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## **Holocene lithic industries of the Letti Basin (Northern Sudan)**

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It is almost fifty years ago when the first prehistorians appeared in the Letti Basin and the neighbouring areas to begin archaeological studies of the region (Fig. 1). It was in mid 60's when the Southern Methodist University expedition penetrated the area between Wadi el-Melik and Korti on the SW-bank of the Nile (Marks et al. 1968). In the same time the area was investigated by the Polish Archaeological Mission to Old Dongola (Krzyzaniak 1968; Kobusiewicz and Krzyzaniak 1974). The archaeological research has been intensified since 1984 when the area started to be systematically studied by K. Grzymiski and his team from the Royal Ontario Museum in Toronto. The work resulted in several publications of both more general and specific nature (Grzymiski 1987; Kobusiewicz and Kabaciński 1996; Chłodnicki and Kabaciński 2002). This paper is an overview of studies on chipped stone industries of the Later Stone Age chronology carried out within frame work of the Royal Ontario Museums project.

During our research both the Letti Basin and the edge of the Nile valley adjacent to it were surveyed. In both areas numerous traces of human settlement from prehistoric times were recorded. However the state of preservation of sites in both areas was different. In the Letti Basin an intensive erosion and denudation plus modern human activity have caused a destruction of a vast majority of Early Khartoum (Mesolithic) and Neolithic sites. Remains of these settlements are spread over the Basin and are found as sherds and lithics occurrences. Only occasionally more concentrated remains were recorded, as was the case with sites ROM 200 and ROM 205.

Prehistoric sites, although also modified by erosion, were found better preserved at the edge of the Nile valley. No Early Khartoum (Khartoum Mesolithic) and Neolithic sites were found at the edge of the Nile valley. These settle-

ments were located on the lower Nile terraces. Erosion removed most of the cultural contents of these sites and their artefacts are usually recorded on the surface or within the subsurface layer (like at the site MG4). However, in some cases lower parts of features survived (site ROM 222).

The oldest Holocene human settlement of the area is related to the Early Khartoum (Mesolithic). Few remains of this occupation were recorded in the Letti Basin, but no intact site was found there. An Early Khartoum site - marked as MG4 - slightly NE of the Letti Basin, near the village of Bukibul, was also recorded.

At MG4 site numerous wavy-line and dotted-wavy-line potsherds were found accompanied by lithic assemblages. The site was surface recorded but also a test trench of 2 x 2 metres was excavated yielding fragments of Early Khartoum pottery and 1143 pieces of lithics (Table 1 and 2).

It can be seen from these breakdowns that over 68 percent of lithics were made of brownish-yellowish chert - easy to find in the wadis, 17.9% were made of agate, 10.4% of quartz and remaining 3.4% are artefacts either burnt or made of sandstone (Table 1). As regards the size of the raw nodules the largest were chert pebbles but they rarely measured over 5-6 cm in diameter.

A principal way of stone processing was exploitation of single platform cores from which mostly flakes were removed (Fig. 2: 1-5). Preparation of cores was very poor and limited to platforms exclusively which were formed either by a single stroke or by multiple blows. In some cases the orientation of the core was changed during the process of exploitation. In such cases the second platform was located on the former striking surface of the core and its exploitation continued (Fig. 3: 1-3). Very simple technology, hard hammer technique with direct percussion, was applied during core exploitation. Minute traces of more advanced technology are also readable since few *laminae* and few blades with faceted platforms were recorded.

The group of tools consists of 54 pieces what constitutes ca 4.9 % of the whole assemblage and 14.78 % when calculating without unidentified pieces, chips and chunks (Table 1). The most abundant group of tools are arched backed pieces - over 31 % of the tool group (Table 2; Fig. 4: 8-22). Other types of microliths are also recorded, like triangles (Fig. 4: 23, 26) and trapezes (Fig. 4: 24-25). The presence of micro-burins indicates the application of the micro-burin technique in microliths' production (Fig. 4:27-28).

Numerous group of tools are retouched pieces - over 30 % of the tool group (Fig. 4: 29-37). Here the micro-retouched pieces, simply retouched flakes and blades predominate (Table 2). Rare irregular flake scrapers and truncations are also present (Fig. 4:1-7).

Table 1. Site MG4. General structure of the assemblage.

Lithic category	Raw material in number of pieces				Total		
	Quartz	Agate	Chert	Other	No.	%	% (without unidentified pieces, chips & chunks)
Cortex flakes	2	5	57	0	64	5.60	16.89
Cortex blades	1	0	5	0	6	0.52	1.58
Single platform cores for flakes	1	2	3	0	6	0.52	1.58
Flakes from single platform cores	15	11	121	0	147	12.86	38.79
Flakes from opposed platform cores	0	0	7	0	7	0.61	1.85
Cores for flakes with changed orientation	0	0	5	0	5	0.44	1.32
Flakes from cores with changed orientation	0	7	48	0	55	4.81	14.51
Blades from single platform cores	0	5	18	0	23	2.01	6.07
Blades from opposed platform cores	0	1	1	0	2	0.18	0.53
Blades from cores with changed orientation	0	1	3	0	4	0.35	1.06
Core tablets	0	1	2	0	3	0.26	0.79
Secondary <i>lames a crete</i>	0	0	1	0	1	0.09	0.26
Unidentified flakes	12	6	33	6	57	4.99	-
Unidentified blades	3	0	6	0	9	0.79	-
Unidentified cores and core fragments	1	4	4	1	10	0.87	-
Chips	84	151	399	23	657	57.48	-
Chunks	0	1	19	9	29	2.54	-
Tools	0	10	46	0	56	4.90	14.78
Micro-burins	0	0	2	0	2	0.18	0.53
Total	119	205	780	39	1143	100.00	100.00
Lithic category	Raw material in number of pieces				Total		

Sites ROM 205 and ROM 200 were also found in the Letti Basin (Chłodnicki and Kabaciński 2002). Lithics from the site ROM 205 originate from the surface and were collected from and around three test trenches excavated on the site. No artefacts were found below the surface suggesting a heavy destruction of the site by erosion and deflation.

Table 2. Site MG4. Structure of the tool group.

Tool type	Number of pieces		Total	
	Agate	Chert	No.	%
End-scrapers on flakes	0	2	2	3.70
Truncations	1	3	4	7.41
Perforators and drills	0	1	1	1.85
Arched backed pieces	6	11	17	31.48
Triangles	0	1	1	1.85
Trapezes	0	2	2	3.70
Fragments of microliths	0	2	2	3.70
Micro-retouched pieces	2	5	7	12.96
Retouched flakes	0	6	6	11.11
Retouched blades	0	1	1	1.85
Notched flakes	0	1	1	1.85
Denticulated flakes	0	3	3	5.56
Fragments of retouched tools	1	6	7	12.96
Total	10	44	54	100.00

The assemblage from site ROM 205 consists of over 80 artefacts which - considering the way they were recorded - are not statistically representative. Nevertheless, they permit a description of the main characteristics of this assemblage.

The basic raw material for production of blanks and tools was locally collected chert, brownish to yellowish in colour - more than 80 % of all the artefacts were made of that material. Agate - the raw material second in importance - mainly for the production of arched backed pieces (lunates). Only single pieces were made of quartz and ferrocrete sandstone. Judging from the dimensions of flakes and blades the chert pebbles only exceptionally exceeded 4 cm in length.

The only way of core processing was the exploitation of single platform cores. Both flakes and blades were removed by the direct hard hammer percussion. A single core found at this site (Fig. 5:1) shows no preparation except the platform which was faceted. This way of limited preparation is parallel to the lack of crest blades on one side and mostly prepared platforms of debitage on the other.

The tool group is dominated by two categories: end-scrapers and lunates. In this first group - which contains over 63 % of all tools - only the end-scrapers on flakes are present. Very often they were made of cortex or semi-cortex flakes (Fig. 5:2-15). They are very short or short specimens with regularly rounded or semicircular scraping edges.

Another important group of tools are arched backed pieces - 27 % of all tools. These are very uniform, almost microlithic tools made mostly of agate

(Fig. 5:16-21). Besides these forms, single examples of other tools - flake truncation (Fig. 5:22) or retouched flake (Fig. 5:23) were also present.

From the second surveyed site - ROM 200, both from their surface and from the test pit almost to 100 artefacts were collected. The assemblage is very similar to that collected from ROM 205 from the point of view of raw material and lithic technology. Mainly chert was processed here, and not more than 25 % of artefacts were made of agate and quartz altogether. Hard hammer technique used for processing of single platform cores was the only way of core exploitation, and cores themselves were poorly prepared – their preparation was limited exclusively to the platforms. Considering analogous size of chert pebbles, the source of this raw material was most probably the same for both the site ROM 200 and ROM 205.

Tool group from the site ROM 200 is slightly more diversified. Beside flake end-scrapers (Fig. 6:1-2, 4-7) and arched backed pieces (Fig. 6:8-11), the retouched flakes (Fig. 6:12-14), perforators (Fig. 6:15-16) together with single specimen of a flat-truncated flake (Fig. 6:17), a micro-retouched blade (Fig. 6:18) and a notched flake (Fig. 6:3) were recorded.

Summing up above made observations, both assemblages are quite similar from the point of view of raw material strategy, lithic technology and typology and represent the same kind of the Late Neolithic lithic industry. This industry seems very close to assemblages identified earlier along the southern bank of the Nile and to the east of Wadi el Melik, and named as Karat Group (Marks et al. 1968:321-323): it was thought to be affiliated with the Khartoum Neolithic industry in the Central Sudan and with the A-Group sites near the Second Cataract. The sites ROM 205 and ROM 200 are indeed very close to the Khartoum Neolithic except for the lack of rhyolite gouges.

The assemblage from the site ROM 222 originates from four test pits and from 100 m<sup>2</sup> of a systematic surface collection. Pottery found here displays some similarities with the Late Neolithic, but many features point to a later age of this site. It seems to belong to the phase of the Neolithic of the Letti Basin, related to the Terminal Neolithic/pre-Kerma times (Chłodnicki and Kabaciński 2002).

Altogether more than 2748 artefacts were recorded at site ROM 222 representing different stages of stone processing, starting with initial cores, different kinds of debitage including numerous chips collected during the screening, and finishing with tools. All this indicates a relatively undestroyed site and in situ materials. The general structure of the assemblage is presented in Tables 3 and 4.

More than 75 % of the assemblage was made of chert, another 13.2 % of agate, 10,8 % of quartz and remaining 0.8 % pieces were burnt or made of sandstone. More than 20 % of all identified debitage are cortex flakes and blades

Table 3. Site ROM 222. General structure of the assemblage.

Lithic category	Raw material				Total		
	Quartz	Agate	Chert	Other	No.	%	% (without unidentified pieces, chips & chunks)
Cortex flakes	38	16	189	1	244	8.88	18.73
Cortex blades	0	6	24	0	30	1.09	2.30
Initially struck cores	4	0	0	0	4	0.15	0.31
Single platform cores for flakes	6	4	11	0	21	0.76	1.61
Flakes from single platform cores	41	28	362	2	433	15.76	33.23
Opposed platform cores for flakes	0	0	1	0	1	0.04	0.08
Flakes from opposed platform cores	2	1	9	0	12	0.44	0.92
Cores for flakes with changed orientation	2	4	22	0	28	1.02	2.15
Flakes from cores with changed orientation	3	10	76	2	91	3.31	6.98
Single platform cores for blades	0	0	3	0	3	0.11	0.23
Blades from single platform cores	3	12	139	1	155	5.64	11.90
Blades from opposed platform cores	0	2	5	0	7	0.25	0.54
Cores for blades with changed orientation	0	0	1	0	1	0.04	0.08
Blades from cores with changed orientation	0	1	13	0	14	0.51	1.07
Scaled pieces	0	3	11	0	14	0.51	1.07
Flakes from scaled pieces	0	0	3	0	3	0.11	0.23
Core tablets	0	0	4	0	4	0.15	0.31
Unidentified flakes	13	4	59	2	78	2.84	-
Unidentified cores and core fragments	2	4	11	0	17	0.62	-
Chips	169	219	856	9	1253	45.60	-
Chunks	8	22	63	4	97	3.53	-
Tools	5	26	204	2	237	8.62	18.19
Burin /spalls	0	0	1	0	1	0.04	0.08
Total	296	362	2067	23	2748	100.00	100.00

which additionally supports the conclusion that stone processing took place on the site from its earliest stage. Over 41 % of all products were flakes, however the presence of numerous blades (176 specimens - 13.5 %) strongly suggests that procuring of blades was also an important goal of stone processing. Undoubtedly, the hard hammer exploitation of single platform cores was the only way of

Table 4. Site ROM 222. Structure of the tool group.

Tool type	Raw material in number of pieces				Total	
	Quartz	Agate	Chert	Other	No.	%
End-scrapers on flakes	0	0	5	0	5	2.11
Burins	0	1	0	0	1	0.42
Truncations	0	0	4	0	4	1.69
Perforators and drills	0	2	14	0	16	6.75
Arched backed pieces	0	8	14	1	23	9.70
Points	0	0	1	0	1	0.42
Retouched flakes	1	3	56	0	60	25.32
Retouched blades	0	5	26	1	32	13.50
Notched flakes	0	0	18	0	18	7.59
Notched blades	0	2	13	0	15	6.33
Denticulated flakes	4	4	38	0	46	19.41
Denticulated blades	0	1	15	0	16	6.75
Total	5	26	204	2	237	100.00

obtaining blanks (Fig. 7:1-2, 6-7; 8:1-6; 9:4). Cores were poorly prepared - only their platforms were faceted. Few examples of core tablets indicate the renewing of platform during the exploitation. Twenty two cores - mostly heavily exploited - have changed its orientation at the late stage of processing (Fig. 7:4-5; 8:7; 9:1-3, 5). Only few artefacts show application of scaled technique (Fig. 7:3; 9:6-7). Although the largest core reaches over 6 cm in length and the largest blanks exceed 5 cm, most of the materials is of small size.

237 tools were found in this assemblage. Only 5 end-scrapers on flake were recorded, and most of them are very irregular in shape (Fig. 10:1-2; 11:1-3). Relatively numerous are perforators and drills - 16 specimens (6.75 % - Fig. 10:3-15; 11:6-11) and arched backed pieces (lunates) - 23 specimens (9.7 % - Fig. 10:16-21; 11:12-16; 12:1-11, 15). The assemblage is strongly dominated by differently shaped flakes and blades which constitute as much as 78.9 % of a tool group. These are retouched flakes and blades (Fig. 11:18-22; 12:12-14, 16-19; 13:1-8; 14:1-6), denticulated flakes and blades (Fig. 13:9-14; 14: 10-11, 13-20; 15:1-9; 16:1) and notched flakes and blades (Fig. 14: 7-9, 12; 15:10-14; 16:2-6). Among tools 4 truncations (Fig. 11:5; 15:15-16), 1 partially bifacial point (Fig. 11:17) and a single flake removed from a polished core tool (Fig. 16:7) were also found. We are not able to find any analogy to this assemblage.

When comparing the Early Khartoum MG4 site, Late Neolithic sites ROM 200 and ROM 205 and the site ROM 222 from the point of view of lithic production, following elements seem to be worth mentioning:

1. Similar raw material strategy was practised at all these sites. It was based on procuring local chert pebbles from the present desert and numerous wadis joining the Nile valley. Other raw materials - quartz and agate - played a subsidiary role.

2. Similar lithic technology was used at these sites, based on exploitation of a single platform core. Cores were poorly prepared (almost exclusively striking platforms) and blanks were removed from the cores by the help of a hard hammer direct percussion. The technique of lithic production seems to be even more simple in the youngest assemblage (ROM 222).

3. A significant shift in the production of tools can be seen in the Letti Basin. Initially, during the Early Khartoum times (site MG4) a rich group of microlithic tools, including triangles, trapezes and arched backed pieces accompanied by micro-burin technique was recorded. Later on, in the Late Neolithic the group of tools was reduced to arched backed pieces only. After a massive appearance of end-scrapers in the Late Neolithic they almost completely disappeared in the pre-Kerma times (site ROM 222). In the course of the time an increasing role of the retouched, notched and denticulated flakes and blades can be noted. It seems that the end-scrapers were finally replaced by numerous and differently shaped flakes and blades. All this probably reflects the change in the subsistence strategies during the Holocene times in the southern Nubia.



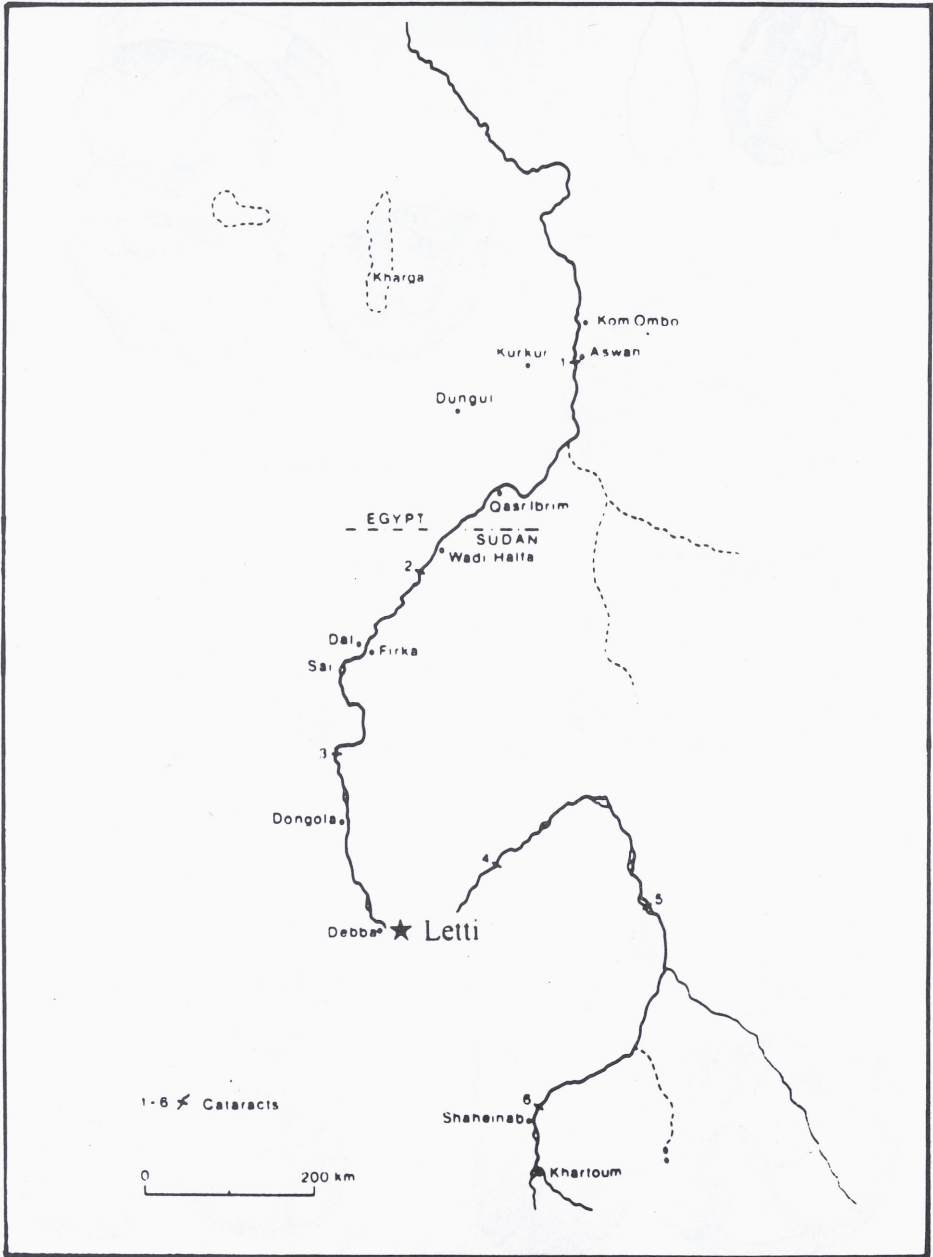


Fig. 1. Map showing the location of the Letti Basin.

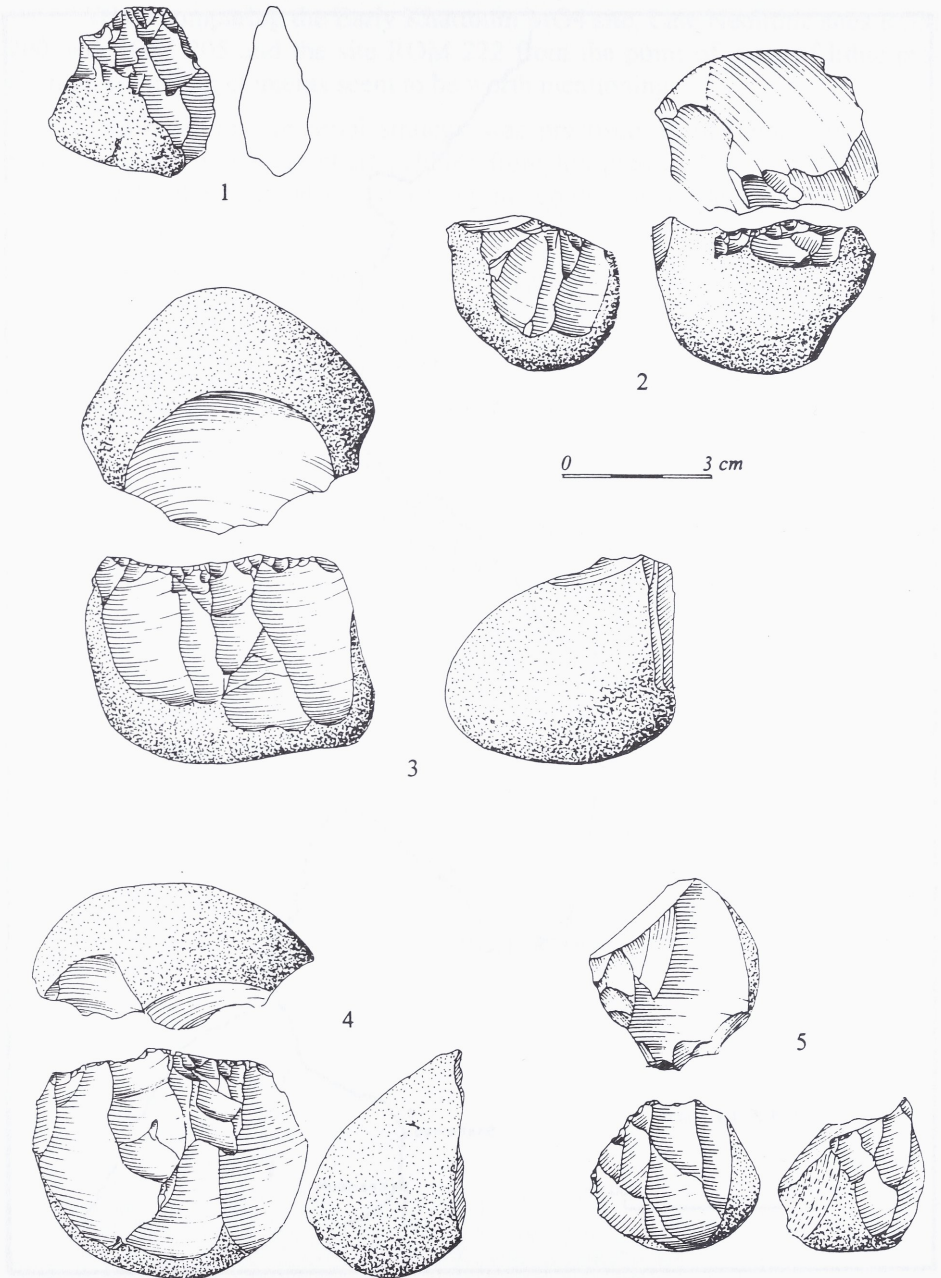


Fig. 2. Site MG4. Early Khartoum. 1-5 - single platform cores.

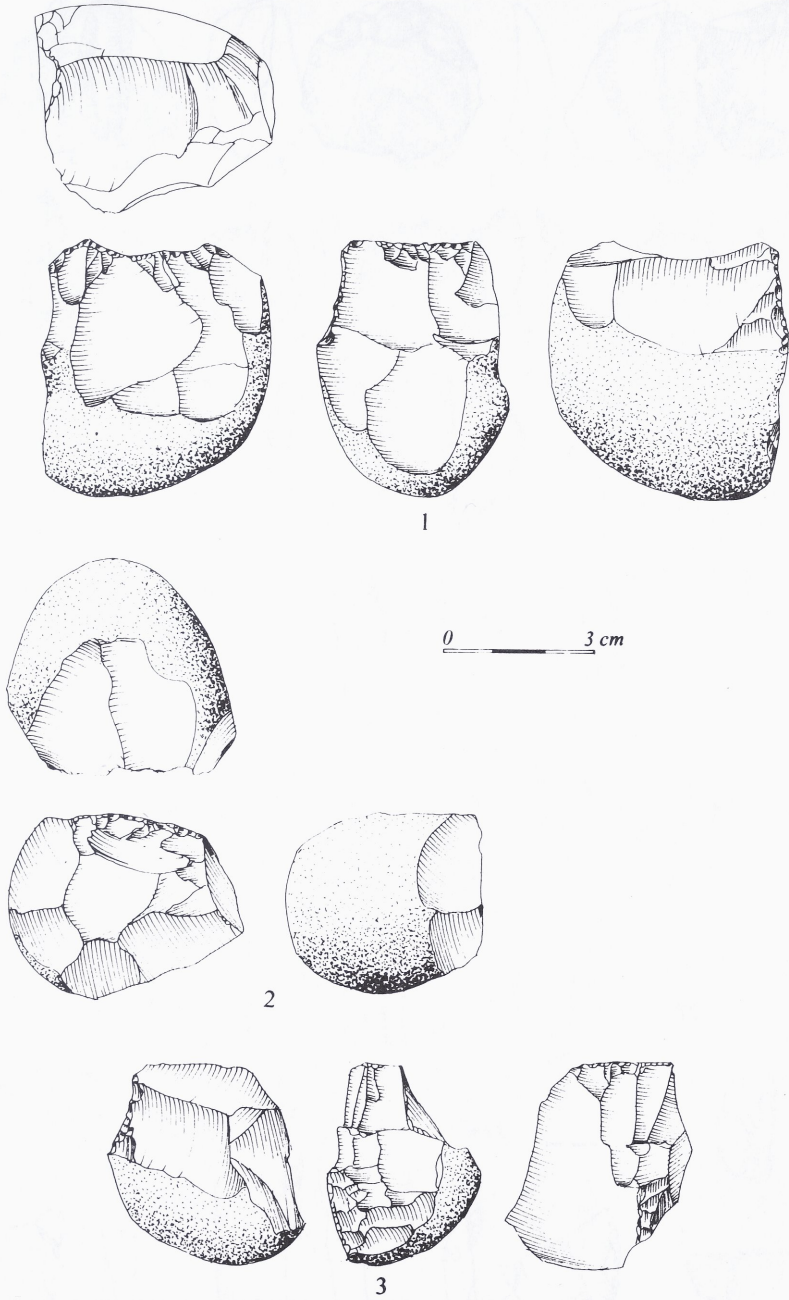


Fig. 3. Site MG4. Early Khartoum. 1-3 - cores with changed orientation.



Fig. 4. Site MG4. Early Khartoum. 1-2 - flake scrapers; 3-7 - truncations; 8-22 - arched backed pieces, 23, 26 - triangles; 24-25 - trapezes; 27-28 - micro-burins; 29-33 - micro-retouched pieces; 34-35 - retouched flakes; 36 - notched blade; 37 - denticulated blade.

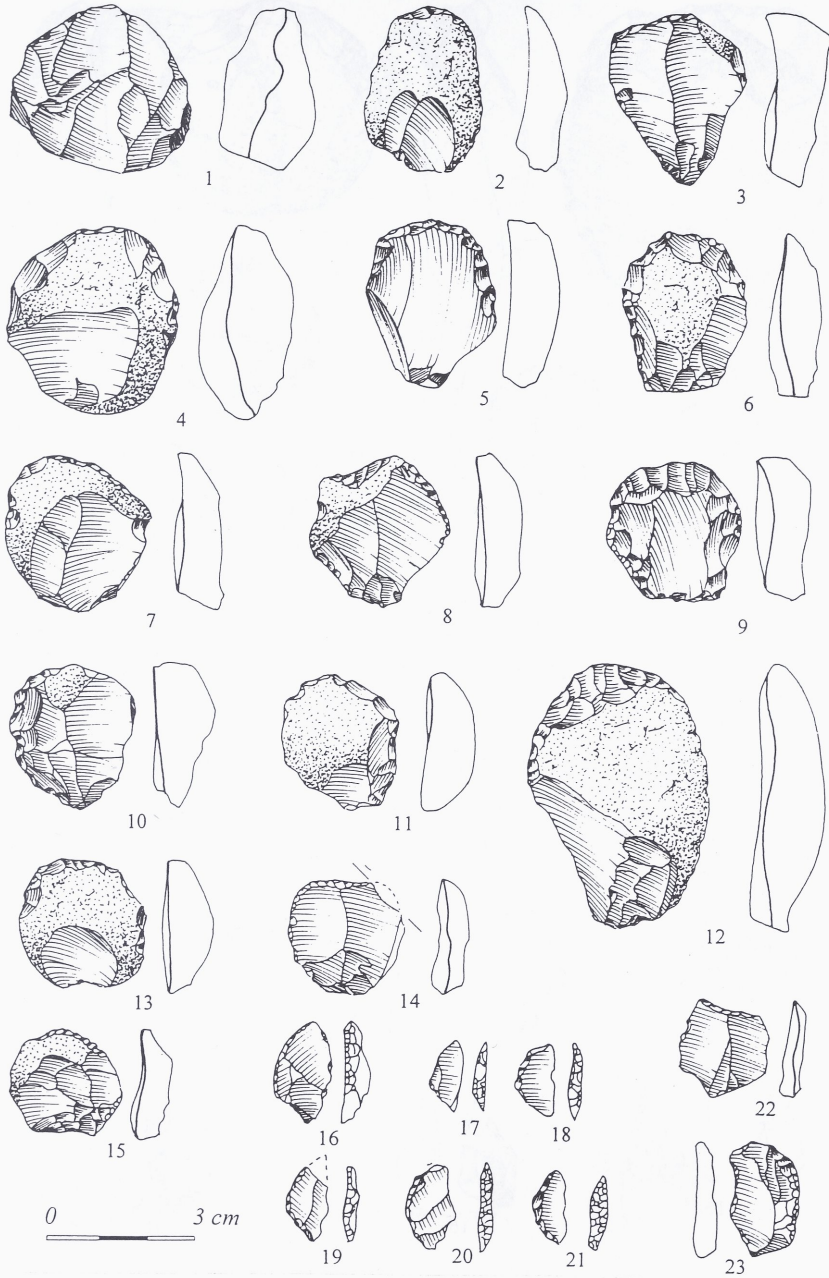


Fig. 5. Site ROM 205. Late Neolithic. 1 - single platform core; 2-15 - end-scrapers on flakes; 16-21 - arched backed pieces; 22 - truncation; 23 - retouched flake.

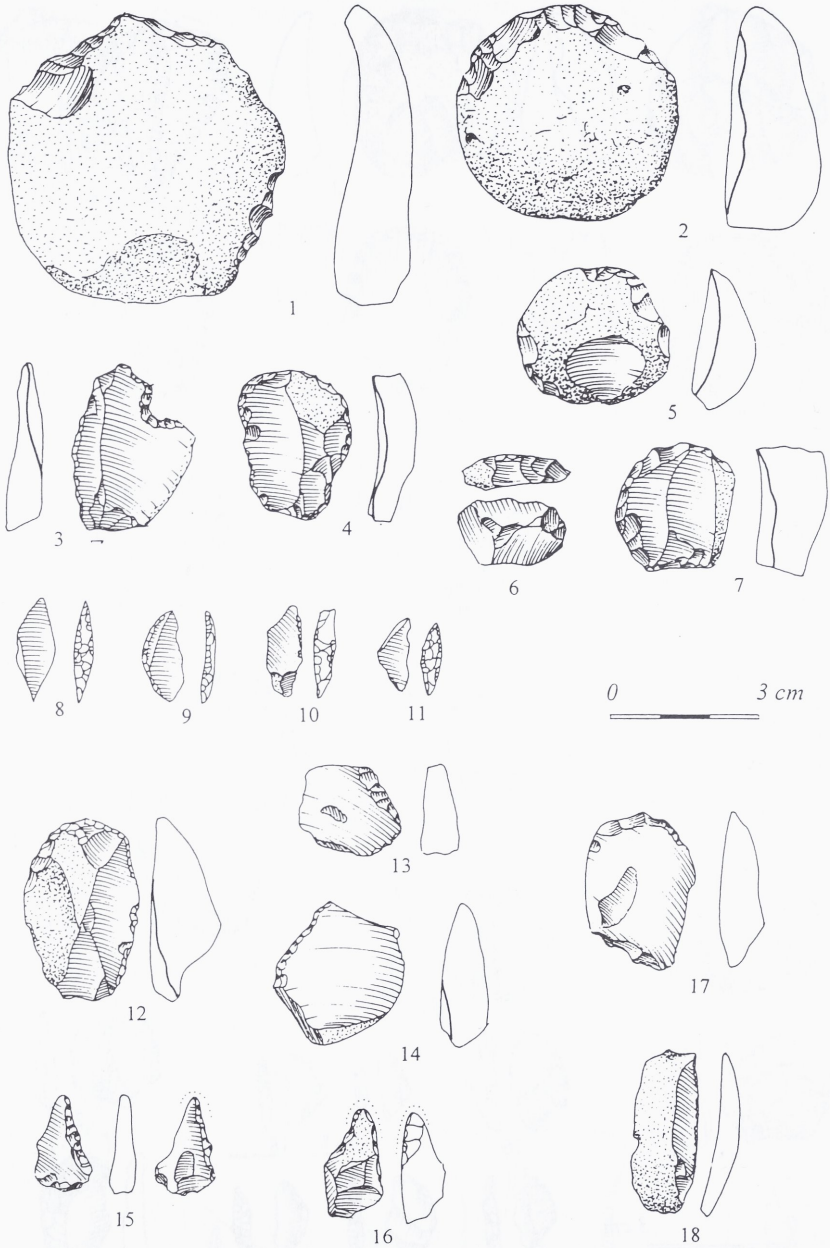


Fig. 6. Site ROM 200. Late Neolithic. 1-2, 4-7 - end-scrapers on flakes; 3 - notched flake, 8-11 - arched backed pieces; 12-14, 17 - retouched flakes; 15-16 - perforators; 18 - retouched blade.

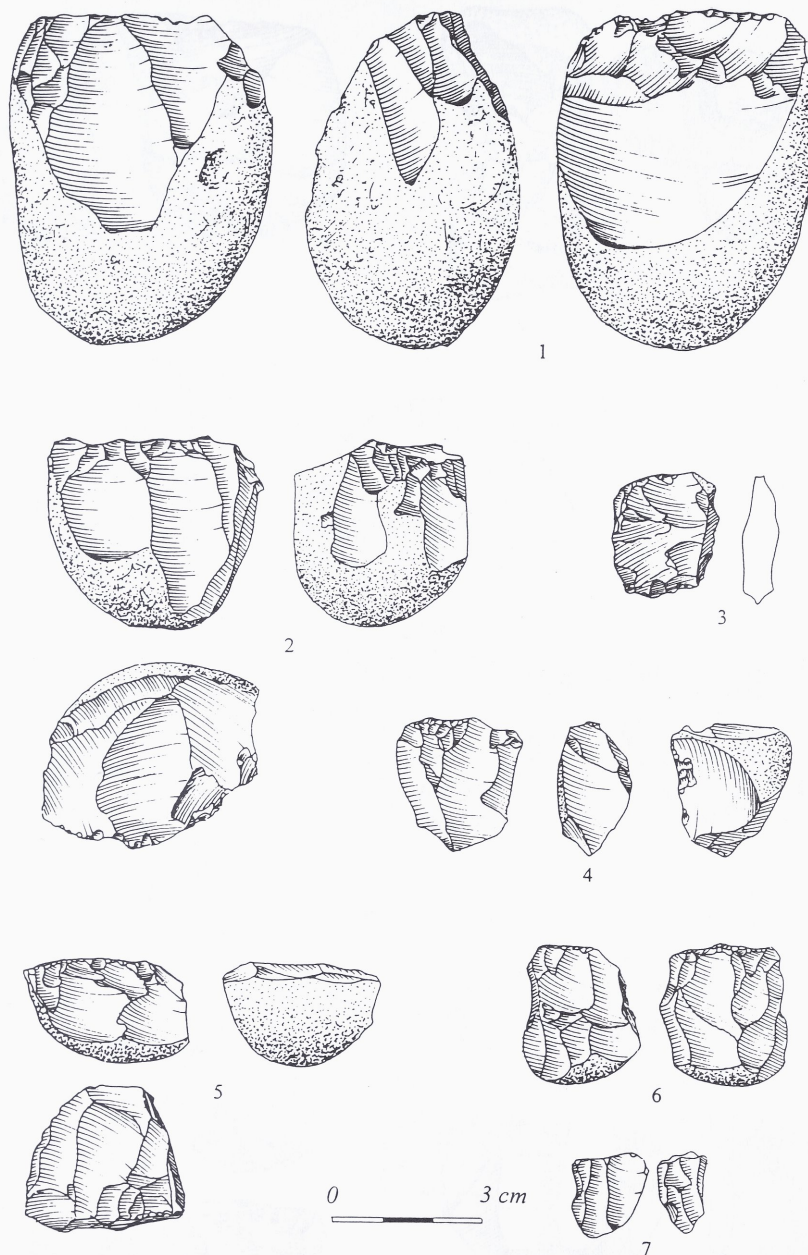


Fig. 7. Site ROM 222. Terminal Neolithic/Pre-Kerma. 1-2, 6-7 - single platform cores; 3 - scaled piece; 4-5 - cores with changed orientation.

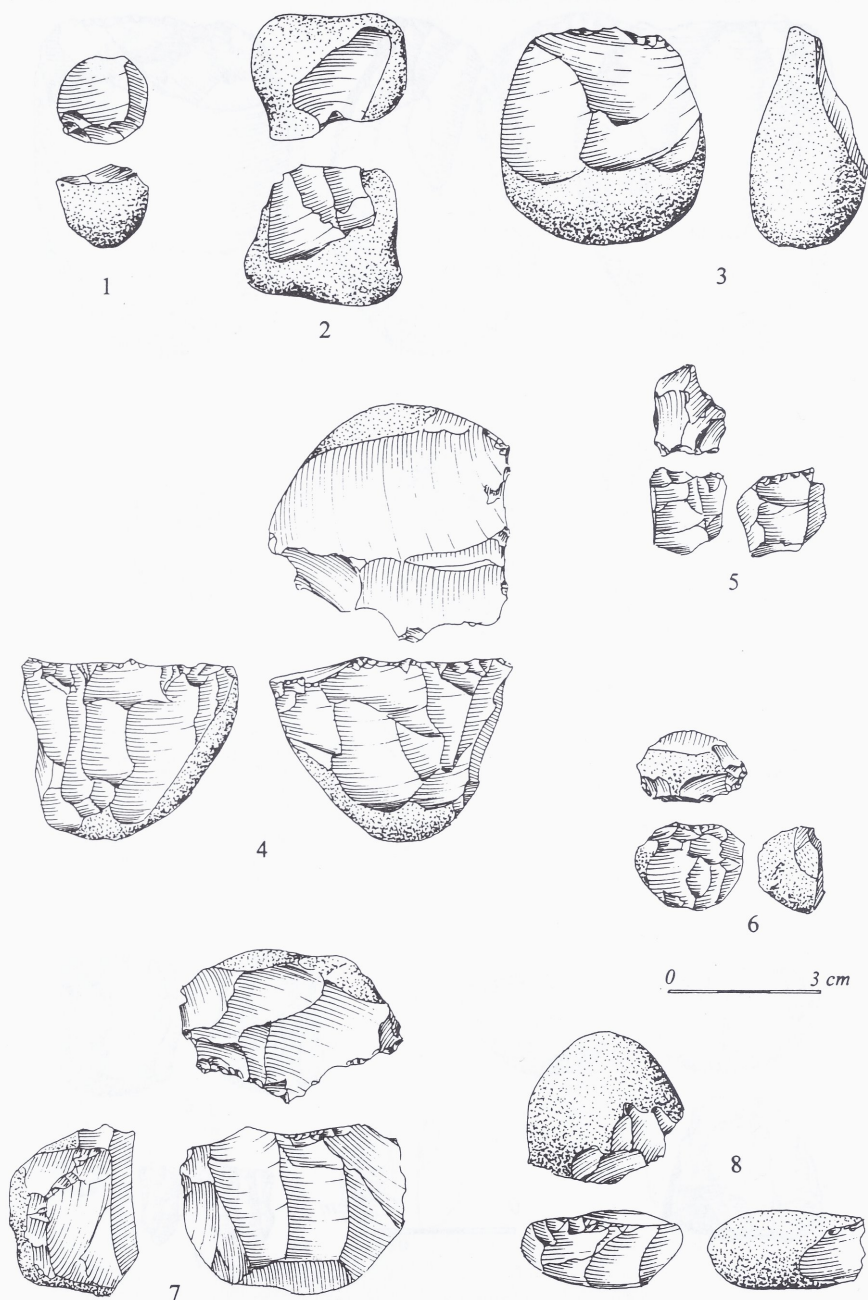


Fig. 8. Site ROM 222. Terminal Neolithic/Pre-Kerma. 1-6, 8 - single platform cores; 7 - core with changed orientation.



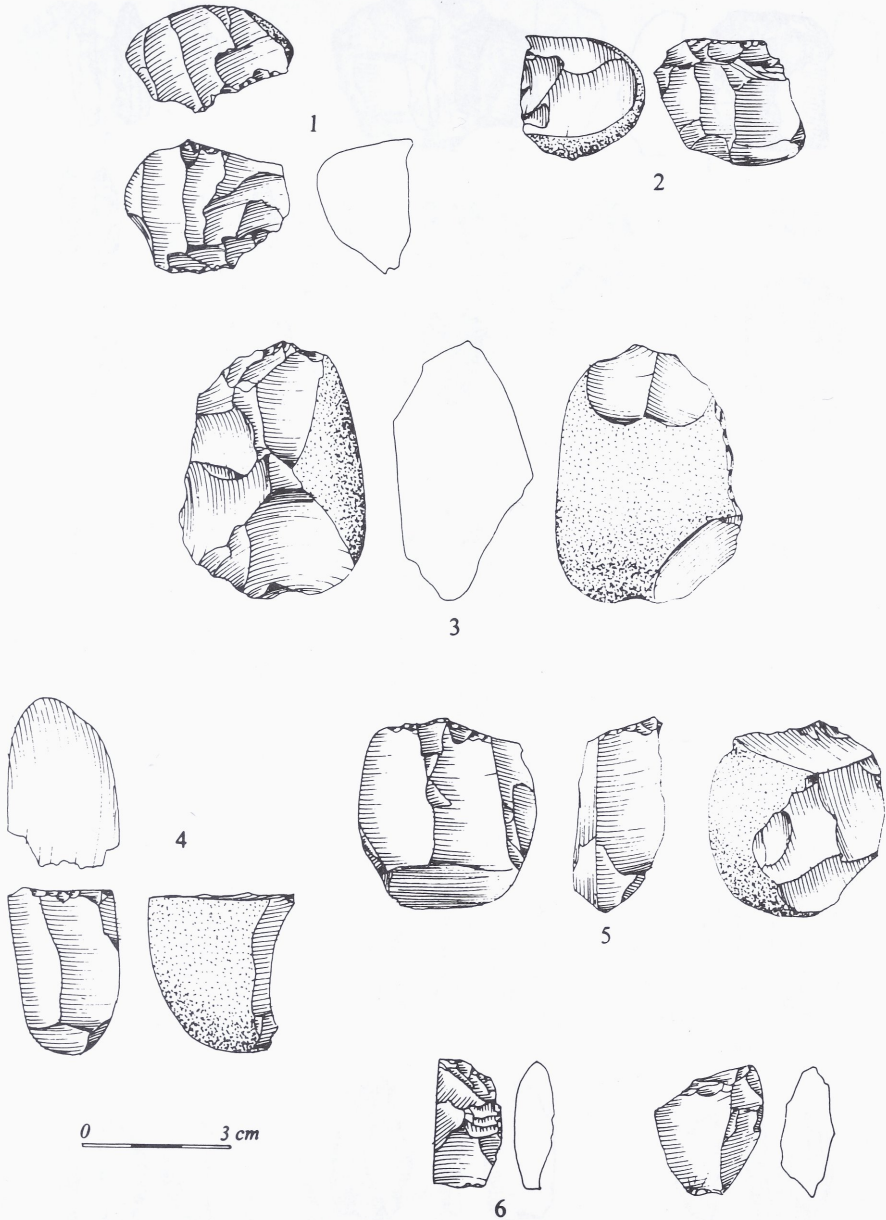


Fig. 9. Site ROM 222. Terminal Neolithic/Pre-Kerma. 1-3, 5 - cores with changed orientation; 4 - single platform core; 6-7 - scaled pieces.

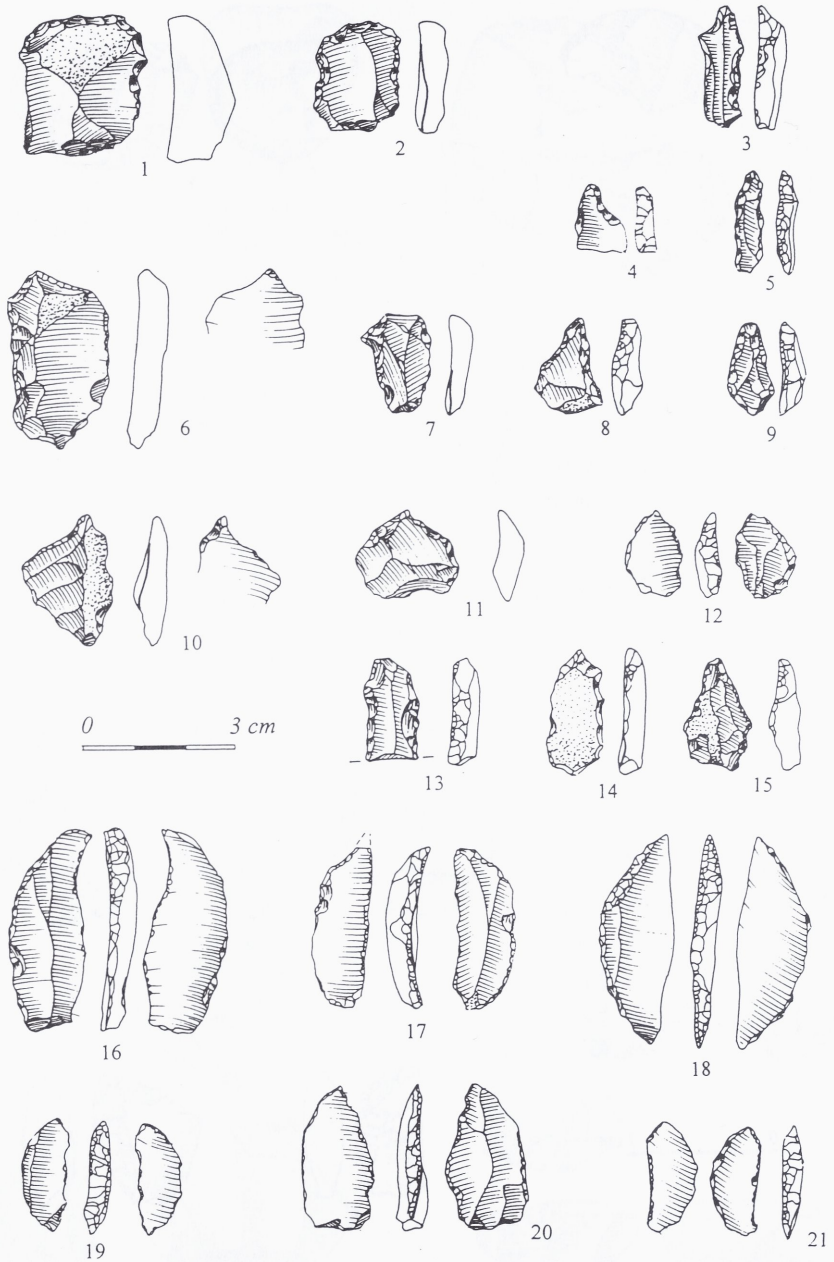


Fig. 10. Site ROM 222. Terminal Neolithic/Pre-Kerma. 1-2 - end-scrapers; 3-15 - perforators and drills; 16-21 - arched backed pieces.

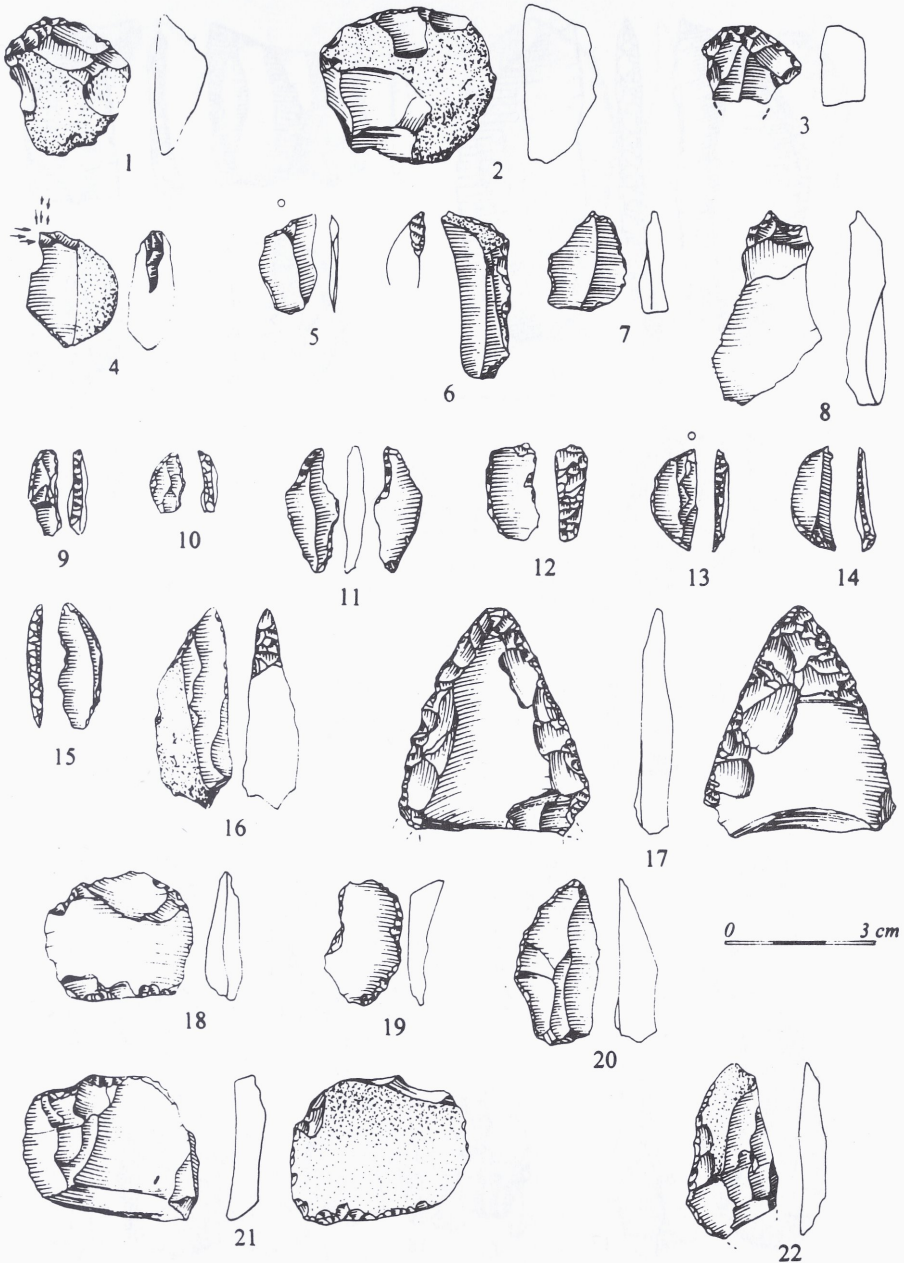


Fig. 11. Site ROM 222. Terminal Neolithic/Pre-Kerma. 1-3 - end-scrapers; 4 - burin; 5 - truncation; 6-11 - perforators and drills; 12-16 - arched backed pieces; 17 - point; 18-21 - retouched flake; 22 - retouched blade.



Fig. 12. Site ROM 222. Terminal Neolithic/Pre-Kerma. 1-11, 15 - arched backed pieces; 12-14, 16-19 - retouched flakes.

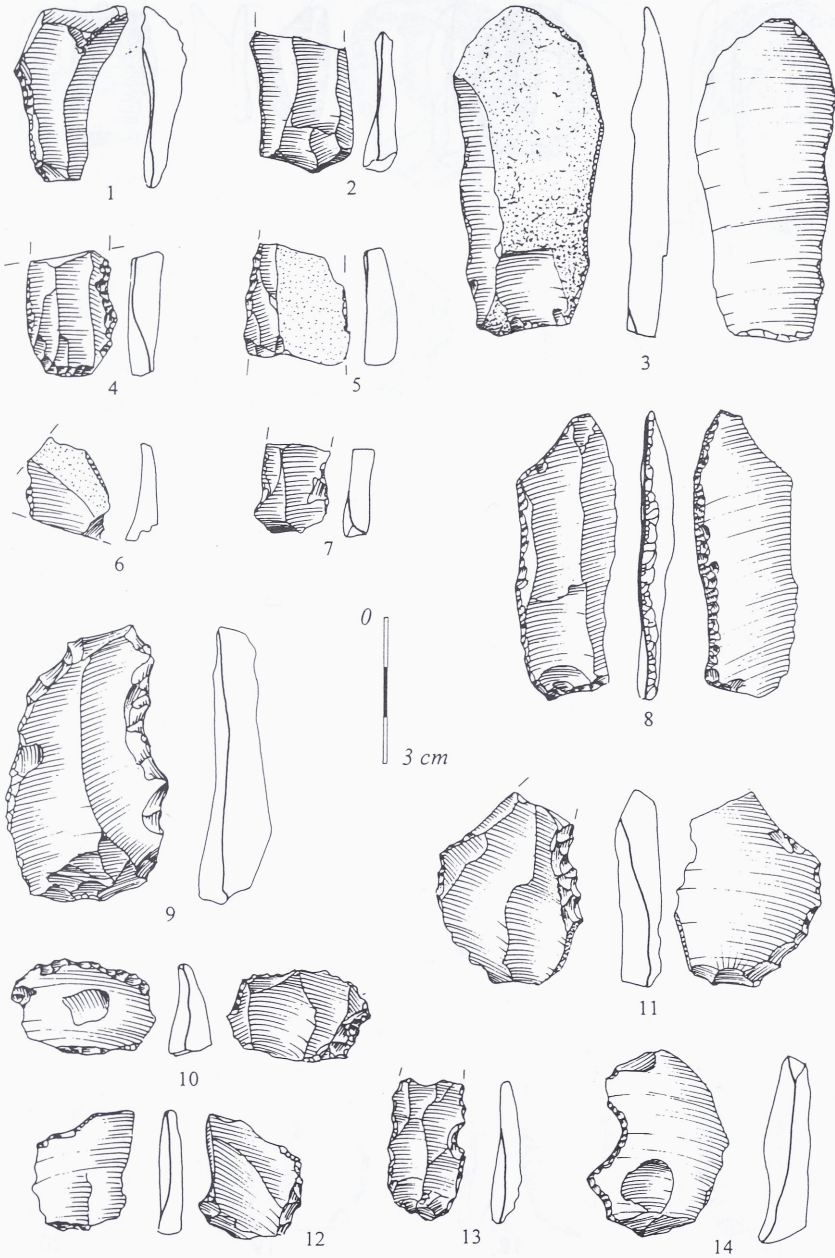


Fig. 13. Site ROM 222. Terminal Neolithic/Pre-Kerma. 1-8 - retouched blades; 9-12 - denticulated flakes; 13-14 - denticulated blades.

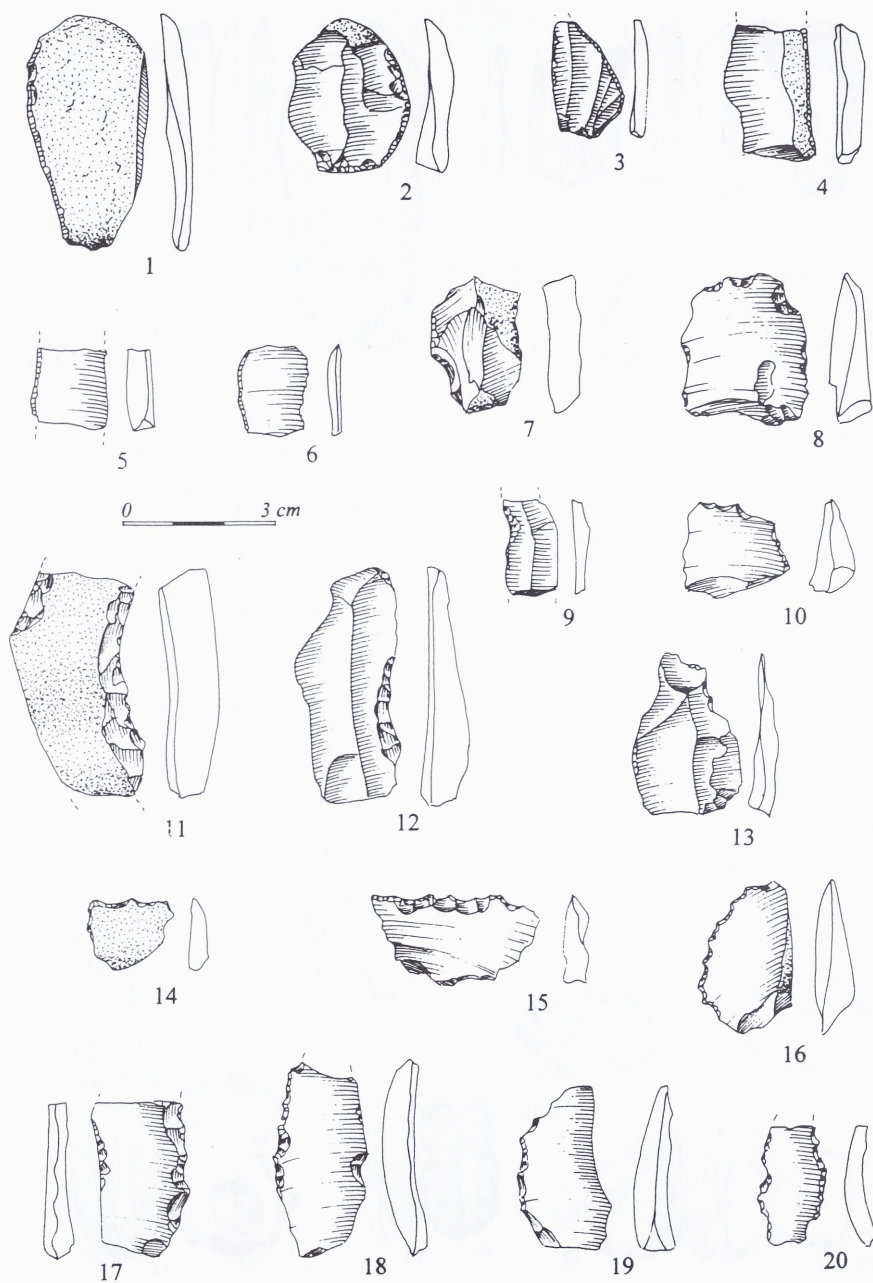


Fig. 14. Site ROM 222. Terminal Neolithic/Pre-Kerma. 1-6 - retouched blades; 7-8 - notched flakes; 9, 12 - notched blades; 10, 13-16 - denticulated flakes; 11, 17-20 - denticulated blades.

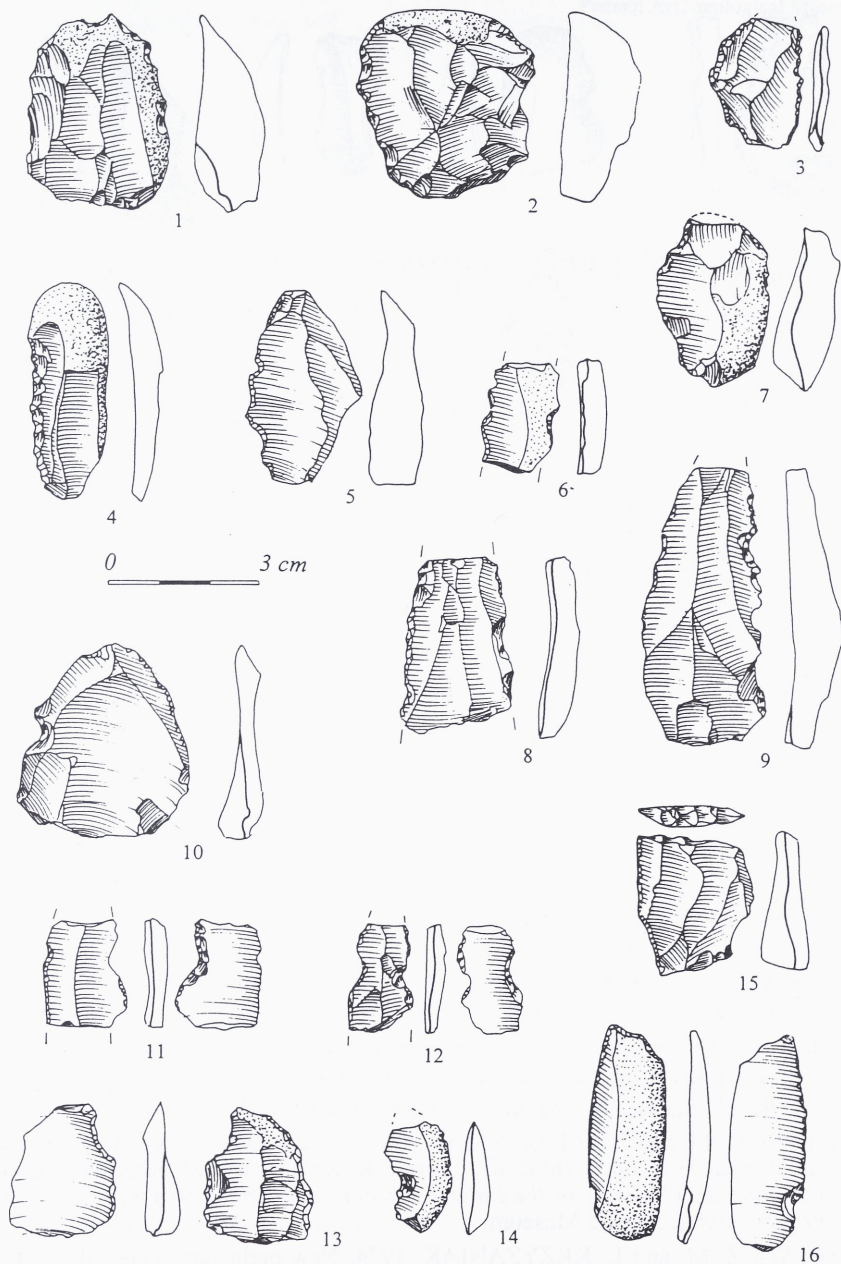


Fig. 15. Site ROM 222. Terminal Neolithic/Pre-Kerma. 1-3 - denticulated flakes; 4-9 - denticulated blades; 10, 13 - notched flakes; 11-12, 14 - notched blades; 15-16 - truncations.

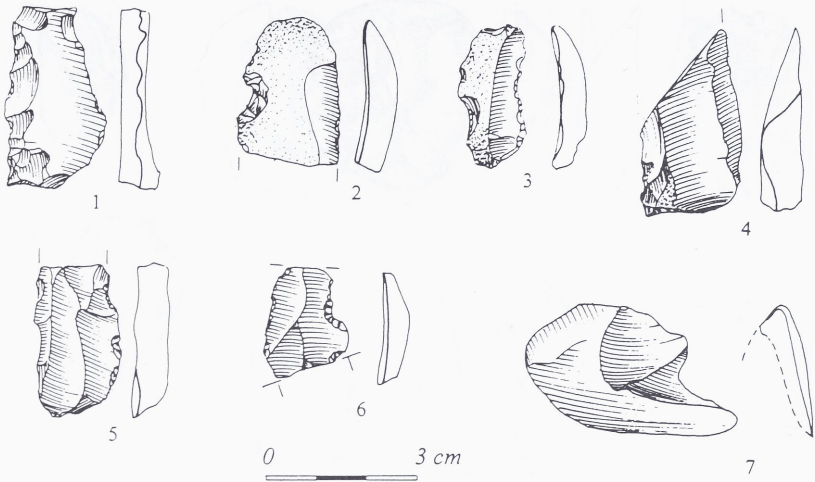


Fig. 16. Site ROM 222. Terminal Neolithic/Pre-Kerma. 1 - denticulated blade; 2-6 - notched blades; 7 - flake from polished core tool.

## References

- CHŁODNICKI M. and J. KABACIŃSKI. 2002. The Neolithic of the Dongola Reach (Nubia). *Gdansk Archaeological Museum African Reports* 2: 1-13.
- GRZYMSKI K. 1987. Archaeological Reconnaissance in Upper Nubia. *SSEA* 4, Toronto.
- MARKS, A. E., J. SHINER and T. R. HAYS. 1968. Survey and Excavations in the Dongola Reach, Sudan. *Current Anthropology* 9 (4): 319-323.
- KOBUSIEWICZ, M. and J. KABACIŃSKI. 1996. Jebel Kobkabba: a Middle Palaeolithic site in Sudanese Nubia. In: L. Krzyżaniak, K. Kroeper and M. Kobusiewicz (eds), *Interregional Contacts in the Later Prehistory of Northeastern Africa*: 355-375. Poznań Archaeological Museum.
- KOBUSIEWICZ, M. and L. KRZYŻANIAK. 1974. New prehistoric materials from the region of Old Dongola (Sudan). *Fontes Archaeologici Posnanienses* 25: 178-186.
- KRZYŻANIAK L. 1968. Neolithic Sites at Old Dongola (Sudan). *Fontes Archaeologici Posnanienses* 19:1-5.