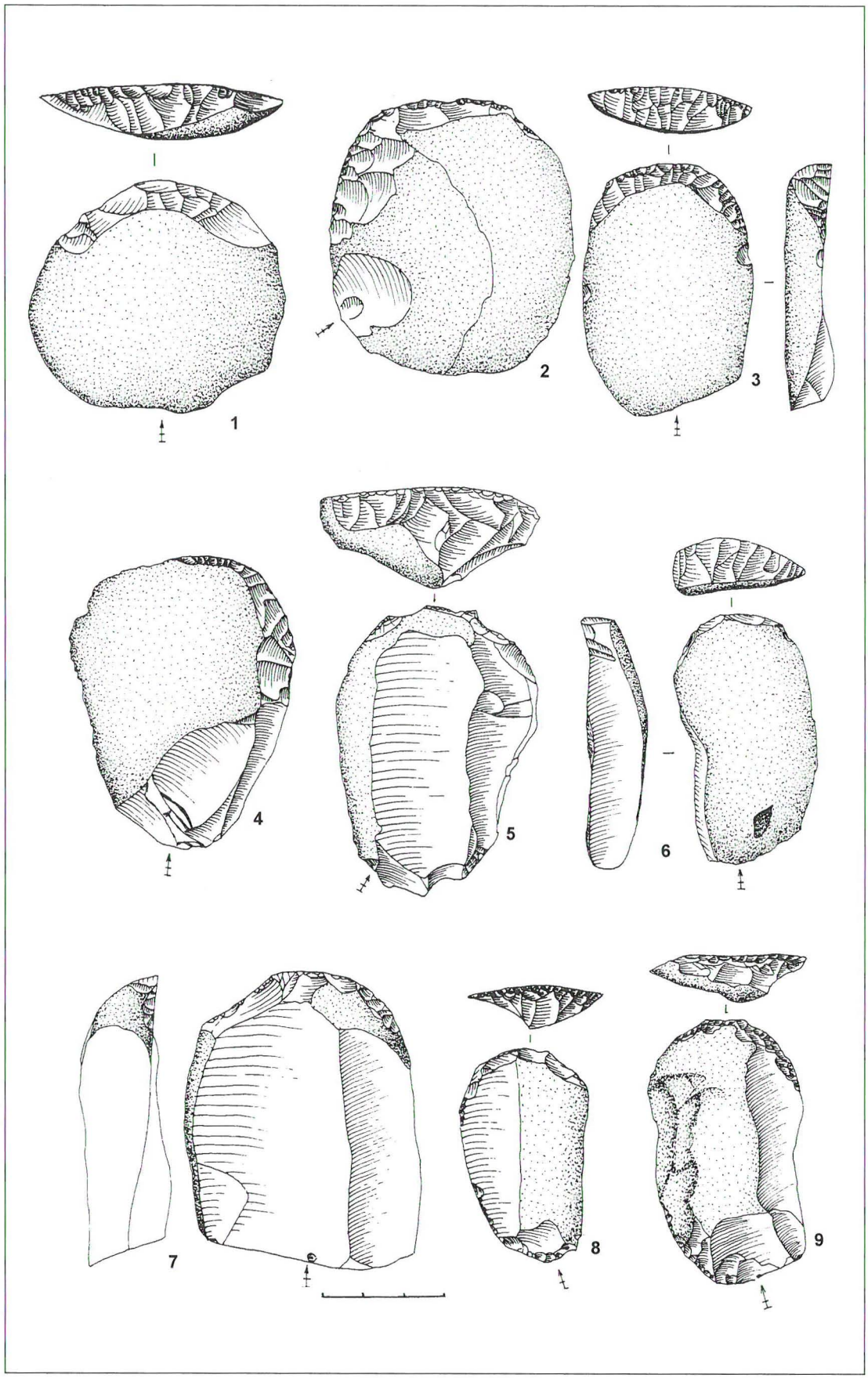


Fig. 6
End-scrapers from the lower occupation levels.

Elkab assemblages and that of the Tree Shelter are nearly identical. The utilisation of a similar raw material, a pink good quality flint, at both sites is remarkable. At both sites ceramics are absent. A point of difference between the Elkabian and the Tree Shelter assemblages is the presence of numerous end-scrapers (fig. 6 & 7), clearly lacking in the Nile Valley. Contacts with the Nile Valley are inferred by the presence of one large freshwater bivalve (cf. *Aspatharia*).
Micro wear traces on the Tree Shelter material (Kwekason, in preparation) indicate that functional composition of the analysed pieces points mainly into hide working preparations, but also in some hunting activities. At Elkab woodworking wear traces in form of scraping, whittling or shaping and sawing were observed on several pieces including blades and flakes, some modified by retouching, backing or denticulations.
With its technological, typological and chronological characteristics, the Elkabian bears a strong likeness (Vermeersch 1984) to the East-Saharan El Ghorab Neolithic (Close 1992), dated 8.5-8.2 ka BP, which is characterised by Eocene imported flint, blades and bladelets, elongated scalene triangles with short sides, straight backed pointed bladelets, shouldered bladelets, microburin technique, notches and denticulates. Like in the Elkabian, the end-scrapers are very rare. In the Eastern Sahara, end-scrapers occur only in the assemblages of the Nabta Neolithic, which is somewhat earlier, from 9500 to 9000 BP, than the Tree Shelter.
For the Tree Shelter we have no indication of any « Neolithic » connotation. No domesticated cattle are present, which was the reason the El Ghorab group from the Eastern Sahara is included into the Early Saharan Neolithic. While ceramic is altogether rare in the East Saharan sites, in the Tree Shelter it is completely absent. It is of course not surprising that activities in the Red Sea area are mainly devoted to hunting activities such as hide working and arrow hafting, whereas at Elkab woodworking seems to prevail.

The upper occupation levels

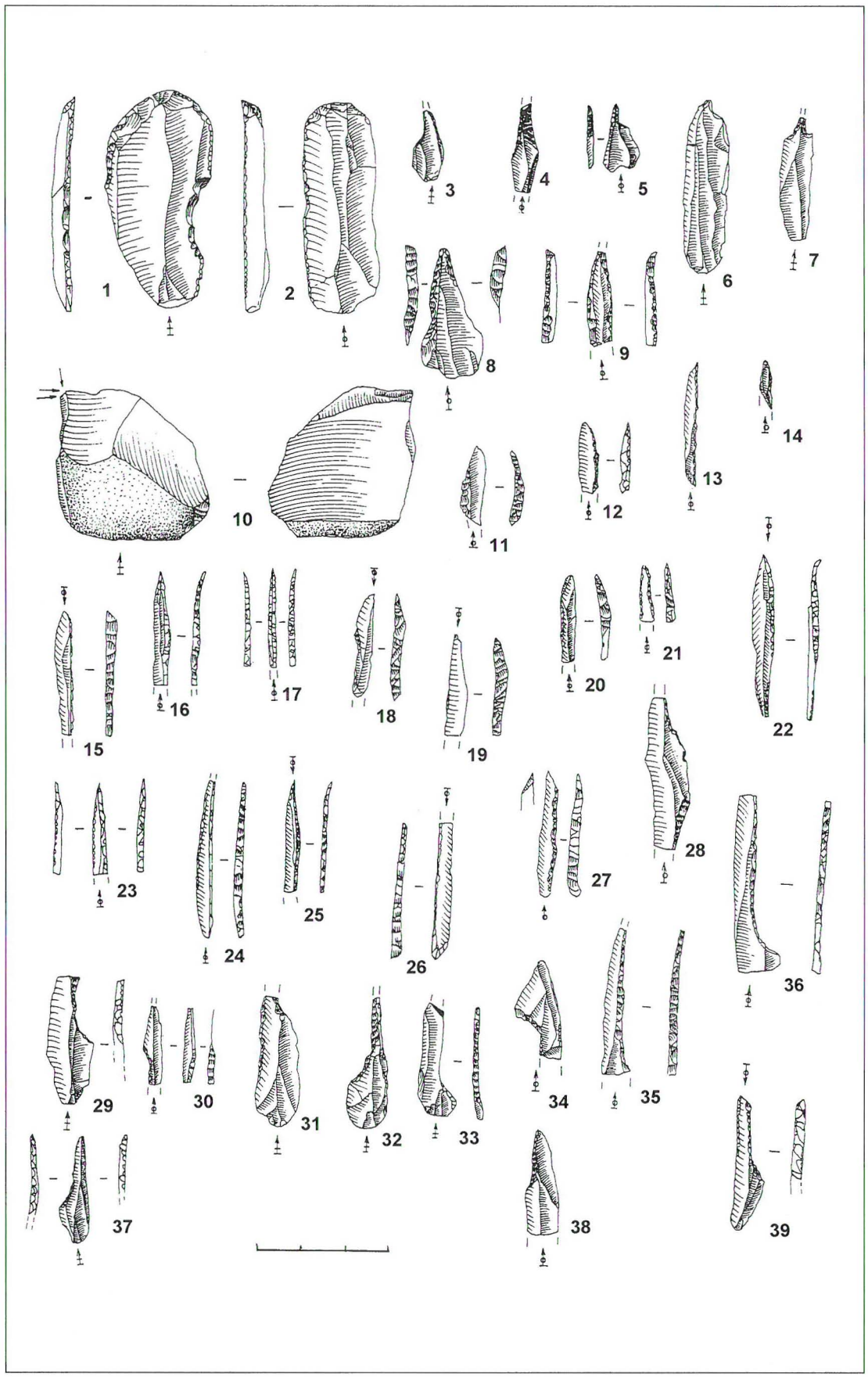
The upper part of the Tree Shelter deposits is characterised by numerous hearths of the following dates (fig. 4) :

feature 23 :	4930 ± 30 (GrN-22651)
feature 17 :	5330 ± 60 (Lv-2185)
feature 8 :	5835 ± 30 (UtC-5390)
feature 12 :	6630 ± 45 (GrN-12560)
feature 15 :	6770 ± 60 (GrN-22562)

Some rather large hearths are present, one of which was structured. It was covered by large limestone slabs and still preserved large quantities of charcoal.
Several occupation levels were recognised. The lithic technology from these levels is rough and the debitage technique is of low quality. Only local flint, directly available in front of the shelter, has been utilised. Cores (fig. 10) have no consistent technical approaches. Some single platform cores for flakes and some cores with multiple platforms are found. Very few specific tool types (fig. 10 & 11) were found. Blanks of most tools are thick and large flakes. Denticulates and bifacial tools are among the most represented tool categories. We recognise a side blow flake and two bifacially flaked arrowheads. Ceramic is present but only represented by some very small (< 3 cm) uncharacteristic sherds.

Fig. 8

End-scrapers, burin, piercers and backed bladelets from the lower occupation levels.



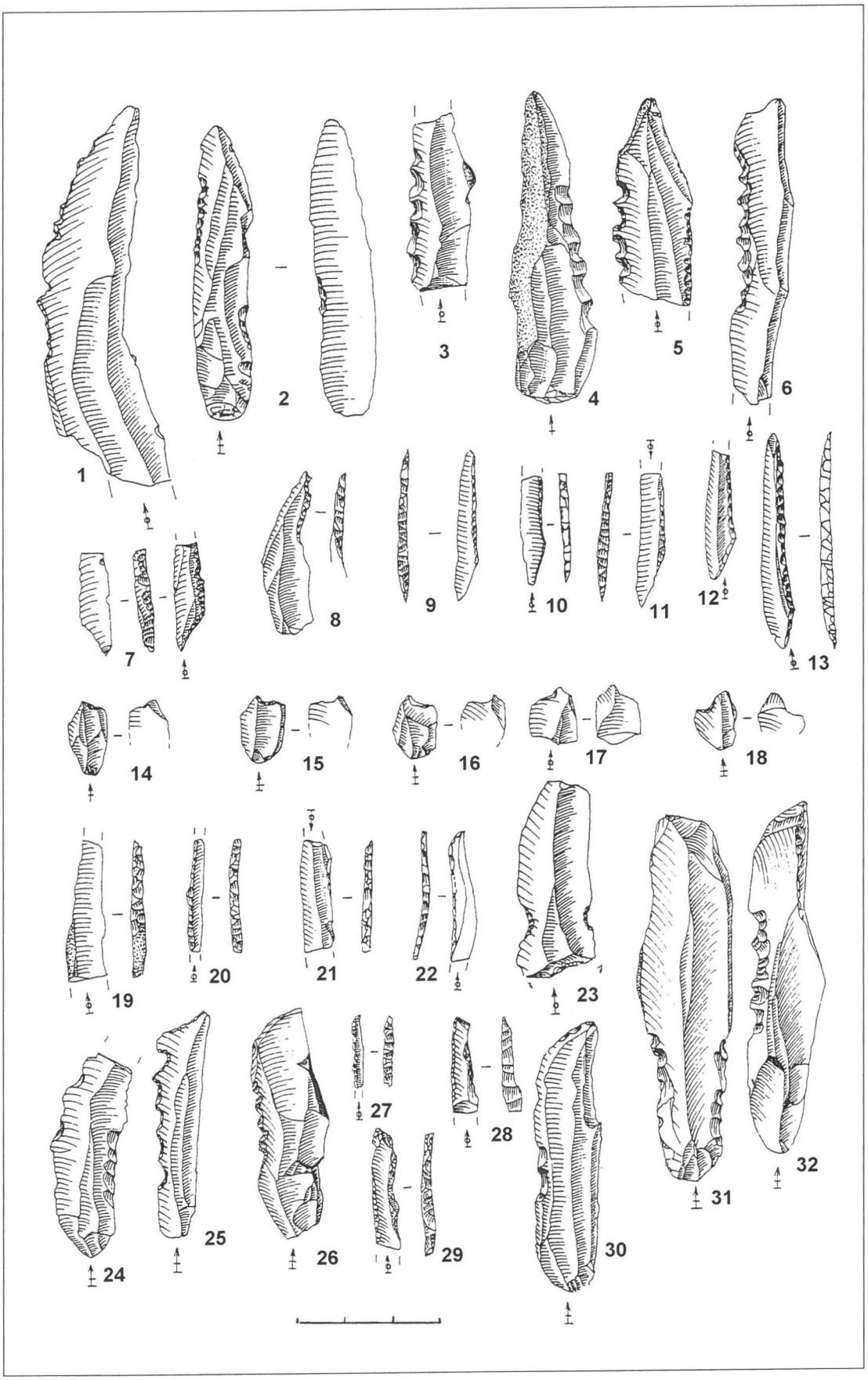


Fig. 9

Denticulated pieces, microburins and geometrics from the lower occupation levels.

Table 2 - Provisional tool list from the upper occupation levels :	
Tools (80)	N
Denticulates	40
Retouched flakes	27
Bifacial pieces	4
Notched pieces	3
Arrowheads	2
Side blow flake	1
Miscelaneous	3
Total	80

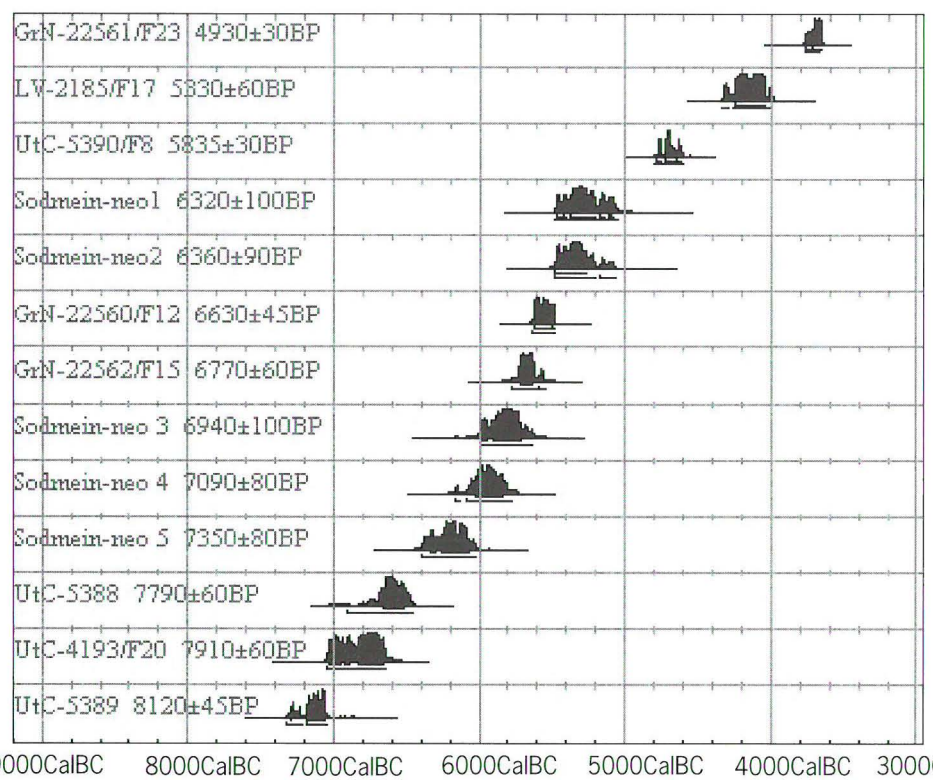
Animal bones are poorly preserved and the number of identifiable remains is low. Among the medium-sized bovid remains, dorcas gazelle fragments indicate that hunting was practised. The presence of domestic ovicaprines is thus far attested by at least four skeletal elements, two of which could be identified as goat. The oldest evidence for goat is associated with feature 12, dated to 6630 ± 45 BP (GrN-12560). A few remains of marine fish occur, some of which belong to the parrotfish (Scaridae), a family that is still today dried for future consumption. Red Sea molluscs comprise several cone shells (*Conus* sp.), *Ancilla* sp. and *Nerita albicilla*. These are of small size and were most probably used for adornment as is indicated by some perforated shells.

Other data on the Neolithic occupation of the Red Sea area are still very restricted. According to the ^{14}C chronology (fig. 12) there is no detectable hiatus in the human occupation of the Sodmein area from 8120 until 6300 BP with at least 15 hearths in the Tree Shelter and more than twenty in the Sodmein Cave. The occupation of Sodmein Cave came to an end with the onset of a dry phase, dated at 6100 BP by Hassan (1987), but the Tree Shelter was still visited in later periods until ± 5000 BP.

Atmospheric data from Stuiver et al. (1998) ; OxCal v3.5 Bronk Ramsey (2000) ; cub r : 4 sd : 12 prob usp [chron]

Fig. 12

Holocene ^{14}C dates from the Sodmein area.



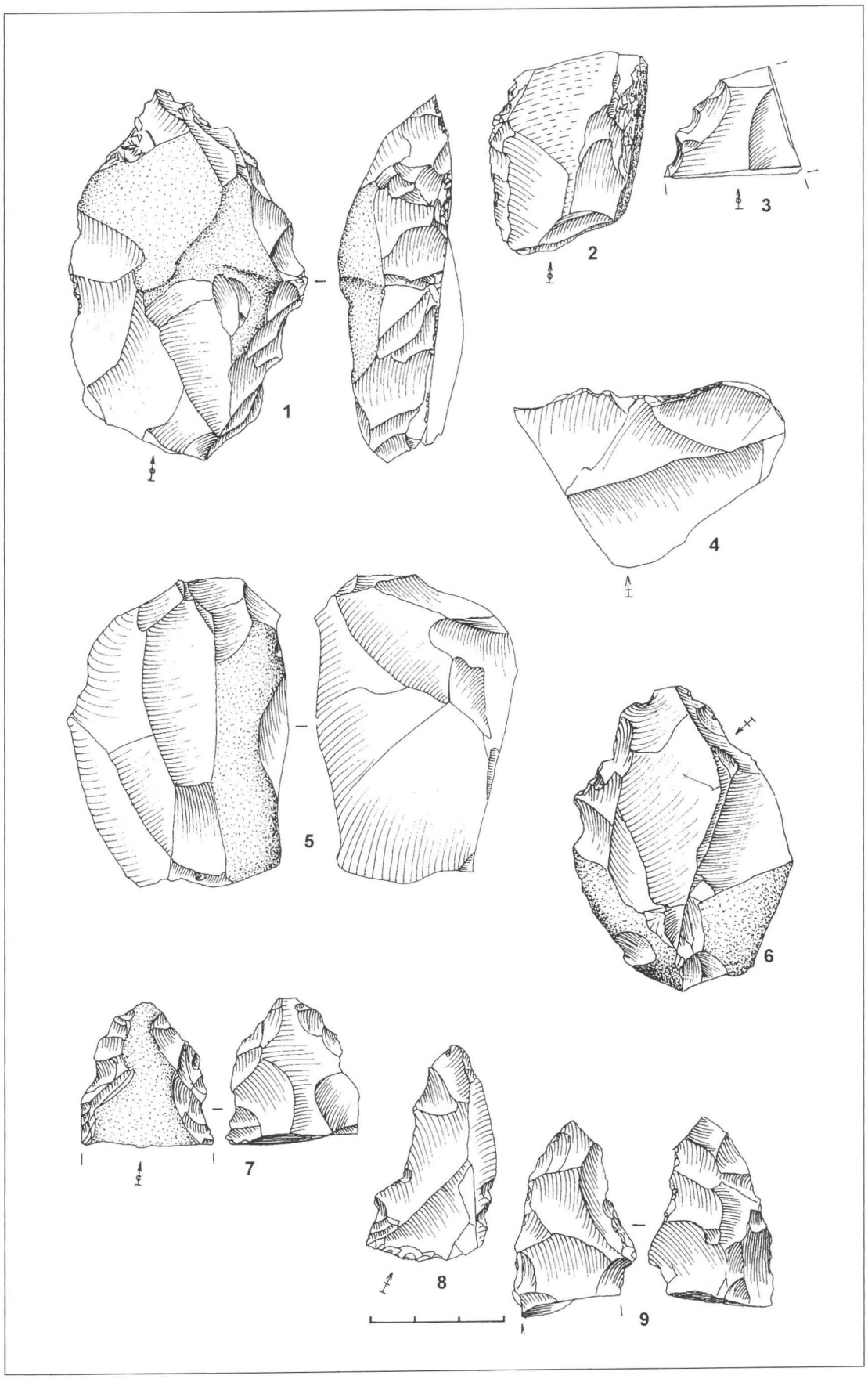
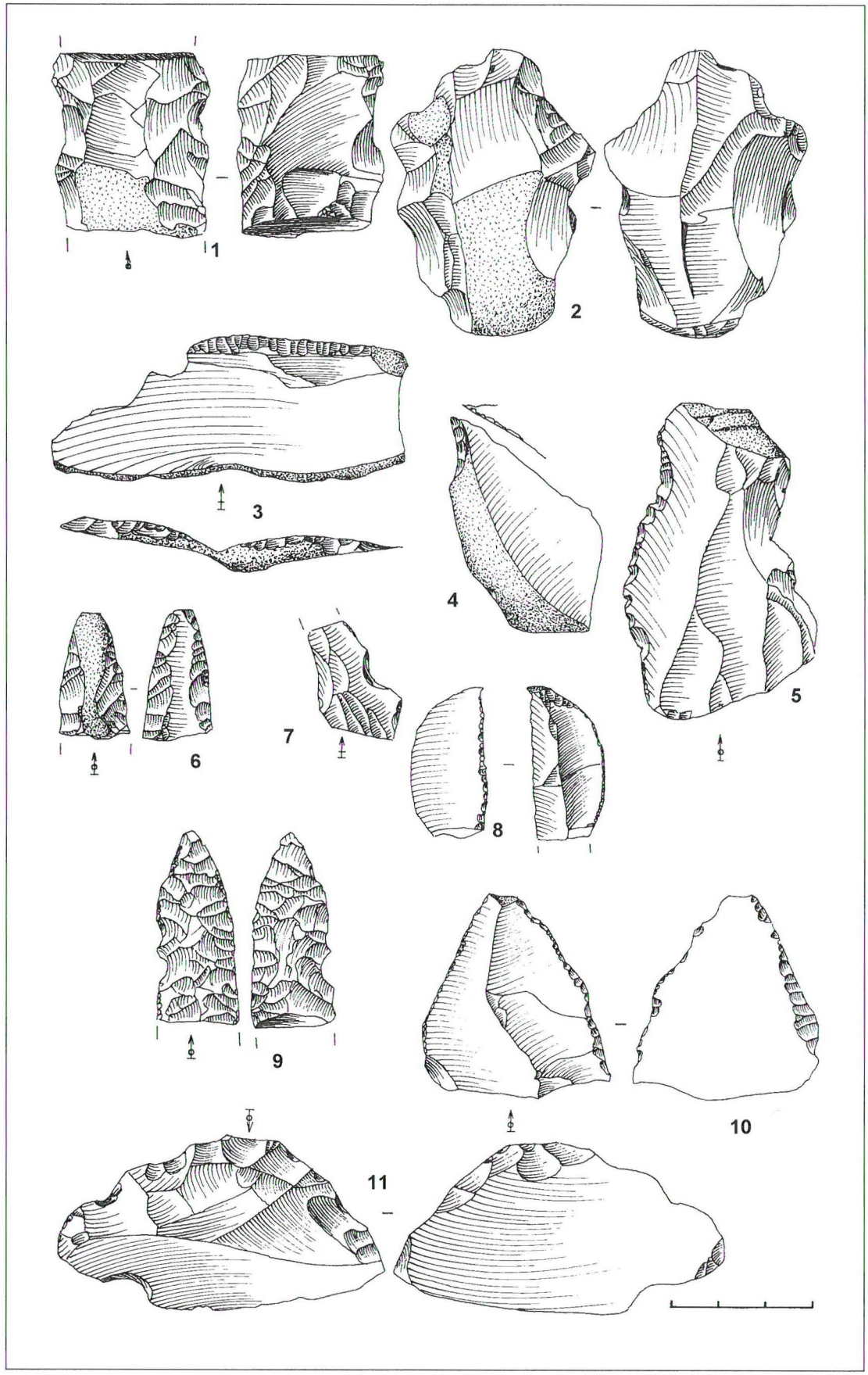


Fig. 10

Cores and tools from the upper occupation levels.

Fig. 11
Tools from the upper occupation levels.



DISCUSSION AND GENERAL CONCLUSION

Taking into account the differences in wear traces on the lithics from Elkab and from the Tree Shelter, (Kweakason, in preparation) one is tempted to consider the humans of the lower Tree Shelter as occupied mainly with hunting and hide preparation, whereas at Elkab the humans were mainly working wood. The presence of a high number of end-scrapers at the Tree Shelter is explained as the result of that difference in economy, whereas the technology and the typology seems to point to assemblages belonging to similar cultural entities. The absence of cattle bones, present in the Western Desert, is probably related to the dryness of the Red Sea area where only goats were kept. The absence of ceramics seems to differentiate the Elkabian of the Red Sea from that of the Eastern Saharan sites (Vermeersch e.a. 1996). The question if the Elkabian people in the Red Sea area had an economic base similar to that of the western desert and/or of the Nile Valley is difficult to answer.

The upper occupation levels give material that is earlier or contemporaneous with the Neolithic from the Nile Valley. Unfortunately, the flint technology from those periods in the Egyptian Nile Valley is insufficiently known. The rather rough flint knapping technology seems similar to that of the Tarifian (Ginter, Kozlowski & Drobniewicz 1979) and to a lesser extent of the Badarian settlement Mahgar Dendera 2, dated at 5110-5480 BP (Hendrickx, Midant-Reynes & Van Neer 2001). A characteristic piece collected at the Tree Shelter is a side blow flake, which is possibly correlated with hearth 8 with an age of 5835 BP. Side blow flakes are rare in Upper Egypt. A single piece was excavated from the Badarian settlement Mahgar Dendera 2 (Hendrickx, Midant-Reynes & Van Neer 2001 : pl. 29,2) and from a predynastic hearth at Makhadma (Vermeersch et al. 2000), associated with a date of 5990 ± 70 (GrN-12983). More side blow flakes are known from the Fayum and from Kharga, where they are surface finds (Baumgartel 1960 : 42). At Dakhleh oasis (McDonald 1991, 1999) they occur in the Bashendi Unit, which seems to date around 6000 BP. At site E-79-4, El Ghorab Playa (Kobusiewicz 1984), a side blow flake seems to be associated with a child's burial with a date of 6330 ± 100 (GD-926). They occur in the Late Neolithic occupation horizons at site E-75-8, Nabta Playa (Wendorf & Schild 1980). At Nabta Playa, side blow flake technology is considered a diagnostic characteristic of the Late Neolithic, dated from about 6300 until 5800 (Wendorf & Schild 1984). During this period, people or ideas seem to move over a very large area from the western desert over the Nile Valley into the Red Sea Mountains.

We have argued in relation with the data of Sodmein Cave (Vermeersch *e.a.* 1996) that ovicaprines were herded in the Red Sea Mountains from around 7000 BP on. This is confirmed by the data from the upper levels of the Tree Shelter. This is not so astonishing as domesticated ovicaprines during the first half of the seventh millennium BP are found in the western desert from around the same time (Close 2002). Sheep and goat were domesticated much earlier in the Levant. As wild animals do not occur in the Red Sea area, it is obvious that the domesticated animals were introduced from the Levant along the Red Sea Mountains. In addition to herding small livestock, the Tree Shelter people were also hunters for dorcas gazelle. They consumed Red Sea fish which they probably imported in dry form.

The Sodmein Cave (Mercier *e.a.* 1999, Moeyersons *e.a.* 1996, Van Peer *e.a.* 1996, Van Peer, Vermeersch & Moeyersons 1996) and the Tree Shelter reveal a rather complex history of human occupation in the Red Sea Mountains. More research should be devoted to unfold the prehistory of the region. ■

Bibliographie

BAUMGARTEL, E.J., (1960) – *The Cultures of Prehistoric Egypt II*, Oxford.

CLOSE, A.E., (1992) – Holocene Occupation of the Eastern Sahara. [in:] Klees, F. & Kuper, R. (eds.), *New Light on the Northeast African Past*, Köln : 155-183.

CLOSE, A., (2002). Sinai, Sahara, Sahel : The introduction of Domestic Caprines to Africa, [in:] Jennerstrasse 8 (Eds), *Tides of the Desert*, Köln : 459-469.

GINTER, B., KOZLOWSKI, J.K. & DROBNIEWICZ, B., (1979) – *Silexindustrien von El Tarif : ein Beitrag zur entwicklung der prädynastischen Kulturen in Oberägypten*, Archäologische Veröffentlichungen 26, Mainz am Rhein.

HASSAN, F.A., (1987) – Desert Environment and Origins of Agriculture in Egypt., [in:] Hägg, T. (ed.), *Nubian Culture. Past and Present*, Stockholm : 17-32,.

HENDRICKX, S., MIDANT-REYNES, B. & VAN NEER, W., (2001) – *Mahgar Dendera 2 (Haute Egypte), un site d'occupation Badarien*, Egyptian Prehistory Monographs 3, Leuven.

KOBUSIEWICZ M., (1984) – Report on site E-79-4 : The Archaeology of El Ghorab Playa, [in:] Wendorf, F., Schild, R. & Close, A.E. (eds), *Cattle-keepers of the Eastern Sahara*, Dallas : 135-164.

KWEKASON A., (in preparation) – *Microwear Analysis : Contribution to Tree Shelter and Elkab Sites.*

MCDONALD, M.M.A., (1991) – Origins of the Neolithic in the Nile Valley as seen from Dakhleh Oasis in the Egyptian Western Desert, *Sahara* 4 : 41-52.

MCDONALD , M.M.A., (1999) – Neolithic Cultural Units and Adaptations in the Dakhleh Oasis, [in:] Churcher, C.S. & Mills, A.J. (eds), *Reports from the Survey of the Dakhleh Oasis 1977-1987*, Oxford : 117-132.

MERCIER, N., VALLADAS, H., FROGET, L., JORON, J.-L., VERMEERSCH, P.M. & VAN PEER, P., (1999). Thermoluminiscence Dating of a Middle Palaeolithic Occupation at Sodmein Cave, Red Sea Mountains (Egypt). *Journal of Archaeological Science* 26 : 1339-1345.

MOEYERSONS, J., VERMEERSCH, P.M., BEECKMAN, H. & VAN PEER, P., (1999) – Holocene Environmental Changes in the Gebel Umm Hammad, Eastern Desert, Egypt, *Geomorphology* 26 : 297-312.

MOEYERSONS, J., VERMEERSCH, P., VAN PEER, P., VAN NEER, W., BEECKMAN, H. & DE CONINCK, E., (1996) – Sodmein Cave Site, Red Sea Mountains, Egypt : Development, Stratigraphy and Palaeoenvironment, [in:] Pwiti, G. & Soper, R. (eds.), *Aspects of African Archaeology*, Papers 10th Congr. PanAfrican Ass. Prehistory and Related Studies, Harare : 53-62.

MOEYERSONS, J., VERMEERSCH, P.M & VAN PEER, P., (2002) – Dry Cave Deposits and their Palaeoenvironmental Significance during the last 115 ka, Sodmein Cave, Red Sea Mountains, Egypt, *Quaternary Science Reviews* 21 : 837-851.

VAN PEER, P., VERMEERSCH, P.M., MOEYERSONS, J. & VAN NEER, W., (1996) – Palaeolithic Sequence of Sodmein Cave, Red Sea Mountains, Egypt, [in:] Pwiti, G. & Soper, R. (eds.), *Aspects of African Archaeology*, Papers 10th Congr. PanAfrican Ass. Prehistory and Related Studies, Harare : 149-156.

VAN PEER, P., VERMEERSCH, P.M. & MOEYERSONS, J., (1996) – Palaeolithic Stratigraphy of Sodmein Cave (Red Sea Mountains, Egypt), *Geo-Eco-Trop* 20 : 61-71.

VERMEERSCH, P.M., (1978) – *Elkab II. L'Elkabien, Epipaléolithique de la Vallée du Nil Egyptien*, Leuven.

VERMEERSCH, P.M., (1984) – Subsistence Activities on the Late Palaeolithic Sites of Elkab (Upper Egypt), [in:] Krzyzaniak, L. & Kobusiewicz, M. (eds.), *Origin and Early Development of Food-Producing Cultures in North-Eastern Africa*, Poznan : 137-142.

VERMEERSCH, P.M., VAN PEER, P., MOEYERSONS, J. & VAN NEER, W., (1994) – Sodmein Cave Site (Red Sea Mountains, Egypt), *Sahara* 6 : 31-40.

VERMEERSCH, P.M., VAN PEER, P., MOEYERSONS, J. & VAN NEER, W., (1996) – Neolithic Occupation of the Sodmein Area, Red Sea Mountains, Egypt, [in:] Pwiti, G. & Soper, R. (eds.), *Aspects of African Archaeology*, Papers 10th Congr. PanAfrican Ass. Prehistory and Related Studies, Harare : 411-420.

VERMEERSCH, P.M., PAULISSEN, E., & HUYGE, D., (2000) – Makhadma 4 A Late Palaeolithic Fishing Site, [in:] Vermeersch, P.M. (ed.), *Palaeolithic Living Sites in Upper and Middle Egypt,* Egyptian Prehistory Monographs 2, Leuven : 227-270.

WENDORF F. & SCHILD,R., (1980) – *Prehistory of the Eastern Sahara,* New York.

WENDORF, F. & SCHILD, R., (1984) – Conclusions, [in:] Wendorf, F., Schild, R. & Close, A.E. (eds*), Cattle-keepers of the Eastern Sahara,* Dallas : 135-164.