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FROM STUDIES ON CULTURES OF THE 4TH MILLENNIUM B.C. IN THE CENTRAL PART OF THE POLISH COASTAL AREA

It is a preliminary report of a research project investigating a hunters-fishermen's settlement from the 4th millennium B.C. It was located on the sandy island on the lake near the shore of the Baltic Sea. The activities of the settlements inhabitants have also left their traces on the shore of the island. Peat trenches have yielded a number of organic matter artefacts and pottery, while in sand trenches flint and stone objects were found. The activities of the groups inhabiting (ca. 4200–3200 B.C.) the island were fishing, hunting and gathering. Pig and cattle husbandry was of little significance. Its role, however, increased during the whole of the 4th millennium. Animal and fish bones indicate that land area was mainly exploited, and the sea played an insignificant role. The groups had contacts with farmers. This has been confirmed by imports of pottery and stone tools. The author regards the artefacts from Dąbki near Darłowo as a Polish variety of the Ertebølle circle.

Little is known of the history of human societies which in the 4th millennium BC inhabited the areas of the Baltic coast between the lower Oder and Vistula. Because of the absence of adequate sources we move in a maze of numerous hypotheses and speculations on the crossing of miscellaneous cultural trends, their differentiation, transformations and their significance in further development of this zone as well as of the whole Polish Lowland complex.

Investigations launched by the regional Museum in Koszalin embraced the settlement region on lake Bukowo, in Dąbki near Darłowo. They elucidated at least the most pivotal problems of the younger Atlantic period, the Chojnice–Pieńki culture and the so called Ertebølle–Ellerbek circle. These studies included reconstruction of the natural and cultural environment, the history of flora and fauna, the chronology and spatial range of settlement. Several well known specialists were participating in the investigations and the results are being elaborated. Here is the list of scholars and their contributions: Assoc. Prof. Bolesław Nowaczyk (University, Poznań) – ecology, geomorphology, history of flora and fauna; Professor Stefan Witold Alexandrowicz (Academy of Mining, Cracow) – malacofauna; Dr Bożena Bogaczewicz-Adamczak (University, Gdańsk) – diatoms; Professor Marian Iwaszkiewicz (Agricultural Academy, Poznań) – fish; Professor Kazimierz Tobolski (University, Poznań) – flora; Professor Marian Sobociński (Agricultural Academy, Poznań) – mammals and birds. Radiocarbon chronology was contributed by Assoc. Prof. Mieczysław Pazdur (Laboratory ^{14}C, Gliwice); Mgr Jacek Nowakowski – flint material; Assoc. Prof. Maria Wirska-Parachoniak (Academy of Mining, Cracow) – technology of ceramics. The author also obtained valuable assistance from Professor Tadeusz Wiślański and Assoc. Prof. Michał Kobusiewicz, Institute of the History of Material Culture, Polish Academy of Sciences in the methodics of research and elaboration of results. I would like to offer my sincere thanks to all these scholars for their interest in my studies.

In the course of seven excavation seasons (1978–1986) there were examined 144 sq.m. of the sandy (dry) part at Site 9, and about 92 sq.m. of the adjacent peatbog. Distinctly isolated in the latter there were two, in some places even three, levels of relics occurring in peats and gyttjas, divided by zones with sparse relics or none at all. This is distinctly percetpible on profiles of natural and three-dimensional layers. Horizontally the material – apart from fish vestiges – does not form concentrations, consequently it is not of a synchronic character.

These essential studies are still not completed and their full publication is a matter of many years. It seems, however, advisable to publish a comprehensive initial report so that problems connected with the period under examination can be included

into the general scientific circulation thus facilitating studies on problems new to Polish prehistory. Considering the character of the work certain problems must be omitted, and some – from necessity – only signallized. However, we hope that even in this form they will be of benefit to our discipline.

GEOMORPHOLOGICAL SITUATION AND STRATIGRAPHY OF SITE 9 AT DĄBKI

The site is situated in the belt of coastal lowlands, at Słowińskie Coast, on lake Bukowo, comprising a fragment of undulating ground moraine plane. It consists of distentions and depressions of rounded forms, small slopes (2–7°), small drops (up to 10 m), and smallish spaces between the culminations of the hummocks. In the depressions there are bogs and peatbogs (Klimaszewski 1978, 700–703; Kondracki 1980, 270–271). On two such hummocks opposite each other, divided by a peaty depression (syncline of a lake) several sites (Fig. 1) were uncovered, with closely related inventories, chiefly flint ones, generally dated to the Mesolithic and Neolithic (Dębowska 1978). Excavations were started in the richest sites, most accessible to the peatbog and promising the best cognitive results, particularly Site 9. It is situated on the north-western slope of a hummock, embracing a slightly marked promontory, sloping towards the peatbog (Fig. 2). Its distance from the banks of lake Bukowo is now about 800 m, from the contemporaneous sea coast – about 1.5 km in a straight line.

The settlement is preserved in the form of a rich flint pit of undefined size. On the western side it is bordered by the natural verges of the promontory, the remaining borders are slightly marked by the presence of relics spilled on the surface of a cultivated field. The cultural stratum is severely damaged, only in some places perceptible in the form of a brown humus layer, about 40 cm thick. There were found here exclusively flint materials (about 95% of the whole lot), and an insignificant amount of ceramic shards (about 5%). A stone axe, a stone grinder with a plate and several lumps of amber were excavated from the humus.

The settlement area slopes slightly towards the now peat-covered syncline of the lake in the south-western direction. The cultural stratum is marked in the form of a 0.5 – 1.0 m layer of plant and animal vestiges, charcoal and portable relics. A 15 m long section reaches 2 m deep into the peatbog and is covered with a 1 m thick layer of later outgrowth. It is actually a fragment of a refuse heap extending around the proper settlement.

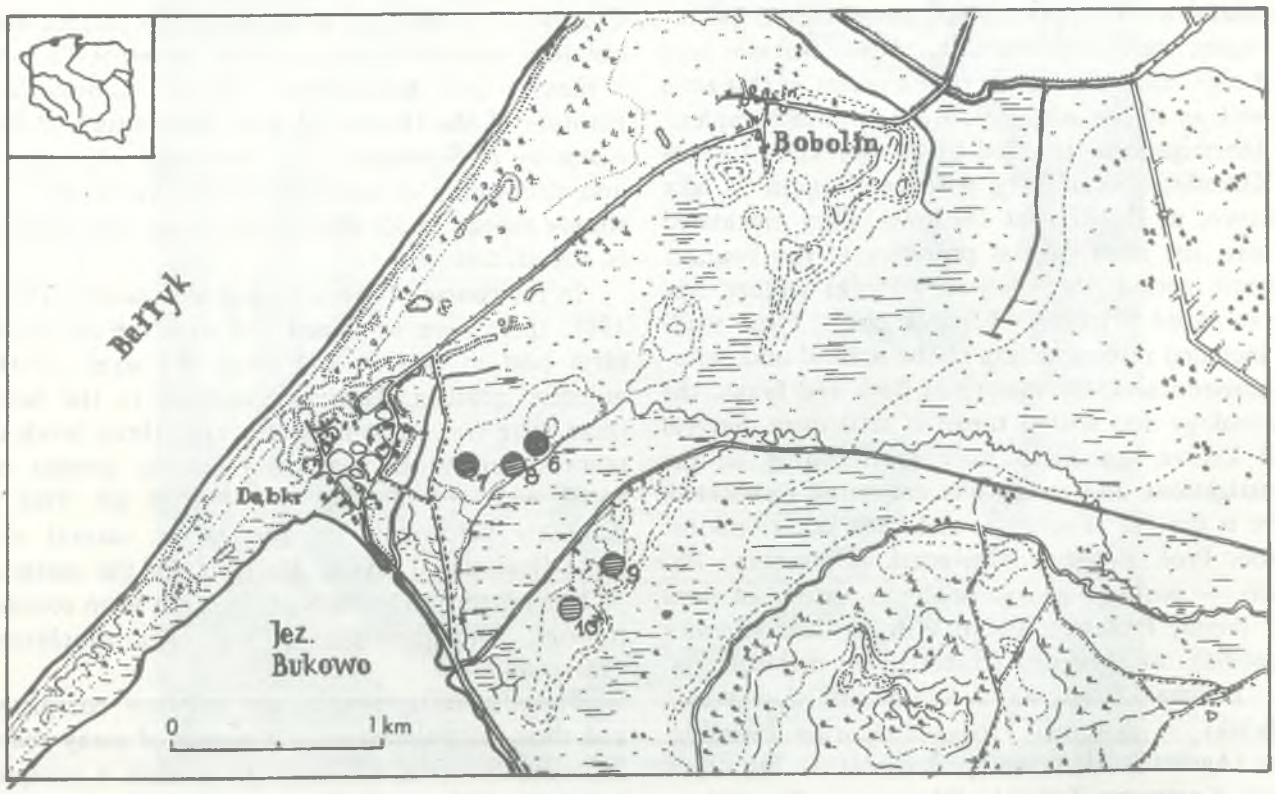

Fig. 1. Dąbki, Darłowo community, Koszalin province, Location of Mesolithic-Neolithic sites (7–10)
Scale of 1:25,000

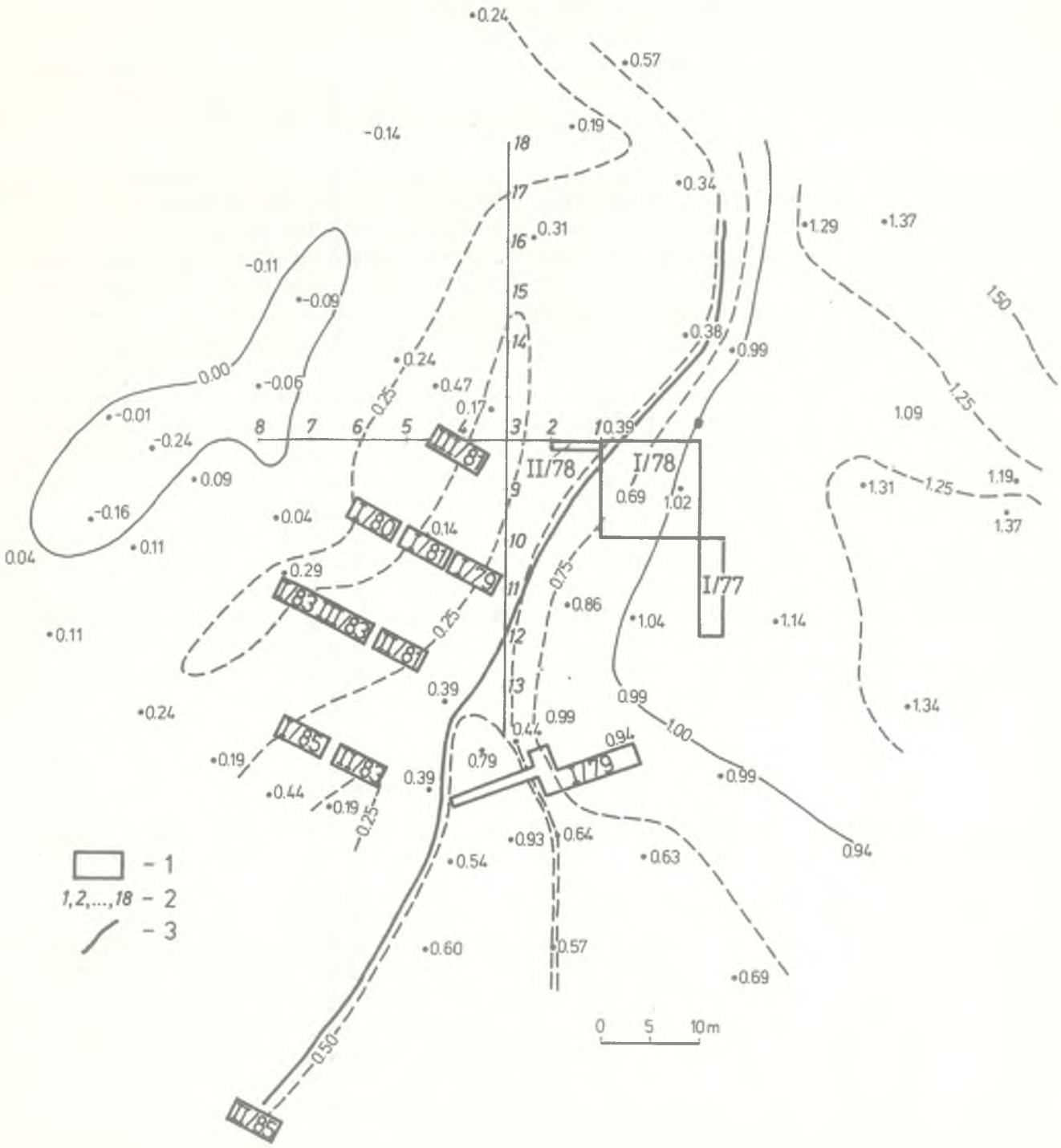

Fig. 2. Dąbki, Site 9. Contours of the site with a marked grid of trenches
1 – trench, *2* – Instorf-bored holes, *3* – peatbog boundary

The syncline of the lake is littered with a layer of ground peat palynologically dated (Tobolski 1982) to the turn of the older and younger parts of the Atlantic period, ^{14}C dated to 4300±40 BC (Gd-3127) and 3940±60 BC (Gd-1278). Traces of huge tree trunks appeared in this layer. The rise of the sea level and ground waters, presumably linked with a successive lithorine transgression, caused the emergence of a lake here (Bukowo ?). Successive sediments of calcareous gyttja arose on the peat layers, and later on – plant gyttja (Figs. 3–5). The floor of the shell gyttja is ^{14}C dated to 4280±60 (Gd-1703), and its roof to 3730±50 BC (Gd-3125). The detritus gyttja generally placed above the calcareous one is dated by 3 samples: 3730±60 BC (Gd-1279), 3750±80 BC (Gd-2162) and 3680±70 BC (Gd-1698). Gyttja layers appear only deep in the peatbog (about 10–15 m from its present border).

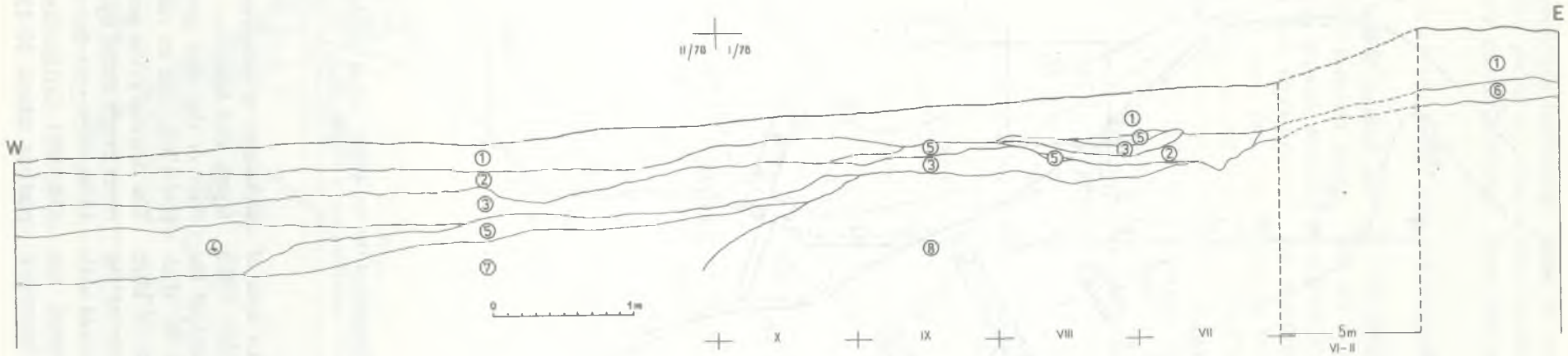

Fig. 3. Dąbki, Site 9. Profile N of trenches II/78 and I/78

1 – humus, *2* – poorly decomposed sedge peat, *3* – peat as above containing a small amount of sand, *4* – very poorly decomposed sedge-reed peat, *5* – grey sands with admixed plant detritus, *6* – sand-containing dark brown humus (forming an iron pan), *7* – grey sands with a small admixture of clay, *8* – greyish-yellow sands containing bog iron stone

Their extension towards the verge are well disposed peats (on the gyttja's borders). The cultural contents is identical with the contents of the plant gyttja, chronologically corresponding to the latter. At the very verge of the peatbog (about 10 m) the cultural layer, linked with the settlement, is composed of woody peat, more or less dispersed. The roof of the cultural layers is dated by charcoal to 3390±60 BC (Gd-1277) and 3315±60 BC (BLn-2465). Layers of the same woody peats overlap the gyttja layers deep in the peatbog, only their floor enters from time to time the composition of the cultural stratum. In some parts of the site the woody peat forms a secondary deposit of the cultural inventory. A part of the material is distinctly translocated along the hill. It is spread over the main cultural layer, sometimes in the form of a composition containing the materials. These materials were included into the peat undoubtedly much later than materials from the actual cultural layer. A much greater degree of devastation and crumbling – particularly of ceramics – proves that they were on the surface for a long time. Generally speaking the cultural stratum connected with the woody peats corresponds with the final stage of settlement at this site.

In summing up the questions of stratigraphy of the site 9 at Dąbki the successiveness of settlement should be stressed as well as its wide chronological frames. The oldest settlement phase (I) can be linked with basic peat and (chiefly) with shell gyttja, dated to 4300–3880/3700 BC. The middle phase (II) is marked by the plant gyttja and peats on the gyttja's borders, dated to about 3700–3600/3500 BC. The decline of the younger phase (III) is dated to 3400/3300 BC and stratigraphically linked with deposits of woody peats. In comparison with phases I and II, stratigraphically considerably well isolated (a distinct "vertical" break in the materials in the profiles), phase III is less distinctly outlined. It seems that materials from this phase are mostly in the secondary deposit and might have been translocated both before and in the course of shifting of the peatbog to the higher parts of the slope. Hence, apart from the youngest materials – also elements from the two older phases might have penetrated here. In general, materials distinguished in phase III may not be homogeneous.

Basically, the stratigraphically isolated settlement phases do not show any typologically differentiated inventories, apart from some stylistic changes in the production of ceramics. In osteological materials, however, there is a certain increase of vestiges of domesticated mammals in phase III.

THE HISTORY OF VEGETATION AND FAUNA

Prevalent in pollen spectra corresponding to the cultural layers (Tobolski 1982), there are grains from mixed oak forests pollen with large numbers of linden, a smaller amount of hornbeam and absence of beech. Pollen analysis did not reveal any cultivated plants, there were only small quantities of weeds. Macroscopic analysis showed a rich floristic milieu in the coastal zone of the lake; most numerously represented were water and bog plants. Among arborescent and shrubby plants most specimens were of alders and birches growing in humid places.

Studies on the history of vegetation as well as a reconstruction of ecological conditions in the lake area are being continued and the results will be published in the nearest future. They will comprise the analyses of macro- and micro-remains (K. Tobolski), diatoms (B. Bogaczewicz-Adamczak), malacofauna (S. W. Alexandrowicz), as well as geological elaboration of the lake district of the water reservoir and its vicinity (B. Nowaczyk).

Fauna is represented by 49 species of animals: 20 mammals, 15 birds, 13 fish and 1 reptile (a frog). The comprehensive list begining with the minimal number of individuals (MIND) is presented in Table 1. The largest percentage of individuals is that of fish – 81.42%; of mammals – 14.39% and of birds – 3.91%, of reptiles – only 0.28%. The ratio of fish towards mammals is 6:1, to birds – 21:1, while that of mammals towards birds is 4:1.

The list of fish vestiges is given in Table 2. Prevailing among fish there are species characteristic of standing waters and rapid sections of rivers and streams (8 species – 98.29%), with a predominance of pike – 44.08% over perch – 20.93% and bream – 15.44%. The remaining 5 species, amounting to 1.71% are typical of flowing waters. Particular attention must be drawn to the vestiges of 3 large salmon and 2 sturgeons which basically are sea fish but breeding only in river mouths. These finds are evidence of the interest of the settlement's inhabitants in the sea environment.

The list of the remaining species of fauna is presented in Table 3, giving only materials already published in the years 1979–1983 (Sobociński 1984; 1986). Materials from the last excavation season (1985) are given in Table 4.

Among the remains of mammals beavers are decidedly predominant (32 individuals – almost 60%), then deer (11 individuals) – 11%, wild

Table 1. List of animal species – the minimal number of individuals (MIND). Next are the same species in other cultures of the northern circles

No.	Animals	MIND	%	Bromme	Maglemose	Kongemose	Ertebølle
1.	Pike – *Esox lucius* L.	257	44.08	x	x	x	x
2.	Perch – *Perca fluviatilis* L.	122	20.93	–	x	–	x
3.	Bream – *Abramis brama* L.	90	15.44	–	x	–	–
4.	Zander – *Stizostedion lucioperca* L.	35	6.00	–	–	–	–
5.	*Silurus glanis* L.	32	5.49	–	x	x	x
6.	Roach – *Rutilus rutilus* L.	28	4.80	x	–	–	x
7.	Tench – *Tinca tinca* L.	6	1.3	–	x	–	–
8.	Crucian carp – *Carassius carassius* L.	3	0.52	–	–	–	–
9.	Salmon – *Salmo salar* L.	3	0.52	–	–	–	x
10.	Sturgeon – *Acipenser sturio* L.	2	0.34	–	–	–	–
11.	Ide – *Leuciscus idus* L.	2	0.34	–	–	–	–
12.	*Aspius aspius* L.	2	0.34	–	–	–	–
13.	*Vimba vimba* L.	1	0.17	–	–	–	–
	Fish total	583	100.00	x	x	x	x
14.	Beaver – *Castor fiber* L. 1758	32	31.07	x	x	x	x
15.	Deer – *Cervus elaphus* L. 1758	11	10.68	–	x	x	x
16.	Wild boar – *Sus scrofa* L. 1758	9	8.74	–	x	x	x
17.	Cattle – *Bos primigenius f. taurus*	8	7.77	–	–	–	–
18.	Dog – *Canis lupus f. familiaris*	6	5.82	–	x	x	x
19.	Badger – *Meles meles* L. 1758	5	4.85	–	x	–	x
20.	Elk – *Alces alces* L. 1758	4	3.88	x	x	x	x
21.	Pig – *Sus scrofa f. domestica*	3	2.91	–	–	–	–
22.	Horse – *Equus ferus spec.*	3	2.91	x	–	–	–
23.	Aurochs – *Bos primigenius Bojanus* L. 1827	3	2.91	–	x	x	x
24.	Roe-deer – *Capreolus capreolus* L. 1758	3	2.91	–	x	x	x
25.	Marten – *Martes martes* L. 1758	3	2.91	–	x	–	x
26.	Wildcat – *Felis silvestris* Schreb. L. 1777	3	2.91	–	x	x	x
27.	Otter – *Lutra lutra* L. 1758	2	1.94	–	x	–	x
28.	Bear – *Ursus arctos* L. 1758	2	1.94	–	x	x	x
29.	Fox – *Vulpes vulpes* L. 1768	2	1.94	–	x	x	x
30.	*Arvicola terrestris* L. 1758	1	0.97	–	x	–	x
31.	Wolf – *Canis lupus* L. 1758	1	0.97	–	x	x	x
32.	Seal – *Phoca spec.*	1	0.97	–	–	x	x
33.	Squirrel – *Sciurus vulgaris* L. 1758	1	0.97	–	x	–	x
	Mammals total	103	100.00	x	x	x	x
34.	Fen duck – *Anas platyrhynos* L. 1758	6	21.43	–	x	–	x
35.	Goose – *Anser anser* L. 1758	5	17.86	–	x	–	x
36.	Crane – *Grus grus* L. 1758	2	7.14	–	x	x	–
37.	Eagle – *Aquila spec.*	2	7.14	–	–	–	x
38.	Little owl – *Athene noctua* Scop. 1769	2	7.14	–	–	–	–
39.	Tuffed duck – *Aythya fuligula* L. 1758	2	7.14	–	x	–	x
40.	Bald coot – *Fulica atra* L. 1758	1	3.57	–	x	–	–
41.	Loon – *Gavia arctica* L. 1758	1	3.57	–	x	–	x
42.	Garganey – *Anas querquedula* L. 1758	1	3.57	–	x	–	x
43.	Goshawk – *Accipiter gentilis* L. 1758	1	3.57	–	x	–	x
44.	Stork – *Ciconia ciconia* L. 1758	1	3.57	–	–	–	–
45.	Grebe – *Podiceps spec.*	1	3.57	–	–	–	x

Table 1 continued

No.	Animals	MIND	%	Brommie	Maglemose	Kongemose	Ertebølle
46.	Snipe – *Scolopax spec.*	1	3.57	–	–	–	–
47.	*Pediceps ruficollis* L. 1758	1	3.57	–	–	–	x
48.	Teal – *Anas crecca* L. 1758	1	3.57	–	–	–	x
	Birds total	28	100.00	–	x	x	x
49.	Reptiles: Frog – *Rana spec.*	2	100.00	–	–	–	–
	Animals total	716	100.00	x	x	x	x

Table. 2. List of fish remains (after M. Iwaszkiewicz)

No.	Family	Species	N indiv.	Percentage		Remarks
1		salmon – *Salmo salar* L.	3	0.52	30.00	large indiv.
2	*Acipenseride*	sturgeon – *Acipenser sturio* L.	2	0.34	20.00	medium indiv.
3	*Cyprinidae*	ide – *Leuciscus idus* L.	2	0.34	20.00	–
4	„	– *Vimba vimba* L.	1	0.17	10.00	medium indiv.
5	„	– *Aspius aspius* L.	2	0.34	20.00	–
	Rheophile species		10	1.71	100.00	
6	*Esocidae*	pike – *Esox lucius* L.	257	44.08	44.85	weight of ind. about 10 and 15 kg, 2 over 20 kg
7	*Cyprinidae*	tenck – *Tinca tinca* L.	6	1.03	1.05	–
8	„	crucian carp – *Carassius carassius* L.	3	0.52	0.52	very large ind.
9	„	bream – *Abramis brama* L.	90	15.44	15.71	medium ind.
10	„	roach – *Rutilus rutilus* L.	28	4.80	4.89	weight about 100 g
11	*Siluridae*	wels – *Silurus glanis* L.	32	5.49	5.58	weight 12–60 kg
12	*Percidae*	zander – *Stizostedion lucioperca* L.	35	6.00	6.11	medium 1–2 kg
13	„	perch – *Perca fluviatilis* L.	122	20.93	21.29	medium ind.
	Kinds of standing waters and leniting sections of rivers and streams		573	98.29	100.00	
		Total	583	100.00		

boars, elks and horses (2–3% each) 9, 4 and 3 individuals respectively. As for weight – bones of deer are in the lead (42% including antlers), then beavers (18%), aurochses (13%), elks (10%) and cattle (9%).

Among domesticated animals there were: dogs (6 individuals about 3% of bones of mammals), cows and pigs (11 specimens – about 12% of bones of mammals). There were no bones of small ruminants in the material. The bones of cattle and pigs cannot always be distinguished from those of wild specimens, particularly in the first phases of domestication. Both species belong to tall animals (the so-called aurochs-like cattle). Altogether – wild and domesticated cattle along with the intermediate specimens amount to 9.09% of bones of mammals and 10.68% of individual s. Domestic pigs and wild boars – together 7.17% of bones and 11.65% of mammal individuals. The numerical ratio of domestic mammals' remains – to wild living ones is 1:6 and 1:5 as for MIND, while the relation of pigs and cattle, domestic and wild is 1:5 and 1:3.5 as for MIND in relation to the remaining mammals.

The participation of domestic mammals significantly increased in the successive settlement phases (Table 4). Particularly striking is the participation of cattle in settlement phase III (23.08%). The following list gives the percentage of participation of domesticated and wild-living cattle, pigs and dogs vestiges.

Table 3. List of animal remains (except fish – after M. Sobociński)

No.	Animals	N	Percentage		Kg	MIND
1.	Cattle – *Bos primigenius f. taurus*	52	5.96	50.00	2.12	8
2.	Pig – *Sus scrofa f. domestica*	31	3.56	29.81	0.50	3
3.	Dog – *Canis lupus f. familiaris*	21	2.41	20.19	0.31	6
	Domestic mammals	104	11.93	100.00	2.93	17
4.	Beaver – *Castor fiber* L. 1758	487	55.85	68.49	4.26	32
5.	Deer – *Cervus elaphus* L. 1758	89	10.21	12.52	10.31	11
6.	Wild boar – *Sus scrofa* L. 1758	25	2.87	3.52	0.73	9
7.	Elk – *Alces alces* L. 1758	24	2.75	3.38	2.48	4
8.	Horse – *Equus ferus spec.*	19	2.18	2.67	0.69	3
9.	Aurochs – *Bos primigenius Bojanus* 1827	13	1.49	1.83	3.10	3
10.	Badger – *Meles, meles* L. 1758	9	1.03	1.27	0.05	5
11.	Roe deer – *Capreolus capreolus* L. 1758	8	0.92	1.12	0.10	3
12.	Marten – *Martes martes* L. 1758	8	0.92	1.12	0.04	3
13.	*Arvicola terrestris* L.1758	8	0.92	1.12	–	1
14.	Wildcat – *Felis silvestris* Schreb. 1777	5	0.57	0.70	0.03	3
15.	Otter – *Lutra lutra* (L. 1758)	5	0.57	0.70	0.05	2
16.	Bear – *Ursus arctos* L. 1758	3	0.34	0.42	0.07	2
17.	Fox – *Vulpes vulpes* L. 1758	3	0.34	0.42	0.02	2
18.	Wolf – *Canis lupus* L. 1758	2	0.23	0.28	0.05	1
19.	Seal – *Phoca spec.*	2	0.23	0.28	0.01	1
20.	Squirrel – *Sciurus vulgaris* L. 1758	1	0.12	0.14	0.01	1
	Wild mammals	711	81.54	100.00	21.64	86
21.	Fen-duck – *Anas platyrhynos* L. 1758	14	1.60	27.45	–	6
22.	Goose – *Anser anser* L. 1758	7	0.80	13.73	–	5
23.	Crane – *Grus grus* L. 1758	5	0.57	9.80	–	2
24.	Eagle – *Aquila spec.*	4	0.46	7.84	–	2
25.	Bald coot – *Fulica atra* L. 1758	4	0.46	7.84	–	1
26.	Little owl – *Athene noctua* Scop. 1769	3	0.34	5.88	–	2
27.	Tufted duck – *Aythya fuligula* L. 1758	3	0.34	5.88	–	2
28.	Teal – *Anas querquedula* L. 1758	3	0.34	5.88	–	1
29.	Loon – *Gavia arctica* L. 1758	2	0.23	3.92	–	1
30.	Goshawk – *Accipiter gentilis* L. 1758	1	0.12	1.98	–	1
31.	Stork – *Ciconia ciconia* L. 1758	1	0.12	1.98	–	1
32.	Grebe – *Podiceps spec.*	1	0.12	1.98	–	1
33.	Snipe – *Scolopax spec.*	1	0.12	1.98	–	1
34.	*Pediceps ruficollis* L. 1758	1	0.12	1.98	–	1
35.	Teal – *Anas crecca* L. 1758	1	0.12	1.98	–	1
	Birds	51	5.86	100.00	–	28
36.	Reptiles – Amphibia: – Frog – *Rana spec.*	6	0.69	100.00		2
	Total	872	100.00	–		133

	Phase I	Phase II	Phase III
Domesticated cattle	6.61	4.07	23.08
Wild living cattle	1.65	2.04	0.64
Total	8.26	6.11	23.72
Domestic pigs	0.83	3.67	7.05
Wild boars	3.30	2.29	3.85
Total	4.13	5.96	10.90
Cattle and pigs	7.44	7.74	30.13
Wild living	4.95	4.33	4.49
Total	12.39	12.07	34.62
Dogs	0.83	3.06	5.13

The percentage of the remaining mammals in individual phases is similar. Beavers are predominant in all phases (41–63%). Participation of deers drops insignificantly in the younger phases (from 19 to 10%); the remaining species appear sporadically, hence there are no regularities.

Worthy of mention is the appearance of bones of a seal in the material from phase II, and a human heel bone in phase III.

The comparison of the list of fauna species from Dąbki with that from other Mesolithic cultures of the northern circle (Table 1) shows far-reaching convergences (36 in 49 common species). In compa-

Fig. 4. Dąbki, Site 9. Profile SW of trenches I/79, I/81, I/80

0 – clay-containing gravels (rock-bed), *1* – reed-woody peat (basic), *2* – peat containing a small amount of sand with a small admixture of shells, *3* – poorly transformed shell gyttja containing charcoal, *4* – sedge-moss peat poor in sand, with a small admixture of shells and charcoal, *5* – detritus gyttja poor in sand, with a small admixture of shells, *6* – very well decayed sedge-moss peat (at the boundary with gyttja), with admixed shells and charcoal, *7* – sedge-moss peat containing charcoal at the base, *8* – peat as above poorly decomposed, *9* – poorly decomposed sedge-reedwoody peat, *10* – humus, *11* – flood sands, *12* – mucky soil, *13* – humus; *a* – ceramics, *b* – flint, *c* – bone or horn tools (T – axe), *d* – mammalian and bird remains, *e* – fish remains, *f* – wood, *g* – amber, *h* – stone, *i* – stone tools, *j* – ^{14}C sample, *k* – wood, *l* – polynological profile, *m* – flints from the same core

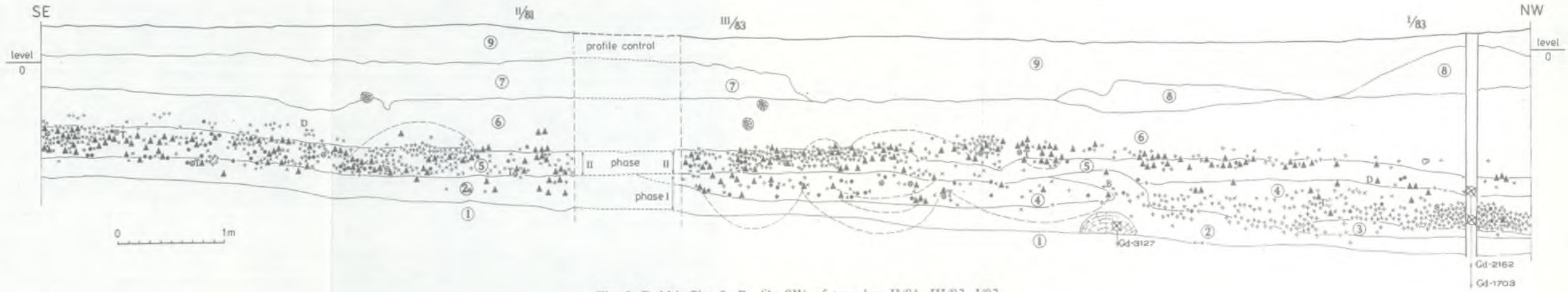

Fig. 5. Dąbki, Site 9. Profile SW of trenches II/81, III/83, I/83

1 – clay-containing gravels (rock-bed), *2* – brown sedge-woody peat with single shells, with a slight admixture of sand under 2a, *3* – dark-grey detritus-detrital gyttja, *4* – shell gyttja, *5* – light olive-tone detrital gyttja with single shells, *6* – moderately decomposed woody peat, *7* – poorly decomposed woody peat, *8* – medium-grained sands with organic intercalations, *9* – mucky soil (for legend see Fig. 4)

Table 4. List of the remains of mammals within isolated settlement phases (after M. Sobociński)

No.	Mammals	Phases								Total	
		I		II		III		indefinite			
		N	%	N	%	N	%	N	%	N	%
1.	Cattle – *Bos primigenius f. taurus*	8	6.61	20	4.07	36	23.08	3	2.68	67	7.61
2.	Pig – *Sus scorfa f. domestica*	1	0.83	18	3.67	11	7.05	8	7.14	38	4.32
3.	Dog – *Canis lupus f. familiaris*	1	0.83	15	3.06	8	5.13	–	–	24	2.73
	Domestic mammals	10	8.27	53	10.80	55	35.26	11	9.82	129	14.66
4.	Beaver – *Castor fiber* L. 1758	67	55.37	311	63.34	64	41.03	78	69.64	520	59.09
5.	Deer – *Cervus elaphus* L. 1758	23	19.01	58	11.81	15	9.61	–	–	96	10.91
6.	Wild Boar – *Sus scrofa* L. 1758	4	3.30	10	2.29	6	3.85	5	4.46	25	2.84
7.	Elk – *Alces alces* L. 1758	4	3.30	16	3.26	4	2.56	–	–	24	2.73
8.	Horse – *Equus ferus spec.*	1	0.83	2	0.41	–	–	16	14.28	19	2.16
9.	Autochs – *Bos primigenius Bojanus* L., 1827	2	1.65	10	2.04	1	0.64	–	–	13	1.48
10.	Badger – *Meles meles* L. 1758	–	–	8	1.63	1	0.64	–	–	9	1.02
11.	Roe deer – *Capreolus capreolus* L. 1758	–	–	6	1.22	1	0.64	1	0.90	8	0.91
12.	Marten – *Martes martes* L. 1758	1	0.83	3	0.61	4	2.56	–	–	8	0.91
13.	Arvicola – *Arvicola terrest.* 1758	6	4.96	–	–	2	1.28	–	–	8	0.91
14.	Wildcat – *Felis silvestris* Schreb. 1777	–	–	4	0.81	1	0.64	–	–	5	0.56
15.	Otter – *Lutra lutra* L. 1758	–	–	4	0.81	1	0.64	–	–	5	0.56
16.	Boar – *Ursus arctos* L. 1758	1	0.83	1	0.20	–	–	1	0.90	3	0.34
17.	Fox – *Vulpes vulpes* L. 1768	2	1.65	1	0.20	–	–	–	–	3	0.34
18.	Wolf – *Canis lupus* L. 1758	–	–	1	0.20	1	0.64	–	–	2	0.23
19.	Seal – *Phoca spec.*	–	–	2	0.41	–	–	–	–	2	0.23
20.	Squirrel – *Sciurus vulg.* L. 1758	–	–	1	0.20	–	–	–	–	1	0.11
	Wild mammals	111	91.73	438	89.20	101	64.74	101	90.18	751	85.34
	Total	121	100.00	491	100.00	156	100.00	112	100.00	880	100.00

rison with the Band cultures cycle (about 16 common species) considerable differences are perceptible, chiefly in the participation of game, a lack of sheep/goat and the prevalence of fishery ("domestic" individuals) amount only to 2% MIND of the fauna. Fishery and in the second place – hunting were of the greatest economic significance at Dąbki, in all phases of settlement. Cattle-breeding, undoubtedly at a very primitive stage, was only of marginal economic interest, slightly increasing only in the third phase. The structure of the species in bone vestiges shows that chiefly the lake and its closest vicinity were exploited. Further regions, including the coastal zone, were expolited only sporadically, which is confirmed by the remains of a seal, a salmon and a sturgeon, as well as of other rheophile species.

ARCHAEOLOGICAL MATERIALS

FLINT INVENTORY

Flint materials of this settlement come chiefly from the sandy part of the site (7792 specimens – Nowakowski 1986). From the peatbog trenches only 281 specimens were obtained (not taking into account materials from the 1985 season; Tables 5 and 6). This fact seriously hampers the cutural interpretation of the materials, which in the sandy part of the site were only scattered, and many years' cultivation of the land disturbed their primeval distribution. In the peat trenches where stratigraphy was clear, flint inventories in individual layers were unfortunately scarce. At the present stage of studies the "sandy" inventories were considered as a whole (Plates I–IX), while the "peaty" ones were elaborated within the stratigraphically isolated settlement phases (Plates X–XIV).

Two kinds of flint raw material were in use at the site: the Baltic flint A and B variations (Balcer 1983). In the sandy trenches the B variation was decidedly predominant (up to 95%); in the "peaty" ones it gave way to the A variation (23–60%) which is of a better technical quality.

Table 5. Numerical structure of flintgroups

Kinds of products		Trenches in sand		Trenches in peat							
				total		phase I		phase II		phase III	
		N	%	N	%	N	%	N	%	N	%
Production rest and débitage	core forms	261	3.35	44	15.66	8	22.22	20	14.92	16	14.41
	blades	2723	34.94	78	27.76	5	13.89.	37	27.61	36	32.43
	flakes	4124	52.93	104	37.01	16	44.44	54	40.30	34	30.63
Tools		684	8.78	55	19.57	7	19.44	23	17.16	25	22.52
	Total	7792	100.00	281	100.00	36	100.00	134	100.00	111	100.00
	Index P	10.39		4.11		4.14		4.82		3.44	

Table 6. Quantity and percentage of flint inventory – characterization

Kinds of products	Trenches in sand		Trenches in peat							
			total		phase I		phase II		phase III	
	N	%	N	%	N	%	N	%	N	%
I. Precores	1	0.01	–	–	–	–	–	–	–	–
II. Cores for blades and blades:										
1) single platform cores for blades	112	1.43	18	6.41	2	5.55	7	5.23	9	8.11
2) opposed platform cores for blades	1	0.01	–	–	–	–	–	–	–	–
3) platform cores for blades with changed orientation	5	0.06	1	0.35	–	–	1	0.75	–	–
4) blades and their fragments	2723	34.94	78	27.76	5	13.89	37	27.28	36	32.43
III. Cores for flakes and flakes:										
1) single-platform cores for flakes	15	0.19	7	2.49	3	8.33	4	2.98	–	–
2) cores for flakes with changed orientation	2	0.02	4	1.42	3	8.33	–	–	1	0.90
3) flakes	522	6.70	36	12.81	6	16.67	17	14.92	13	11.71
IV. Splintered pieces	125	1.64	10	3.56	–	–	5	3.73	5	4.50
V. Specimens of cores preparation and core reparation:										
1) cortex flakes	373	4.78	10	3.56	3	8.33	5	3.73	2	1.80
2) core tablets	9	0.12	2	0.71	–	–	1	0.75	1	0.90
3) lame à crête	2	0.02	–	–	–	–	–	–	–	–
4) core trimming flakes	–	–	1	0.35	1	2.77	–	–	–	–
VI. Unidentified specimens:										
1) fragments of unidentified cores	–	–	4	1.42	–	–	3	2.24	1	0.90
2) unidentified flakes	1068	13.71	14	4.98	–	–	8	5.97	6	5.41
3) chips	1958	25.12	19	6.76	–	–	11	8.21	8	7.21
4) chunks	192	2.46	22	7.83	6	16.76	12	8.95	4	3.60
VII. Tools and production refuse	684	8.78	55	19.57	7	19.44	23	17.16	25	22.52
Total	7792	100.00	281	100.00	36	100.00	134	100.00	111	100.00

Technologic-typological analysis of flint materials from the sandy part of the site (Nowakowski 1986) showed a decisive prevalence of blades (36.44%) over flakes (6.91%); tools were only insignificant (8.78%), and even a more insignificant number of cores and splintered pieces, merely 3.35%. The index of productivity (P – Balcer 1983) for materials from the "sandy" part is relatively high, amounting to 10,39.

In the group of cores predominant is the single platform core for blades (43.08%; Plate I) regularly shaped. Debitage cores are less numerous (6.54%; Plates II 9, III 1,3). Splintered pieces are slightly more numerous than cores for blades (48.08%; Plate III 2,4–9).

In the group of tools (Tables 7 and 8) most frequently appear fragmentary retouched blades (Plates V 16, VI 1–7), end-scrapers (Plates III 10, 11, IV, V 1, 2, 5–7), retouched flakes (Plate V 8), scrapers (Plate V 9–12, 15), groovers and perforators (Plates VI 11–31, VII 1–4, 7, VIII 14), trapezes (Plate VII 5, 6, 8–28), truncations (Plates VII 32–38, VIII 1–8, 10–13, 15), notches (Plate VI 8–10) and retouched blades (Plate V 17, 18). Participation of

Table 7. List of quantity and percentage of typologic groups of flint tools

No	Group of tools	Trenches in sand		Trenches in peat				
				total		phase I	phase II	phase III
		N	%	N	%			
1.	Fragmentary retouched blades	170	24.85	9	16.36	–	4	5
2.	End-scrapers	103	15.06	12	21.82	2	7	3
3.	Retouched flakes	71	10.38	4	7.27	1	–	3
4.	Scrapers	67	9.80	8	14.54	1	4	3
5.	Grovers and perforators	64	9.35	5	9.09	–	2	3
6.	Trapezes	61	8.92	3	5.45	–	2	1
7.	Truncations	34	4.97	2	3.63	–	–	2
8.	Notches	29	4.24	1	1.82	–	1	–
9.	Continuously retouched blades	28	4.09	2	3.63	1	–	1
10.	Tool fragments	19	2.77	1	1.82	–	–	1
11.	Pre-burin blades	12	1.75	1	1.82	–	1	–
12.	Burin spalls	8	1.17	1	1.82	–	–	1
13.	Flake and core axes	7	1.02	4	7.27	2	1	1
14.	Raclettes	3	0.44	–	–	–	–	–
15.	Triangles	3	0.44	–	–	–	–	–
16.	Backed pieces	2	0.29	–	–	–	–	–
17.	Denticulated tools	1	0.14	1	1.82	–	–	1
18.	Rombes	1	0.14	–	–	–	–	–
19.	Axes	1	0.14	–	–	–	–	–
20.	Picks	–	–	1	1.82	–	1	–
	Total	684	100.00	55	100.00	7	23	25

Table 8. Participation of groups of flint tools (excluding fragments and production rests)

No.	Group of tools	Trenches in sand		Trenches in peat		Similarities
		N	%	N	%	
1.	Retouched blades	198	30.70	11	21.15	+
2.	Scrapers and end-scrapers	170	26.35	20	38.46	+
3.	Retouched flakes	74	11.47	4	7.69	+
4.	Trapezes and other microliths	65	10.09	3	5.77	–
5.	Groovers and perforators	64	9.92	5	9.09	+
6.	Truncations and backed pieces	36	5.58	2	3.85	+
7.	Notches and denticulates	30	4.65	2	3.85	+
8.	Flake and core axes, picks and axes	8	1.24	5	9.09	–
	Total	645	100.00	52	100.00	

other typological groups is very low. There are no burins in the inventory, only burin spalls and pre-burin blades.

Blade exploitation (34.52%) is generally prevailing in the peaty trenches while that of flakes amounts only to 16.72%. These proportions are inverse in particular phases: the group of exploited flakes diminishes from 33.33% in phase I to 12.61% in phase III, while the blade group increases from 19.44% in phase I, to 40.54% in phase III. The significance of this fact, however, is reduced because of the small number of materials in the individual phases.

Tools are more numerous in the peaty than in the sandy trenches (19.57% – 19.44 in phase I, 17.16% in phase II, and 22.52% in phase III). The participation of cores and splintered pieces is five times as numerous as in the "sandy" part (15.65% – 22,22% in phase I, 11.94% in phase II and 14.41% in phase III).

The ratio of productivity (P) is relatively low (4.11): 4.14 in phase I, 4.82 in phase II and 3.44 in phase III.

Dominant in the group of cores (Pls X 1, XI 5, 6, 13, XIV 1) there are also single-platform cores for blades (average 40.91% – 25.00% in phase I, 35.00% in phase II, and 56.25% in phase III. The amount of cores for blades is considerably higher than in the "sandy" part (in general 25%), the highest in phase I, up to 75.00%, in phase II – 20.00%, and only 6.25% in phase III.

The participation of splintered pieces is twice as low as in the "sandy" part (22.73%). There were none at all in layers dated to the older phase (I), in phase II there were 25.00%, in phase III 31.25% (Pls XII 2,3,6, XIV 7,10).

In the group of tools (Table 7) most numerous were end scrapers (Plates X 8–13, XII 7–9, 11, XIV 11), fragmentary retouched blades (Plates XII 10, XIII 1, 2, 5, XIV 13, 14), scrapers (Plate X 15), groovers and perforators, flake and core axes (Plate XIII 6) and picks (Pl. XIII 8) retouched flakes (Pls XIII 7, XIV 9). The remaining typological groups appeared only sporadically (trapezes, truncations – Pls XIII 3, 9, retouched blades – Pl. XI 3, cogged tools). As opposed to the trench there were no other microliths in the "peaty" one than trapezes, backed pieces, reclettes (in the "sandy" part these categories also appeared only sporadically). Three categories, however, have no counterparts in the "sand": a pick (Pl. XIII 8, phase II), a large, select retouched end-scraper (Pl. XII 11), and a select concave truncation (Pl. XIII 9, also phase II). The remaining types of tools appear in the sandy trenches. A comparison of both inventories shows a great similarity in the

group of tools (Table 8), the difference lying only in a larger amount of flake and core axes in the peat, and a smaller number of microliths; this, however, accounts for the smaller number of materials in the peat trenches.

Summing up the problem of flint working on Site 9 at Dąbki it has been established that Mesolithic elements are prevalent; this is proved by the technology of producing semi-raw material and most tools, as well as ways of coring. Typologically the inventory can be assigned to the late Mesolithic, most closely linked with the Chojnice – Pieńki culture, particularly in the ways of coring and obtaining semi-raw material. The list of tools is undoubtedly poorer than in the "classic" phase of this culture (particularly in microliths). This might be the result of the chronologically later position of the materials from Dąbki. Typologically Neolithic materials also appeared in the material, an evident example of which is a fragment of an axe (from the sandy part of the site). Neolithic features are also noticed in some end-scrapers, groovers, perforators, and parts of flake and core axes (Nowakowski 1986). The large oblique or crossed truncations can be accepted as a transitional form, typologically late Mesolithic, but already inclined to Neolithic forms (Plate VIII 1–8). A particular case of such a truncation is a large, select blade with a concave piece (Plate XIII 9), identical with those of the Ertebølle culture. The massive flake end-scraper (Plate XII 11) might also be linked with this culture; both come from the layer stratigraphically dated to phase II. They decidedly deviate (also in size) from the remaining materials, hence we are inclined to accept them as imports from the circle of other groups of the Ertebølle culture.

Generally, the materials from Dąbki show certain similarities with complexes of the Ertebølle culture, both technologically (single platform cores for blades, splintered pieces technique) and in the typology of tools, where the leading forms such as scrapers, end-scrapers, groovers, truncations and trapezes appear in similar proportions. Differences lie in a lack of burins in Dąbki and in general metric evaluations of the raw material, semi-raw material and tools. This might surely result from raw material variations. The technology of the Ertebølle culture is based on select semi-raw material of high quality flint, while in Dąbki the Pomeranian flint, of poor quality was used (category B), though a much better quality the Baltic flint (category A) was almost as easy to obtain. The preference of poorer raw material might have resulted from cultural tradition (the site at Dąbki is the most westwards situated site with mass-participation of Pomeranian flint in the inventories). The increase in the use of the Baltic flint A in settlement phase II, and the presence of select imported tools prove the intensification of cultural contacts with other groups of the Ertebølle circle at a certain stage of development of the Dąbki settlements.

CERAMICS

Ceramics come mostly from the peaty trenches (more than 95% of it) being scarce in the sandy part and only in small characteristic fragments (Table 9). Technologically the ceramic complex is being investigated by M. Wirska-Parachoniak, and the results will be published sometime later.

Vessels were chiefly made of fat and very fat clays containing considerable amounts of organic substances, mixed with iron compounds, unevenly distributed, badly mixed sandy and rocky materials, sharp-edged quartz and bits of granite. Sometimes ceramic breakages were used as admixture.

Vessels were moulded from balls, sometimes flattened, or from flattened bands, with straight or rounded up joins, obliquely in relation to the walls. The walls were smeared with fatty irony silt and polished. The balls and bands were of various thickness, not particularly well done, hence the walls of the vessels were wavy, of irregular thickness, especially inside, and unevenly joined. On the outside these irregularities were concealed under an additional portion of a thin layer of potters' sub-

Table 9. The quantitative characteristics of ceramics

	Brims		Bodies		Bottoms	Handles	Total	Numerical weight index	Percentage of ornamented ceramics
	ornamented	not ornam.	ornamented	not ornam.					
Humus	–	6	–	57	–	–	63	0,142	0,00
Phase I	1	6	1	71	1	1	81	0,056	2,47
Phase II	17	24	9	391	2	–	443	0,052	5,87
Phase III	24	10	1	799	2	–	836	0,103	3,00
Phase ?	3	3	1	21	–	–	28	0,042	14,30
Total	45	49	12	1339	5	1	1451	0,110	3,92

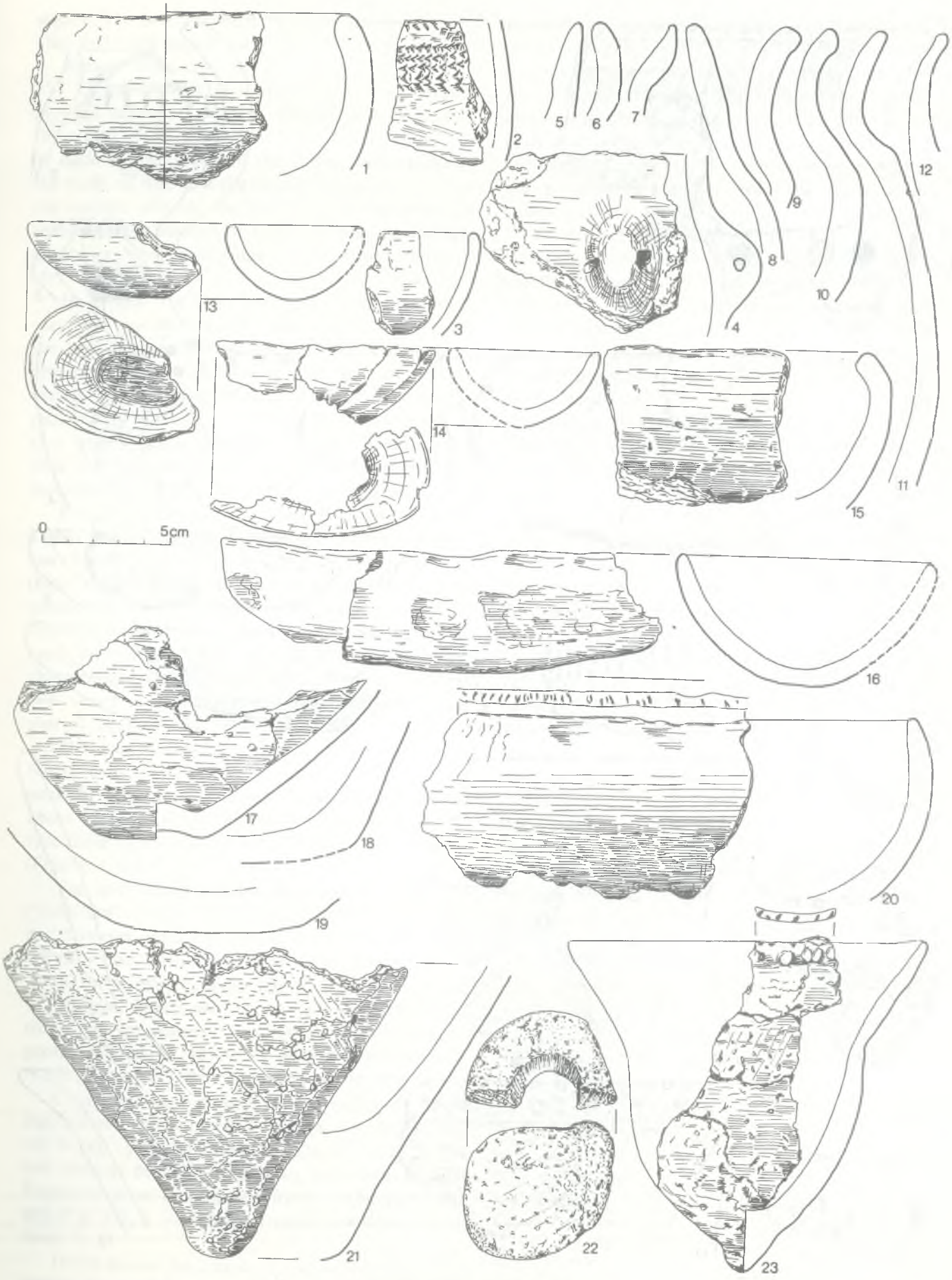

Fig. 6. Dąbki, Site 9. Pottery and stone „truncheon" (*22*)

Phases: I – *2–4, 16, 20,* II – *1, 7, 9, 13–15, 17, 18, 23,* III – *11, 21,* indefinite – *5, 6, 8, 10, 12, 19*

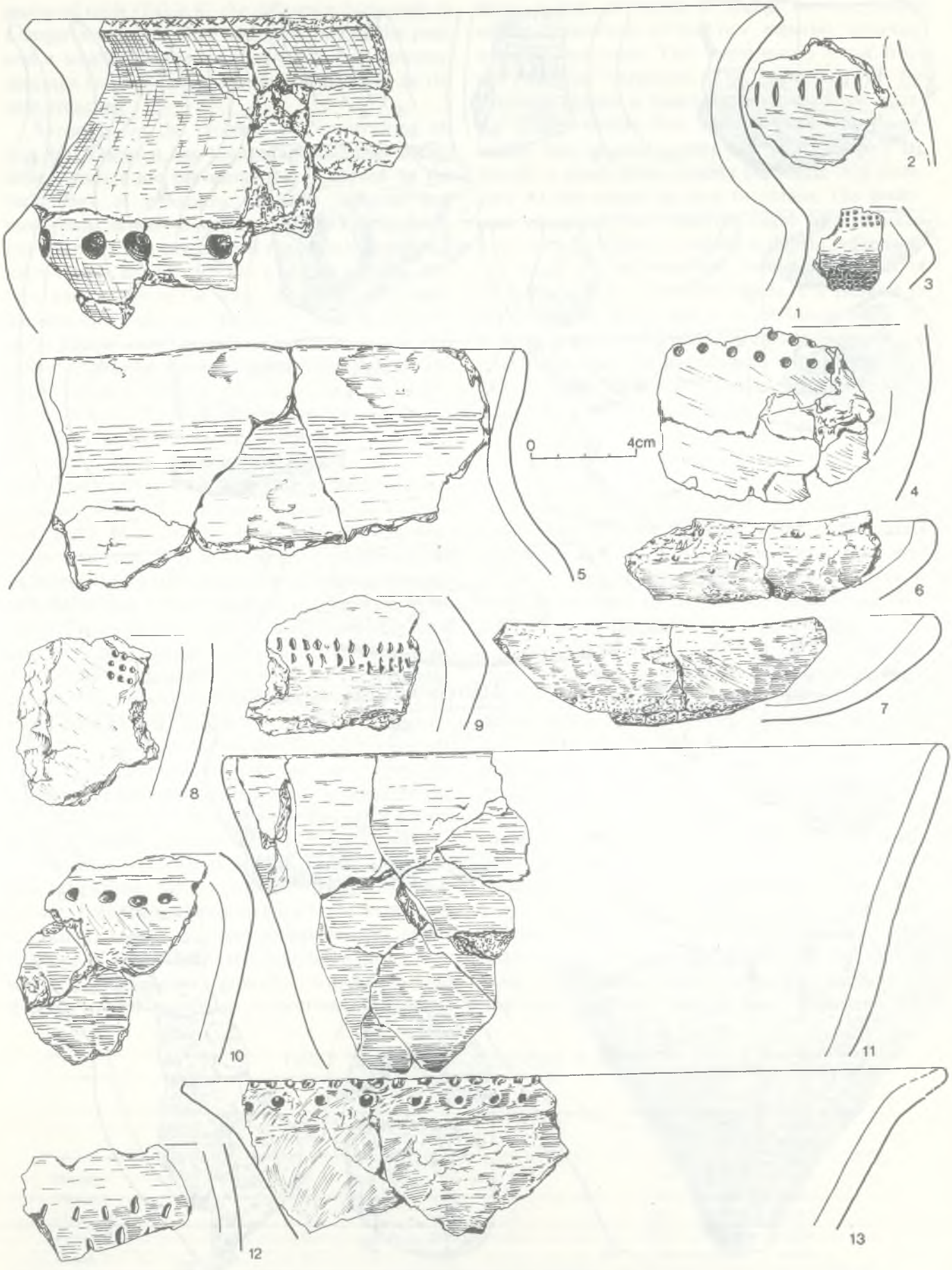

Fig. 7. Dąbki, Site 9. Pottery

Phase I – 2–5, *8*, *10*, *12*, III – *1*, *6*, *11*, *13*, indelinite 7, 9.

stance. The bottoms were formed from one piece of clay and then joined with the balls or bands.

Vessels were fired in low temperatures (up to 650° C), presumably in a hearth, in the atmosphere of weak reduction (smoke). Cooling was done with the access of air which is attested by the dark-grey or dark-brown colour of the surface and cracks in the walls, as well as a slightly lighter, rough layer on the outside. Despite the low firing temperature the ceramics were marked by their hardness (mechanical durability), presumably due to the properties of the clay used.

In general the production of vessels was of a very low standard which, presumably, was due to the lack of potters' tradition, and also a short-lived development of this branch. The skill of making vessels was adopted without a sound knowledge, particularly of the proper choice of clay, its preparation and selection of the appropriate admixture. This skill was presumably worked out unaided, thus inventing an original tradition of ceramics.

Forms of Vessels. The basic form of vessels in Dąbki was the beaker, with an everted rim, more or less S-shaped profile, circular and concave base (Figs 6:17, 21, 23, 7:11, 8:11,12). This form is perceptible chiefly in the main fragments of the vessels brims, of different size, as a rule thick- or even very thick-walled. Half of the materials are characterized by this form. Reconstructed was only one vessel, a slender, thin-walled beaker, with a sharply pointed foot (Fig. 6:23).

The second group of vessels is constituted by bowls, oval in shape. The specimens are of varied sizes, of semi-circular sections and thick bottoms; about 25% of such fragments were found. In literature these bowls are defined as "lamps" or "dishes" (Figs. 6:1, 13–16,20, 7:6,7).

The next group consists of straight-walled pots ("sack-like" vessels – Fig. 8:1,3,7,24,25). Their number, however, does not exceed several percent. Sporadically pots were found of arcuately shaped profile, the brim bent cylindrically (Fig. 8:17, 26, 7:5).

"Simple" bowls are represented by several fragments of specimens of arch-shaped or S-shaped profiles (Figs 8:15, 18, 22, 23; 8:4), and one conically shaped bowl, with a funnel-like brim (Fig. 7:13).

Compound vase-shaped vessels, with wide openings (vases ?, deep bowls ? – Figs 6:9, 10; 7:1, 2, 10; 8:16), cylindrical necks, slight or sharp bends and conical bodies appear also sporadically. Two fragments seem to originate from double-cone vessels (Fig. 7:3, 9 – three-part vases of a double-cone body ?).

In the above characterized materials several fragments of vessels deviate typologically and technologically from the remaining ones: one fragment of a semi-circular, thin-walled cup (Fig. 6:3), several fragments of an amphora with a preserved kneed, horizontally pierced handle (Fig. 6:4) which is the only one in the material, and a fragment of an arched body of a vessel, ornamented with manifold, straight and slanting imprints of triangles (Fig. 6:2). These are presumably imports from the Band Pottery cultures circles.

No distinct rules were noticed in the shaping of the rims of the vessels. Most frequently they are slightly thinner in relation to the vessel's neck, rounded or slightly flattened, always topped horizontally towards the core of the wall. These roundings or flattenings seem to be rather occidental features since both ways of finishing were noticed on the same vessel.

All bottoms of the vessels are of the non-isolated type, most frequently rounded (bowls – oval in shape) and globular, slightly flattened (2 specimens – Fig. 6:18,19). There were also two sharp-pointed bottoms (beakers – Fig. 6:21,23) with an isolated prong and concave bottom (presumably a beaker – Fig. 6:17). There were no flat bottoms.

Summing up the forms of vessels we found that 75% of the materials are remnants of beakers and oval bowls, the leading forms of the Ertebølle circle. The remaining fragments show distinct traces of influences of the lowland Band Pottery groups (the late Band Pottery culture – Czerniak 1980). This is perceptible in the strongly marked profiles of some vessels, in separated necks and bends of the bodies (perhaps also in the double-cone vase-like vessels).

Ornamentation of Ceramics (Table 10). Generally the amount of ornamented ceramics does not exceed 4%, reaching about 6% in settlement phase II. The list of ornamentation elements as well as their presence in the patterns, layout on the vessel and remarks on the finds is presented in Table 11.

Table 10. Characteristics of ceramic ornamentation

	N	%
Percentage of fragments ornamented with separate patterns in the collection of ceramics	—	1.52
Relation of separate ornamentation elements in multi-element patterns to the number of single-element patterns	—	0.09
Ornaments:		
The rim patterns	28	50.00
Below rim patterns	38	67.87
Knab and hole	31	55.36
The body patterns	12	21.43
"Finger" and small imprint	10	18.00
Isolate patterns	11	20.00
Total	56	3.92

Table 11. List of ornamental elements on ceramics

No.	Ornamental element	Participation in pattern: on the rim	below the rim	on the body	Layout on the vessel	Remarks on features	Phases	Figures
1.	Notch	23	–	–	round	done with a horizontally placed stick, perpendicularly to the walls	II, III	6:23, 8:1–6, 10, 11, 17, 22, 23, 26
2.	„	1	–	–	„	irregular imprints of a thin stick	I	6:20'
3.	„	2	–	–	„	irregular imprints in x form	II, III	7:1, 8:16
4.	Finger-like	1	–	3	„	fine finger imprints on a plastic board	II, III	7:1, 8:19, 25
				(1)			II	8:16
5.	Notch	1	–	–	„	done with an unevenly broken stick	III	7:13
6.	Small hole	–	19	–	„	circular openings, straight	II, III	7:13, 8:3–7, 10
			1		segments	or conical in a pattern;		12, 17, 21–23, 25;
			1		round	combined with oval holes		8:26
7.	Knob	–	10	–	„	deep pricks bringing out into relief a circular knob	II, III	6:23, 8:1, 2, 11, 22,
8.	Small imprint	–	3	1	„	imprinted with endings of various sticks;	II, III	7:10, 8:24
		–	1	–	„	pattern combined alternately with small holes;		8:26
		–	–	1	„	a double row	II	7:12
9.	Vertical straight stamp	–	1	–	„	imprinted with a rectangular stamp	III	8:18
		–	1	–	„	double		8:8
10.	as above	–	–	1	„	incised (with the blade?)	II	7:2
11.	Slanting stamp	–	1	–	„	imprinted	II	8:14
12.	Circlet	–	–	1	„	imprinted with a circular stamp (?), redoubled	II	7:4
13.	Semi-circle	–	–	1	vertical strand	imprinted with a stamp (?)	II	9:
14.	Pricks	–	–	1	round	small pricks with a comb over and below the bend	II	7:9
				1	„	in a multiplied pattern		7:3
15.	Diamond	–	–	1	single	small pricks	II	7:8
16.	Stroke	–	1	–	round	incised strokes	II	8:9
17.	Triangle	–	–	1	carpet-like	straight and slanting multiple stands of triangular imprints	I	6:2

The ornamentation was done with a crude object (a twig, a finger) or with an adapted tool (a comb, a stamp), or even with random tools (a blade, an awl). Various kinds of ornamentation techniques were used: imprints, piercing, pricking, incising, plastic elements. The motifs were also differentiated, chiefly applied at the rims of the vessels (in 45 specimens) and on the bodies only in 12 vessel fragments.

The rims of the vessels were usually notched with sticks of different thickness, around, perpendicularly in relation to the walls of the vessels (Fig. 8:1–6). Sporadically the rims were decorated with irregular imprints of a thin, horizontally applied stick (Fig. 6:20). In two cases such imprints were crossed forming a row of X pattern (Figs 7:1, 8:16). The rim of the conical bowl was ornamented with the help of an irregularly broken stick which formed uneven imprints around (Fig. 7:13). The rim of the sack-shaped pot was ornamented with slight finger imprints (Fig. 8:25).

The cups, straight-walled pots, the oval bowl and the arch-profiled pot were decorated with specific elements of a round knob (Fig. 8:12), or a hole (Fig. 8:3–7). They were done with an awl, by deep pricking, piercing or bringing into relief a circular knob (∅ 3–5 mm). Several such holes or knobs appear around or in groups beneath the rim. Since the knobs have thin walls and yield to crumbling both elements are very similar, hence the quantitative relation between them seem to be fairly accidental, about 1:2 in favour of the holes. Both elements appear in numerous and different variations, both inside and outside the vessel. It also happens that part of the pattern is done on one side and the other – on the other side. In one case the holes appear alternately with little hollows, oval in shape (Fig. 8:26), which is the only combined pattern. More than a half of the ornamented ceramics is decorated with a knob and hole.

Second in the frequency of motifs there are an

Fig. 8. Dąbki, Site 9. Pottery

Phase II – *4, 6, 9, 12–14, 16, 19, 20,* III – *1–3, 5, 7, 8, 10, 11, 15, 17, 21–25,* indefinite 18, 26

oval or multiangular hole impressed with endings of various sticks and finger imprints. This pattern appears on 10 fragments (18%) of ceramics, chiefly on the straight-walled pots, but also beakers. These elements appear on one rim (finger imprints – Fig. 8:25), and in two cases under the rim (little hollows – Fig. 8:24). One pattern is combined (hollows alternate with holes – Fig. 8:26) and three threads on the body (around finger imprints – Fig. 7:1), a single row of hollows – (Fig. 7:10), and an around row of double alternating hollows (Fig. 7:12).

The remaining 4 fragments of the brims and 7 bodies (20% of the ornamented ceramics) are decorated with unique patterns on single fragments. These are: a perpendicular simple bar imprinted around the rim of an arch-shaped bowl (Fig. 8:18), a double bar in the lower part of the funnel-shaped neck (Fig. 8:8), an incised perpendicular bar in the upper part of the vase's body (Fig. 7:2), a group of short incised strokes in the narrow part of a small vessel's S-shaped neck (Fig. 8:9), around row of imprinted circlets in the upper part of the vase's body (Fig. 7:4), a perpendicular strand of semicircular imprints on a fragment of the body (Fig. 9:8). Two bends of the double-coned vase are decorated with single or manifold rows of comb-pattern pricks under and over the bends (Fig. 7:3,9). Also the original single ornamentation in the shape of a diamond with manifold pricks was done with a comb (Fig. 7:8). The fragment of the arch-shaped vessel's body, presumably imported from the Rössener Band culture circle, shows manifold straight and slanting triangular imprints (Fig. 6:2). In one case finger imprints decorated a badly preserved plastic band in the upper part of the vessel's body (Fig. 8:16).

The only identified form of a vessel in the stratigraphically isolated settlement phase I – is bowl, an oval (Fig. 6:16), the rim decorated with irregular stick imprints (Fig. 6:20). All fragments from the Band Pottery cultures circle are also linked with this phase (Fig. 6:2–4).

In settlement phases II and III a fundamental set of vessel forms (a cup, an oval bowl, a sack-shaped pot) and their ornamentation are identical (cf. Table 10, items 1,3,4,6–8). Differences are manifested only in certain unique forms, phase II being richer in forms (cf. Table 10, items 10–16) embracing almost all forms of vessels and ornamentation (except elements 5 and 9 – Table 10) but not a conical bowl.

In settlement phase III there are no sharply-bent double-cone vessels or body threads besides finger imprints. A conical bowl appears, however, with original rim ornamentation (Fig. 7:13).

BONE AND HORN PRODUCTS

The inventory comprises 42 tools (Table 12), among which there are: 19 axes made of antlers (45.24% of tools), 9 bone awls (21.43%), 5 spearheads (11.90%), 4 "stilettoes" made of the *ulnae* of big mammals (9.52%), 2 "knives" made of wild boar and pig tusks (4.76%), a polisher made of deer antlers (2.38%), and 2 fragments of closer undefined tools (4.74%).

All axes (Fig. 10:15,16) are of the type with an opening in the sleeve from antlers (the so-called T-axe type). In one case the opening was not perforated, which might be an unfinished product rather than a different type. The blades were made by a slanting cut of the horn's arm, the head – by a crosswise cut. In one case the axe was broken along

Table 12. Bone and horn products

No.	Name of object	N	Raw material	Features of surface	Phase	Figures	Remarks
1.	Shaft-hole axe	19	deer antlers	back and blade shiny	I–III	10:15, 16	1 notch-decorated
2	Awl	9	deer antlers, *metatarsus* of deer and roe-deer (2), *metatarsus* of elk, fibula and *ulna* of wild boar, *ulna* of beaver, not closer defined bone	polished, shiny blades	I–III	10:2, 3, 5, 7, 12	1 with opening
3.	Spear-head	5	deer *metatarsus*, long bone of elk, stork *radius*, bird hone	polished, shiny blades	I, II	10:4, 6	–
4.	"Stilettoe"	4	elk *ulna* (2), deer *ulna* (2)	blades polished and shiny	I, II	10:1	–
5.	"Knife"	2	wild boar and pig tusks	as abobe	II	10:9, 10	–
6.	Polisher	1	deer antlers	–	II	–	with blunt ending
7.	Other objects	2	not closer defined	blades polished and shiny	II	10:8, 17	fragments
	Total	42					

Fig. 9. Dąbki, Site 9. Pottery and tools

1–11 – pottery (Phase II: *1–3, 5, 6, 8–11*, Phase III: *4, 7, 12, 14, 15, 18* – antler *13, 16, 17* – bone

the opening and later repaired by piercing a new hole in the antlers' arm (Fig. 10:15).

Sizes of the axes are 18.0–31.0 cm in length, 2.8–6.5 cm in width and 3.0–5.5 cm in thickness (the medium length 24.4 cm, thickness and width – 4.3 cm). Ten specimens are fully preserved, the remaining ones more or less damaged (most frequently the blades and heads, crosswise or longitudinally cracked). All blades and heads have a bright gloss and characteristic flaws from use. One specimen is decorated with crosswise nicks on the head.

This type of axe is characteristic of the north-European Mesolithic, appearing also in unchanged form in Neolithic cultures.

Awls (Fig. 10:2,3,5,7,12) were made of long bones, sometimes with fragments of the preserved base, split lengthwise. There are three variations in awls from this site. The first group (typologically Neolithic), consist of flat, relatively wide chips extracted from long bones (Fig. 10:7), one from deer shank bone, one of a closer undefined bone and one from a chip of deer antlers (Fig. 10:12). The latter is provided with a circular opening in the stem. All awls of this variation have broken blades. In the second group there are awls of a "C-shaped" cross-section (Fig. 10:5) made of lengthwise cut bones of circular section, (typologically Mesolithic). In this variation the back part frequently shows the natural articular thickening. In two cases these awls were made of a *metacarpus* bone of the roe-deers, and in one case – of a shank bone of an elk. The third variation comprises circular or square awls (Fig. 10:2,3) made of tube-shaped bones of a wild boar and cubital bones of a beaver.

All awls are perfectly polished and the working parts have a strong shine. Only three specimens, about 9 cm long, are fully preserved, in the remaining ones the blades, and in one case the back, are damaged. The thickness of the awls varies between 0.5–2.2 cm, and in width from 1.0 to 3.5 cm.

There was one variation of spear-heads in the form of characteristic, slender, two-sided, spindle-shaped blades, of circular or oval section (Fig. 10:4,6). The length of the three fully preserved specimens is 14–15 cm, the remaining two, impaired specimens 7.0 and 12.3 cm. Their width is 0.8–1.3 cm and thickness 0.6–0.7 cm. The spear-heads are perfectly polished, their blades shiny. On one specimen there are traces of winding with rope (Fig. 10:6). In two cases the spear-heads were made of the metatarsal bone of a deer, in one case the spoke-bone of a stork, in one – the long bone of an elk, and one closer undefined bone of a bird.

"Stilettoes" – from the *ulna* of an elk and a deer (Fig. 10:1) have natural backs, in the form of thickened joint and sharpened blade, polished and shiny, covered with characteristic traces of usage (traces of working the blade about 5 cm).

"Knives" made of the wild-boar and pig tusks (Fig. 10:9,10) have sharp edges, rounded or sharpened ends, with traces of working and shining which indicates their use as perforators.

In the inventory there is also a polisher from deer antlers, with a blunt end, and two fragments of undefined tools, one of which might be a kind of a bidentate fishing spear (Fig. 10:17).

Tools were made on the spot which is confirmed by masses of raw and semi-raw materials and production refuse, with traces of cutting, shaving and polishing. A *metacarpal* bone of a deer with a negative of a cut-out tool (Fig. 10:11) was also found in the inventory.

Deer antlers were the basic raw material for the production of tools, of which 50% of all specimens were made, chiefly axes, but also a polisher and an awl. Deer bones were also a valuable productional raw material for tools (about 11.90%), used for 2 stilettoes, two spear-heads and an awl. Four tools were made of the bones of an elk, the remaining 12 tools from the bones of different animals: a wild-boar, a roe-deer, a pig, a beaver and a stork. The considerable prevalence of deer's bones and antlers (70% of all tools) proves that the raw material was carefully selected. The participation of antlers in relation to deer's bones is incomparably high. Apart from antlers from killed animals there are also shedded antlers, undoubtedly purposely collected.

STONE PRODUCTS

The inventory is presented in Table 13; it comprises 18 specimens among which are: a shaft-hole axe, a fragment of a "truncheon", an axe, grinders and "polishing plates".

The shaft-hole axe (Fig. 10:14) assymetric in shape, with a flat back is made of fine-grained micaceous quartz, presumably erratic (Skoczylas 1981). Numerous analogies of this form are found in the Band cultures, and the specimen might be an import from this circle. The shaft-hole axe was found in the layer dated to settlement phase I.

The "truncheon" (Fig. 6:22), uncovered in settlement phase II, is typical of the northern cultures, among them also the Ertebølle.

The axe (Fig. 10:13), assymetric, primitive in form, thinner at the back, with irregularly rounded edges, is presumably a local product, possibly being an imitation of Mesolithic cylindrical axes, which also appear in the Band cultures circles (Smoczyń-

Fig. 10. Dąbki, Site 9. Tools

1–11, 17 – bone, *12, 15, 16* – antler, *13, 14* – stone

Table 13. Stone products

No.	Name of objects	N	Features of surface shape	Sizes (cm)	Phase	Remarks	Figures
1.	Shaft-hole axe	1	polished, rectangular in section	9.7 × 4.5 → 2.5, ∅ 1.5	I	–	10:14
2.	"Truncheon"	1	polished, oval in section	5.7 × 5.4, ∅ 2.0	II	fragment	6:22
3.	Axe	1	polished, lenticular in section, back thinning	8.4 × 5.2 × 2.6	?	–	10:13
4.	Stamp (grinder)	3	traces of knocking on the surface circular or oval	∅ 7–10 cm	II, III	1 found with the pad	–
5.	Polishing plate	12	polished, traces of knocking on the surface, flat plates	?	I–III	plate fragments, pink sandstone	–
	Total:	18					

ska 1955; Czerniak, Kośko 1980). The axe was found in the sandy part of the site.

The remaining tools are simple in shape. The oval and rounded grinders were chiefly used as pestles which is confirmed by traces on their surface. One was found together with the pad in the form of a sandstone plate. In literature such plates are interpreted as "polishing plates". In the cultural layer there were also found numerous pebbles which undoubtedly had been used as pestles (which is confirmed by traces on their surface); some pebbles were purposely chipped.

OTHER PRODUCTS

Fragments of undefined wooden objects were often found in the peaty cultural layer, but their state of preservation does not permit a closer characterization. In one of the trenches two fragments of a wooden stick, 130 cm long and 2–3 cm thick were found. In its vicinity a horn axe was discovered so the stick might have been its shaft. Fragments of wooden shafts were often found in the holes of horn axes.

Lumps of non-processed amber were uncovered on the surface as well as in the cultural layer, however, no ready products were found.

SHORT CHRONOLOGICAL AND GENETICAL CONCLUSIONS

The beginning of settlement at Dąbki falls to the turn of the 5th and 4th millennia B.C., its decline – to 3400/3300 BC. In principle, the stratigraphic settlement phases do not show any typological differentiation, apart from certain stylistic changes in the production of ceramics. These phases comprise exclusively materials from the peatbog. Almost all flint materials (about 95%) come from the sandy part of the site, which is beyond the reach of stratigraphic assessement. Typologically they are generally linked with Late-Mesolithic inventories, though there are certain Neolithic elements. The large number of flint materials also confirm their non-concurrence. Flint materials from the peatbog are undoubtedly linked with those from the sandy part of the site but their small amount is not sufficient for a detailed comparative analysis.

Theoretically it seems plausible that the ceramic phase might have preceeded the non-ceramic phase, linked with the late phase of the Chojnice – Pieńki culture. The proceeding stabilization of settlement, connected with maximal exploitation of the natural environment, might have caused the economic-cultural transformation of the Mesolithic group of the Chojnice – Pieńki culture into the Ertebølle type culture, and impulses from this circle (or directly from the Band cultures circles) might have caused the adoption of clay vessel production. Technologically, this skill, throughout the whole period, of the settlement's existence was relatively poor, likely the evidence of a local model of its adaptation. The basic proof of potters' tradition is undoubtedly the oval bowl and the cup, modelled after the Mesolithic organic containers, characteristic of all groups of the Ertebølle circle, their stylistics being alien to the Band culture circles. In the course of time the forms of vessels developed as well as their ornamentation, presumably under the influence of impulses from neighbouring areas (Band cultures circle) and also owing to the invention of the producers themselves.

The appearance of ceramics, generally in the upper parts of the layers, dated to the oldest phase, is a stratigraphic confirmation of the hypothetical non-ceramic phase. The scanty inventory from these layers (chiefly zoological materials), and particularly the lack of characteristic types of flint materials disputes this fact. The hypothetical, non-ceramic phase, might be dated to the older (Ib) section of phase I (about 4300–3900 BC), the ceramic phase

(Ia) – to the years about 3900–3800/3700 BC. Ceramics from this phase consist mainly of unornamented body fragments. The only identified form of a vessel is the oval bowl. All "imports" are linked with this phase, chiefly ceramic ones (Fig. 6:2–4), but also the stone shaft-hole axe (Fig. 10:14) stylistically linked with the early phases of the late Band cultures. The fragment of a wine-cup (Fig. 6:3) can be stylistically linked both with the Linear or Stroked Pottery culture. Fragments of the amphorae (Fig. 6:4) are linked with type A (Czerniak, Kośko 1980). In the Lowlands they are dated to phase IV of the Stroked Pottery culture (Zapotocka 1970), i.e. to about 3800–3700 BC (Czerniak, Kośko 1980). The last ceramic "import" might be linked with the Rössen culture. It is a fragment of an arch-shaped vessel's body, covered with "carpet-like" ornamentation (Fig. 6:2).

Settlement phase II is generally dated to the years 3700–3600/3500 BC. Relic materials from the natural layers distinctly prove the intensification of settlement. More than half of all bone remains comes from this phase as well as most of the horn and bone products and "peaty" flints. In ceramics, the cup and oval bowl – leading forms of the Ertebølle circle, constitute about 75% of the materials. The presence of unique forms of "simple" bowls, vase-shaped vessels (among them the double-cone ones) and their ornamentation, we are inclined to link with influences of the early phase of the Late Band cultures (the last phase of the Stroked Pottery culture the Rössen culture and the early phases of the Lengyel culture. Also the ornamentation of the rims of Dąbki vessels is similar to that of the Late Band Pottery culture. The notching of rims is characteristic of the Ertebølle circle, though mainly the finger and fingernails imprints, rarely or never found in Dąbki. The specific ornamentation in the form of rows of holes and knobs around and under the rims of most vessels is an originality which appeared only in the Linear Band Pottery culture complex from Radziejów Kujawski (Gabałówna 1963) at approximately the same period (beginning of 4th millennium BC). Similar ornamentation is known from sites of the so-called "forest" cultures, but from later chronological phases.

In settlement phase II distinct connections appear in flint working (imports) with other Ertebølle culture groups (Rugia ?). It is perceptible in the increase of the Baltic flint in the inventories, which is of better quality (variation A) than the commonly used Pomeranian flint (variation B); there are also more core tools, concave truncations and massive end-scrapers which have close analogies in the Ertebølle culture (Gramsch 1973, Fig. 12:8; Schwabedissen 1972). The same applies to the stone "truncheon".

Settlement phase III, initially dated to about 3500–3400/3300 BC, differs from the previous one only in a lack of body patterns in the ornamentation of ceramics. An imprinted vertical bar motif in a characteristic layout of the Late Band Pottery culture style appeared twice (Fig. 8:8,18). The cone-shaped bowl with a funnel-like brim, is the only new, unique form of vessels (Fig. 7:13), analogies of which can be also found in the Late Band Pottery cultures. The remaining categories of sources do not show any typological variations in relation to earlier chronological phases.

As for economy, the site at Dąbki represents basically the Mesolithic stage of development over the whole period of settling, based chiefly on fishery, hunting and presumably also gathering. There were no changes in the set of animal species over the whole period. Pike decidedly prevailed over perch and bream, beaver – over deer, elks and wild boars. Poultry and water-fowl played a significant role. The nearest countryside, the lake and its hinterland were chiefly, exploited and also sporadically farther areas, including the seashore, which is proved by the uncovered vestiges of a seal and rheophile fish, particularly salmon and sturgeons; their participation, however, does not surpass 2% of the remains.

Settlement was of a stabile and successive character which is attested by the thickness of cultural layers in the peatbog, reaching 1 m. According to radiocarbon dating it lasted approximately about 1000 years. The cultural homogeneity presumably results from the traditional way of life of the population. Since the settlement was situated in a rich natural environment and the modicum of living was sufficient there was no motivation to expand production, despite confirmed contacts with other circles. The stabile character of settlement favoured animal husbandry though not on a major scale. Bones of animals in the early stages of domestication appear throughout the whole period of settlement, increasing in phase III to about 35% of mammal bones.

Both the type of settlement and economy, as well as the cultural inventory, place the site generally at the stage of proto-Neolithic societies. The Neolithic ideas were undoubtedly transferred by the Band cultures populations both directly or through the intervention of other Ertebølle circle groups. The intensification of direct contacts with the Band circles presumably took place in the older (I) phase which is proved by both ceramic imports and stone products (shaft-hole axe). These contacts can be linked with the early phase of the Late Band Pottery culture. Certain stylistic elements

of the Band cultures circle concerning forms and ornamentation of vessels were adopted and transformed in the younger phases. In settlement phase II there were influences of the early phases of the Late Band ceramics (late phases of the Stroked Pottery culture – V, of the Rössen culture, early phases of the Lengyel culture and the Brześć Kujawski group). At the same time the intensification of contacts occurred with other groups of the Ertebølle culture (import of flint raw material ? similarities in flint- and stone-working. In settlement phase III the pricked patterns disappear and ornamentation on the vessels' bodies is limited, presumably under the influence of later phases of the Late Band Pottery culture. At the same time horizon (about 3500 BC) the Stroke Pottery culture imports and those of the Brześć Kujawski group of the Lengyel culture appeared in close vicinity of Dąbki, in the Ertebølle culture in Rugia (Ralswik – Augustenhof – older horizon, Gramsch 1973).

Both the imports and the numerous stylistic patterns, chiefly in ceramics, prove lively intercultural contacts with neighbouring areas during the whole period. New, alien patterns were undoubtedly selective, and principally limited to marginal, stylistic phenomena. The economic model remained unchanged for the duration of the settlement. Despite great stability, e.g. the skill of plant cultivation was not adopted, and domestication included only dogs, cattle and pigs. The two latter had their wild counterparts in the natural environment, and checking of these herds might have led to their domestication independently of impulses from the Band culture circles, and might have also included other species, e.g. beaver lodges (preference of beaver is particularly perceptible in osteologic materials from the site). This kind of checking did not always lead to domestication of the animals. In Dąbki there is a lack of bones of small ruminants characteristic of the first farmers which proves that not all species of domestic animals were taken over from the Band cultures. The process of domesticating cattle and pigs did not develop at Dąbki, and animal husbandry was only of marginal economic interest.

Generally, settlement at Dąbki is linked with the Ertebølle culture and its local, "Polish" (?) group, shaped on the basis of older, Late-Mesolithic tribes (Chojnice – Pieńki culture ?). The beginnings of settlement are dated to the beginning of the entire Ertebølle circle, and falls within the limits of the 4th millennium BC (up to 3300 ?), distinct intensification falling to the II settlement phase, about 3700–3600/3500 BC.

The site under examination is the first Ertebølle culture settlement on the Polish coast. The formation of relatively permanent forms of settlement were promoted by favourable natural conditions, particularly in the Atlantic period. Due to successive sea transgressions, however, their traces might still be under the present sea bottom, or under the layers of peat on the present sea coast, or even in the lake district zone. For technical reasons the uncovering of such sites is unusually difficult though endeavours should be undertaken.

The complex studies on proto-Neolithic settlement in the Dąbki region are still not completed and a number of specialistic problems are still being studied. Some of them will be published in the nearest future, others call for continuation and completion. Field studies on other sites of this region will be shortly continued. Most problems could be only signalled here, the more so that studies on this cultural circle are almost new in Polish prehistory.

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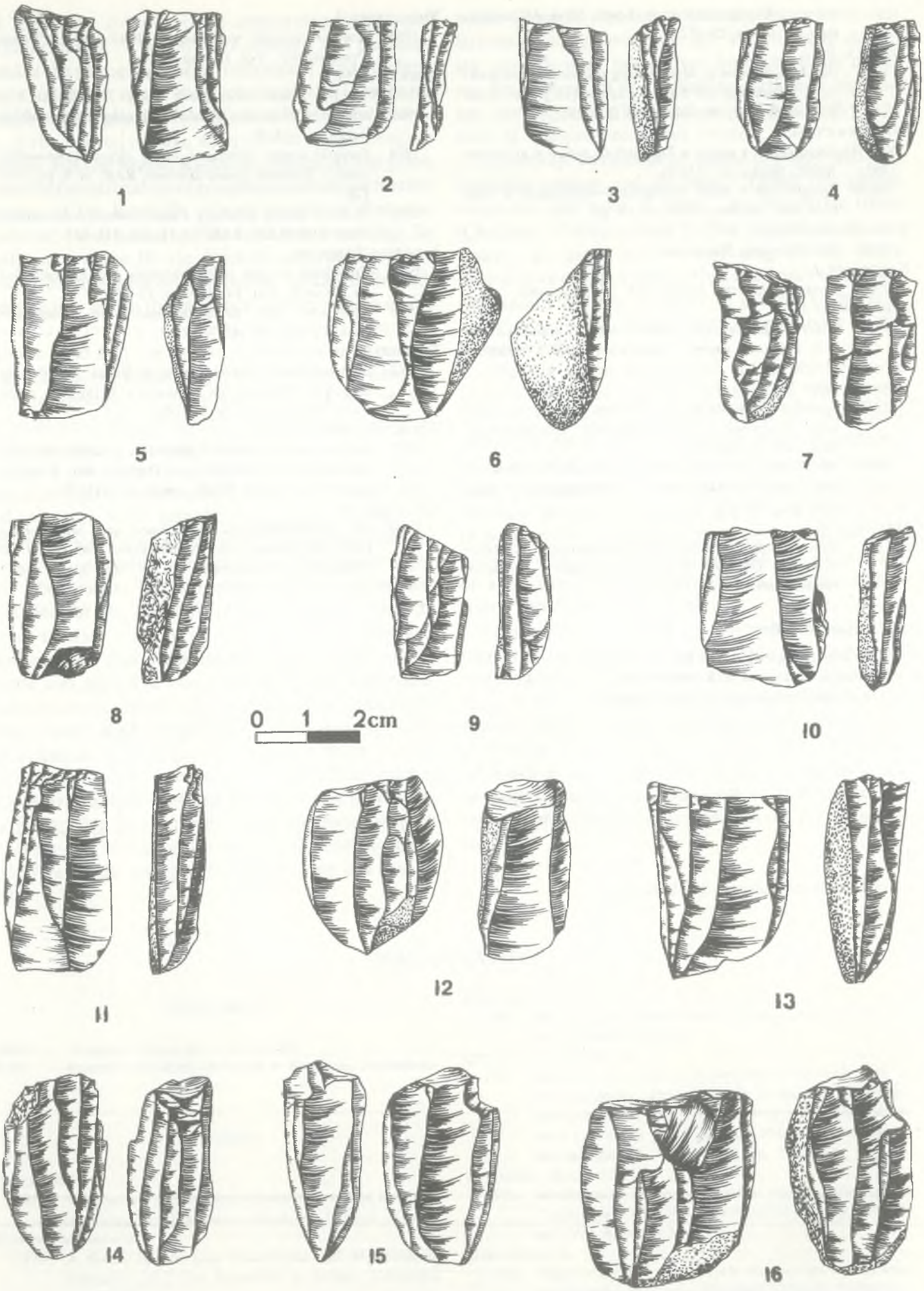

Plate I. Dąbki 9. Sand trenches. Flints, ingle platform cores for blades

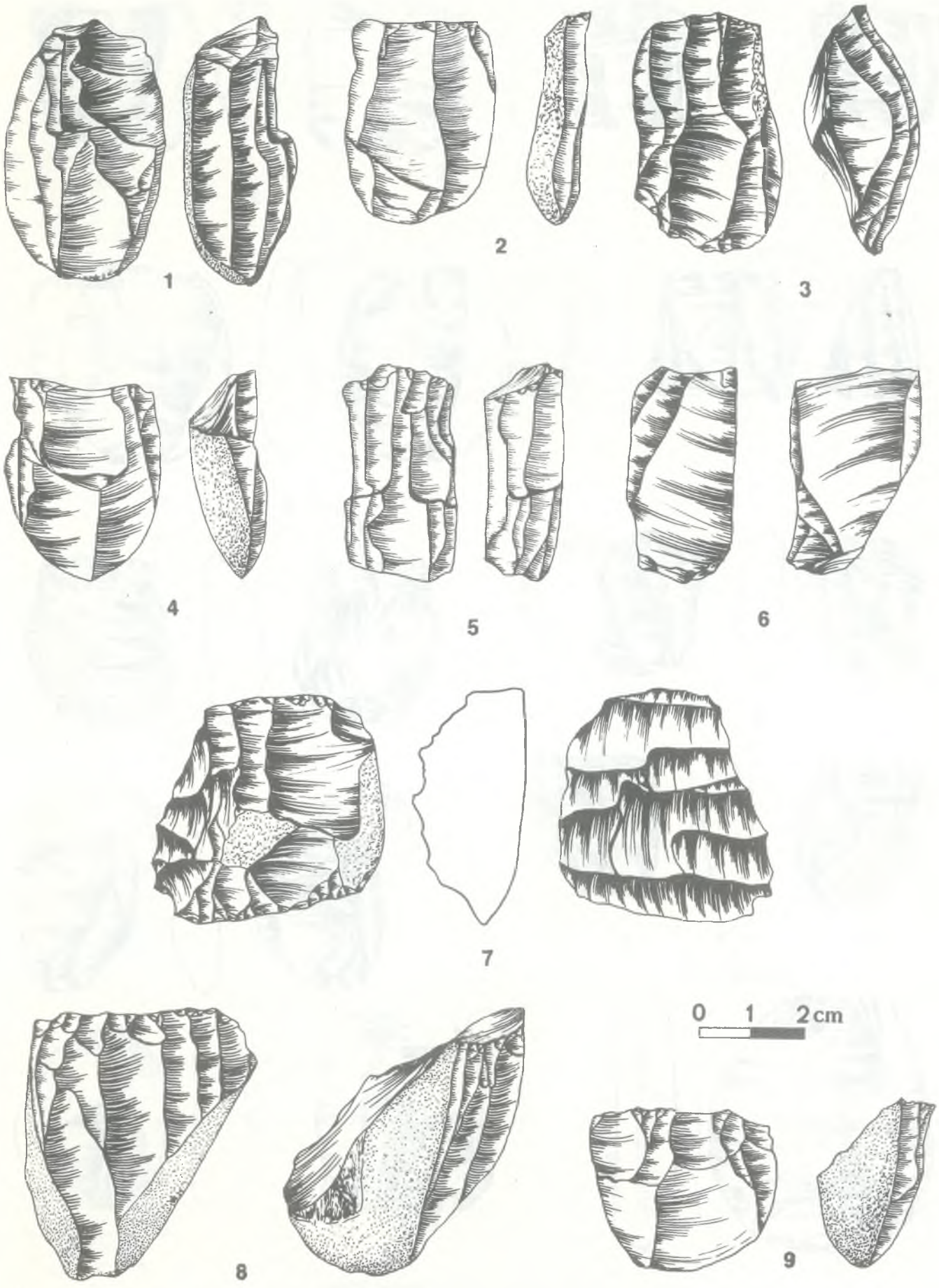

Plate II. Dąbki 9. Sand trenches. Flints

1, *2*, *5*, *8* – single platform cores for blades, *3* – multiplatform core for blade, *4* – single platform core for blades and flakes, *6* – multiplatform core, *9* – single platform core

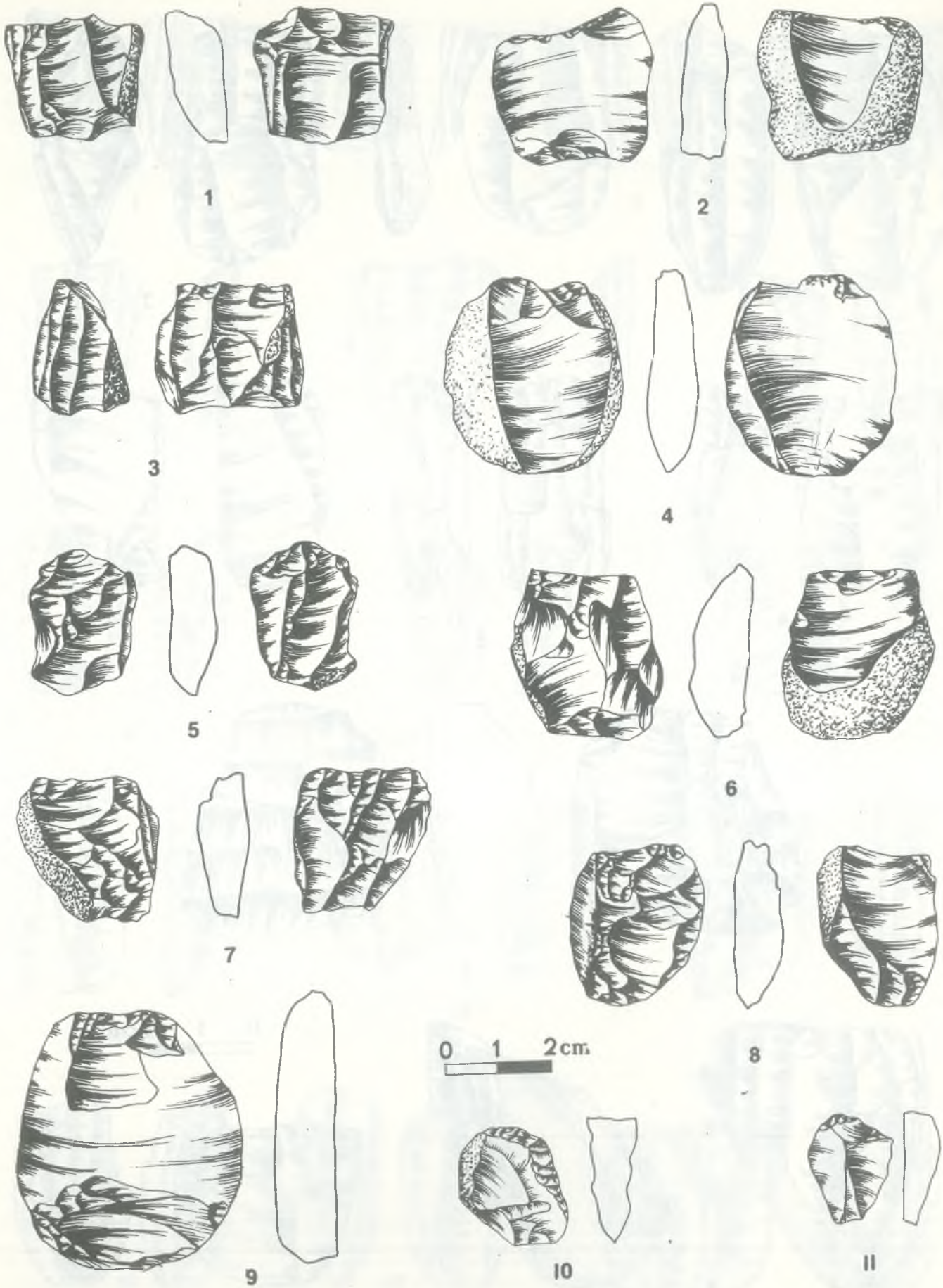

Plate III. Dąbki 9. Sand trenches. Flints

1, 3 – double platform cores for flakes, *2, 4–9* – scalled pieces, *10, 11* – end-scrapers

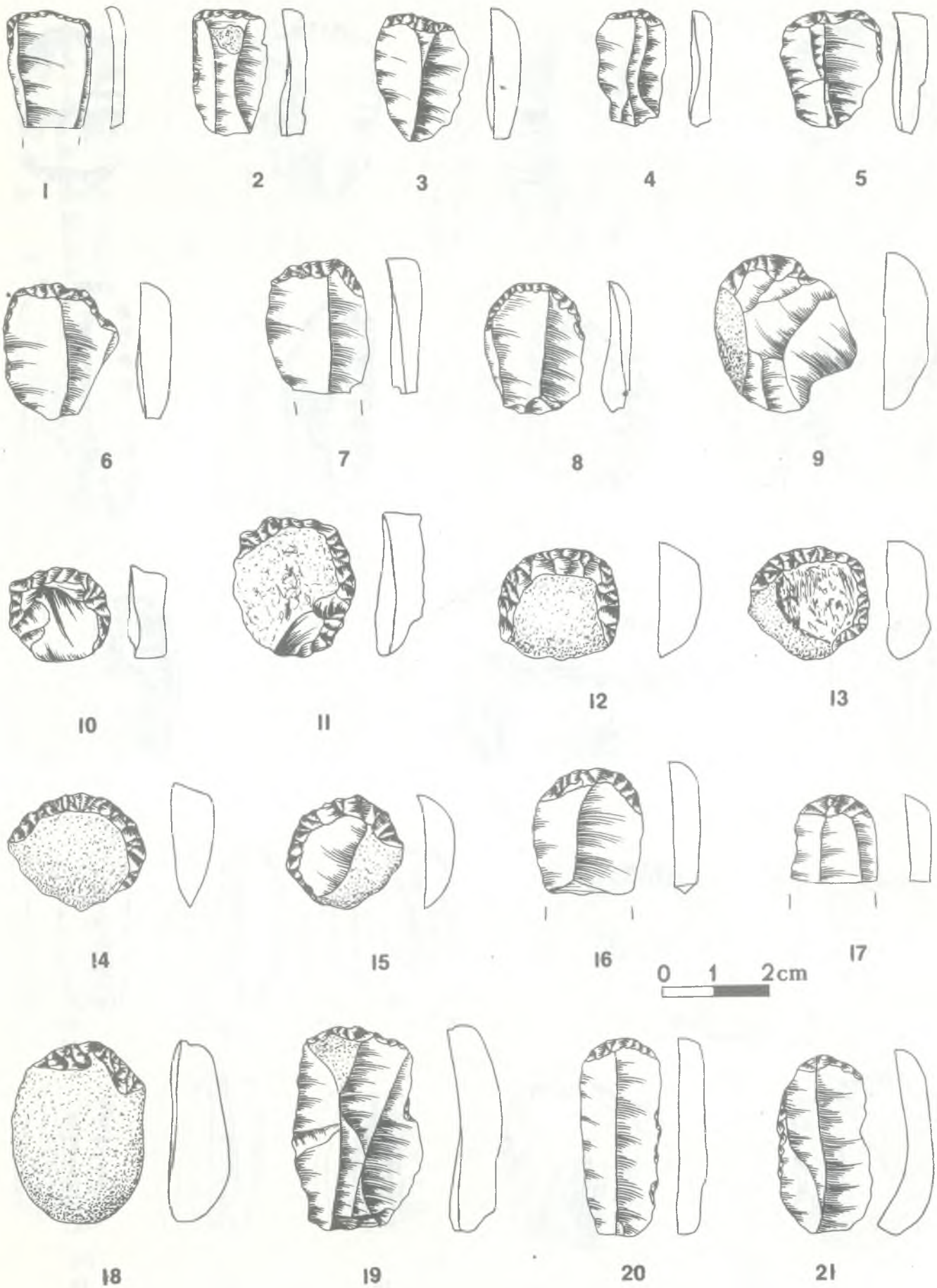

Plate IV. Dąbki 9. Sand trenches. Flints. End-scrapers

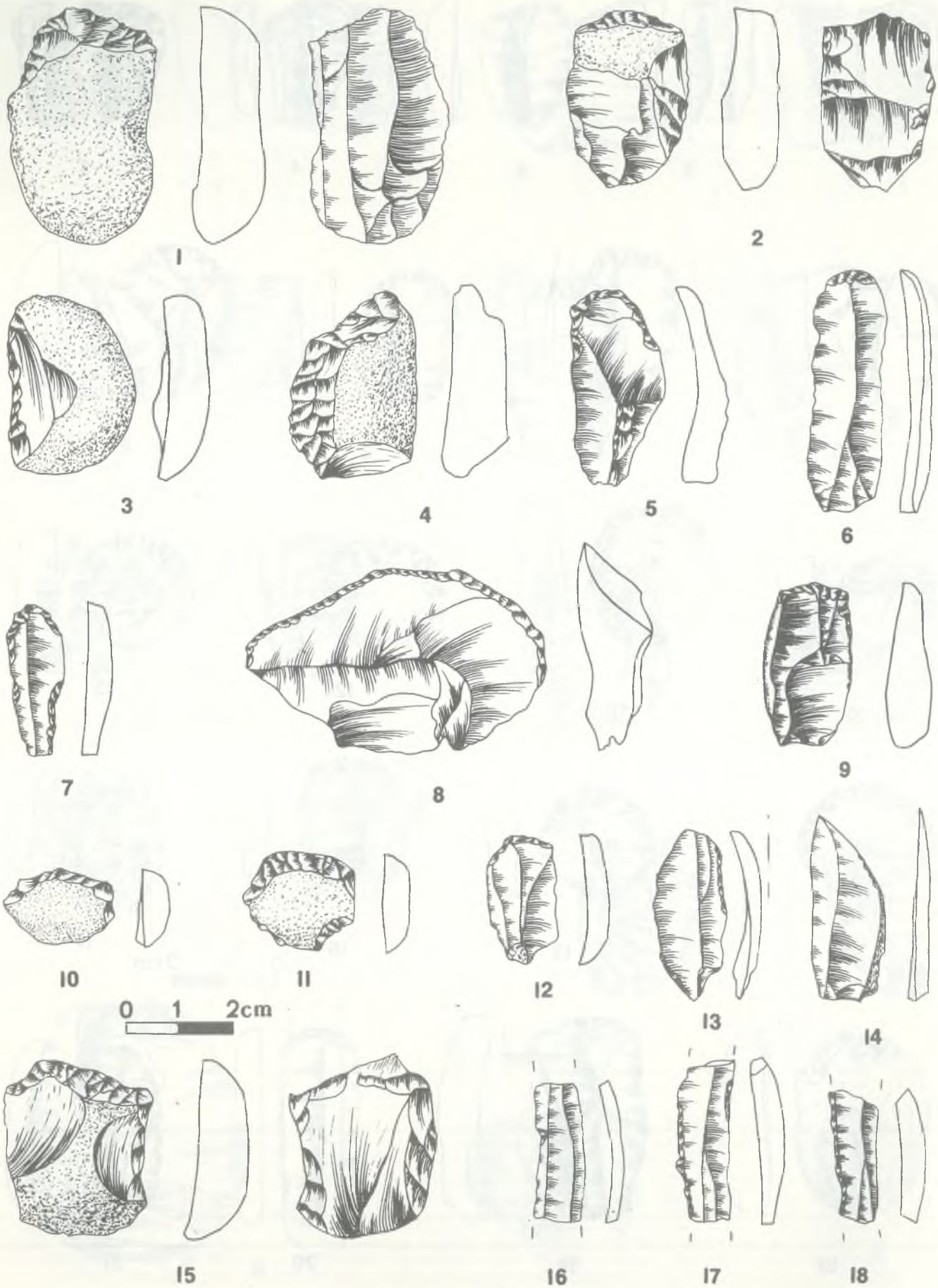

Plate V. Dąbki 9. Sand trenches. Flints

1, 2, 5–7 – end-scrapers, *3, 4* – side scrapers, *8* – flake with racletype retouch, *9–12, 15* – erapers, *13, 14, 16–18* – retouched blades

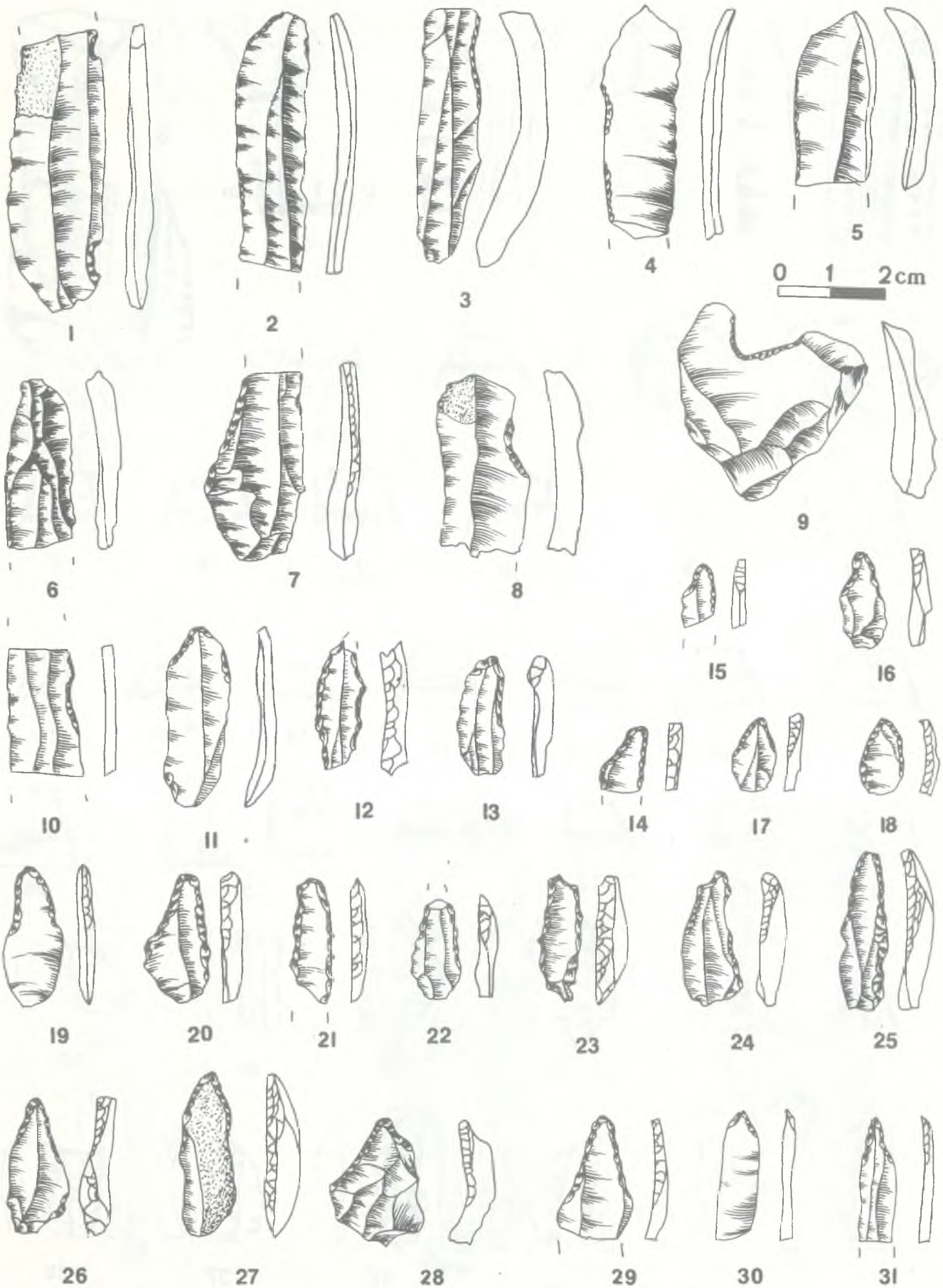

Plate VI. Dąbki 9. Sand trenches. Flints

1–7 – retouched blades, 8–10 – notches, *11–31* – grouvers

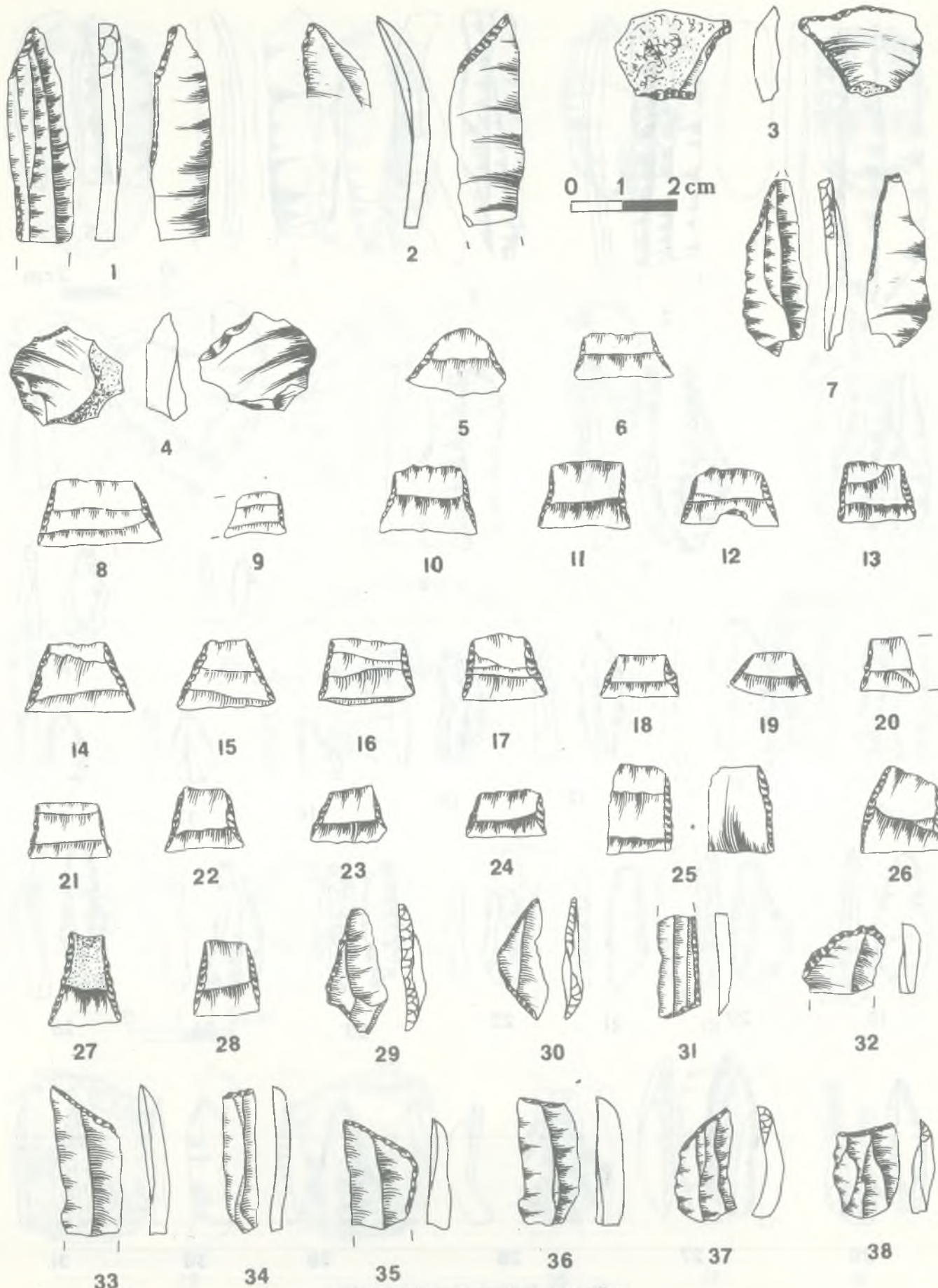

Plate VII. Dąbki 9. Sand trenches. Flints

1–4, 7 – perforators, *5, 6, 8–28* trapezes, *29–31* – triangles, *32–38* – truncations

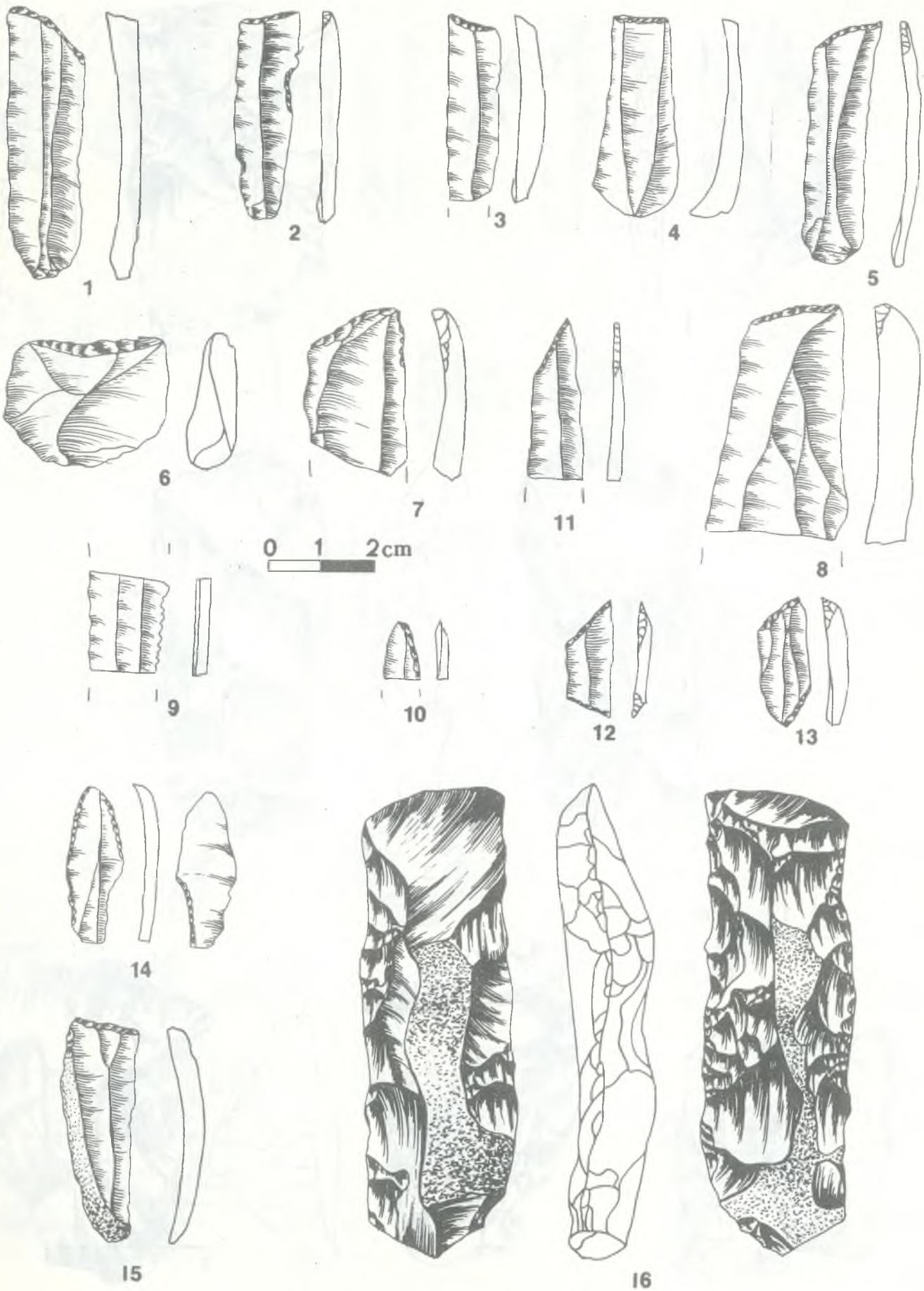

Plate VIII. Dąbki 9. Sand trenches. Flints

1–8, 10, 11, 15 – trunca ions, *9* – sow, *12, 13* – double truncations, *14* – perforator grouver, *16* – flake-axe

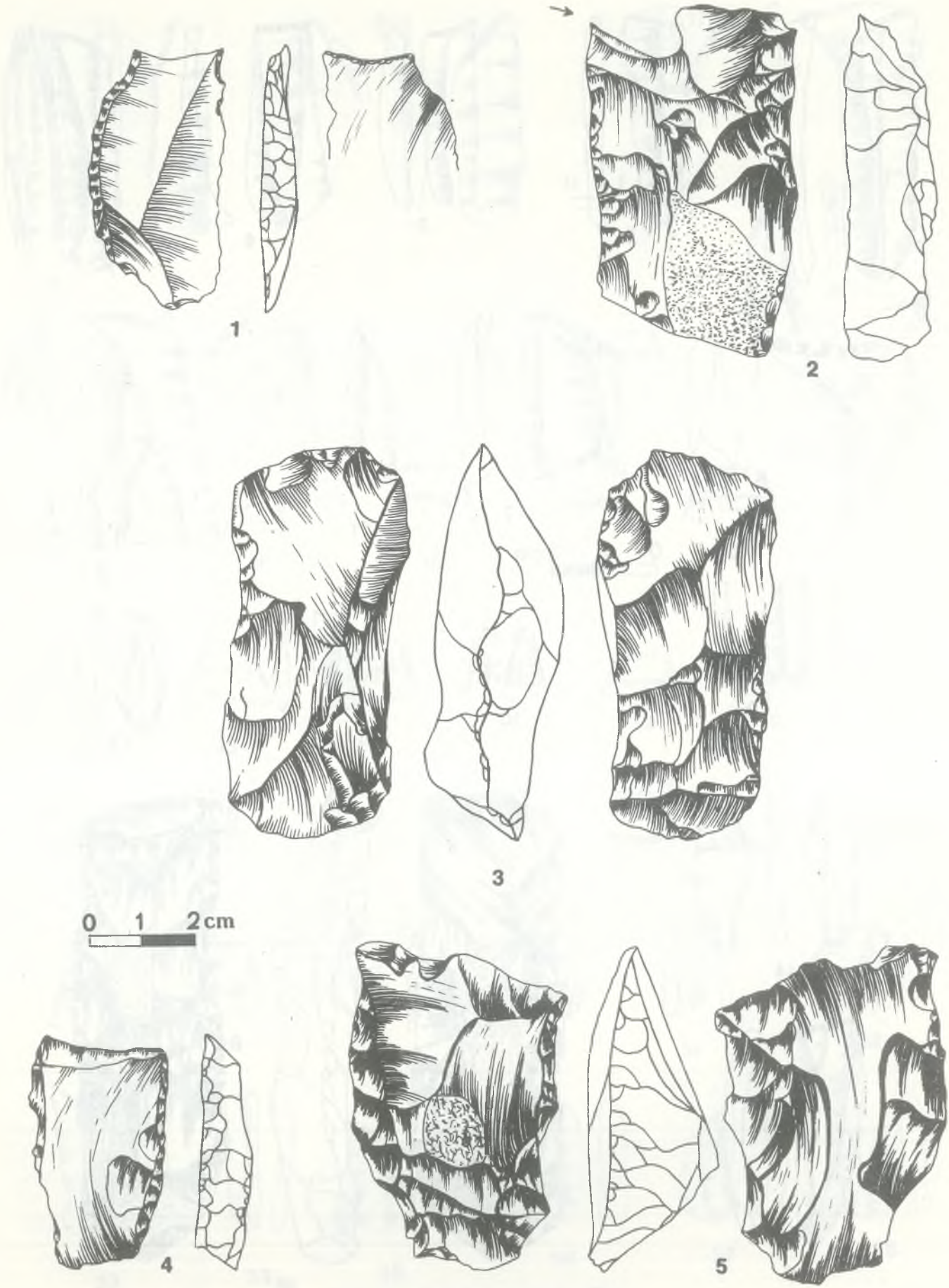

Plate IX. Dąbki 9. Sands trenches. Flints
1 – backed blade-perforator, 2–5 – flake-axes

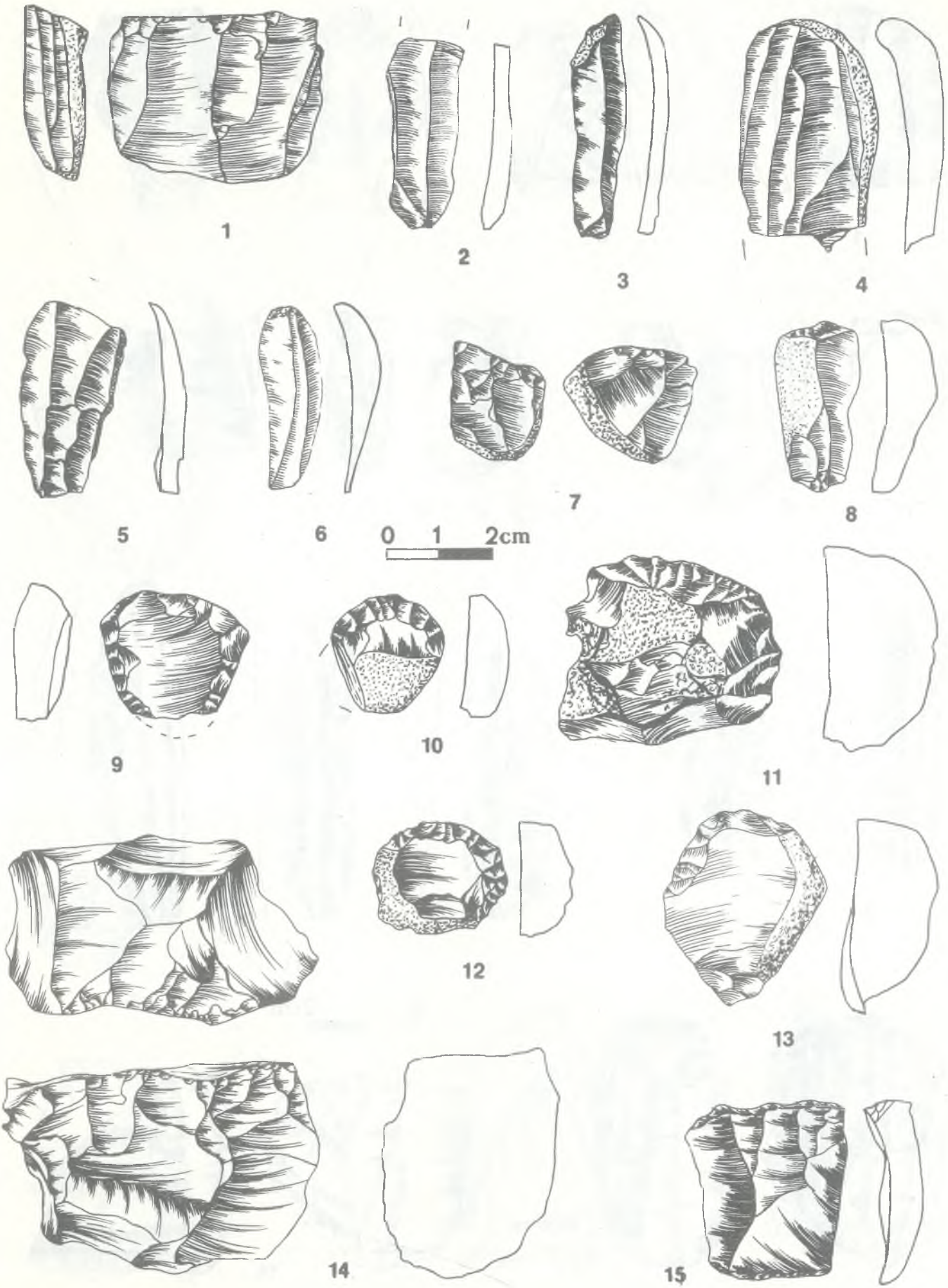

Plate X. Dąbki 9. Peat tranches. Flints. Phase I

1 – single platform core for blades, *2–6* – blades from single platform core, *7* – single platform core for blades, *8–13* – end scrapers, *14* – multiplatform core for flakes, *15* – scraper

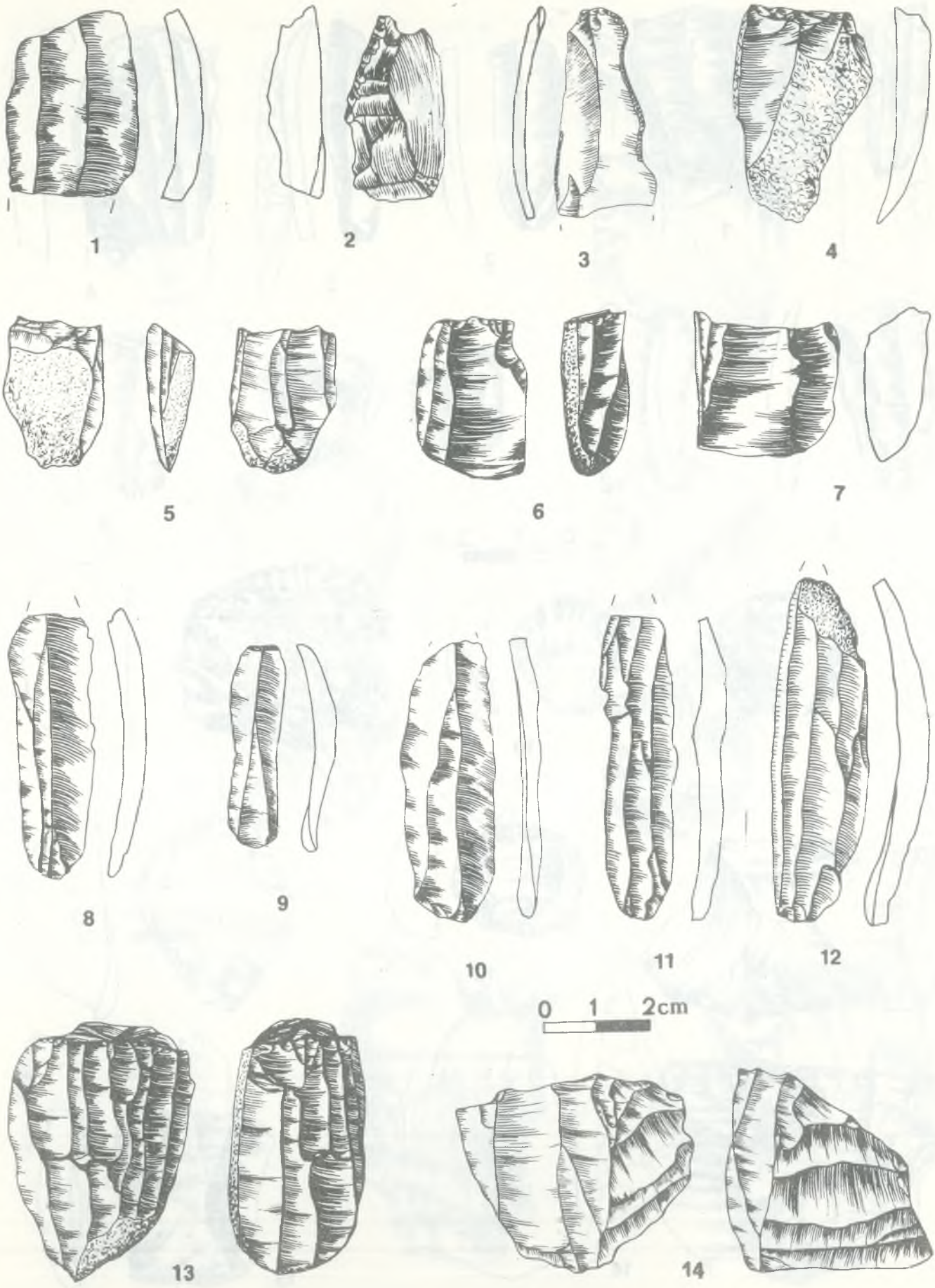

Plate XI. Dąbki 9. Peat trenches. Flints. Phases I (1 – 3) and II (4 – 14)

1 – blade from single blade core, *2*, *3* – retouched blades, *4*, *8–12* – blades from single blade core, *5*, *6*, *13* – single platform cores, *7* – single platform core for flakes and blades, *14* – double platform core for blades

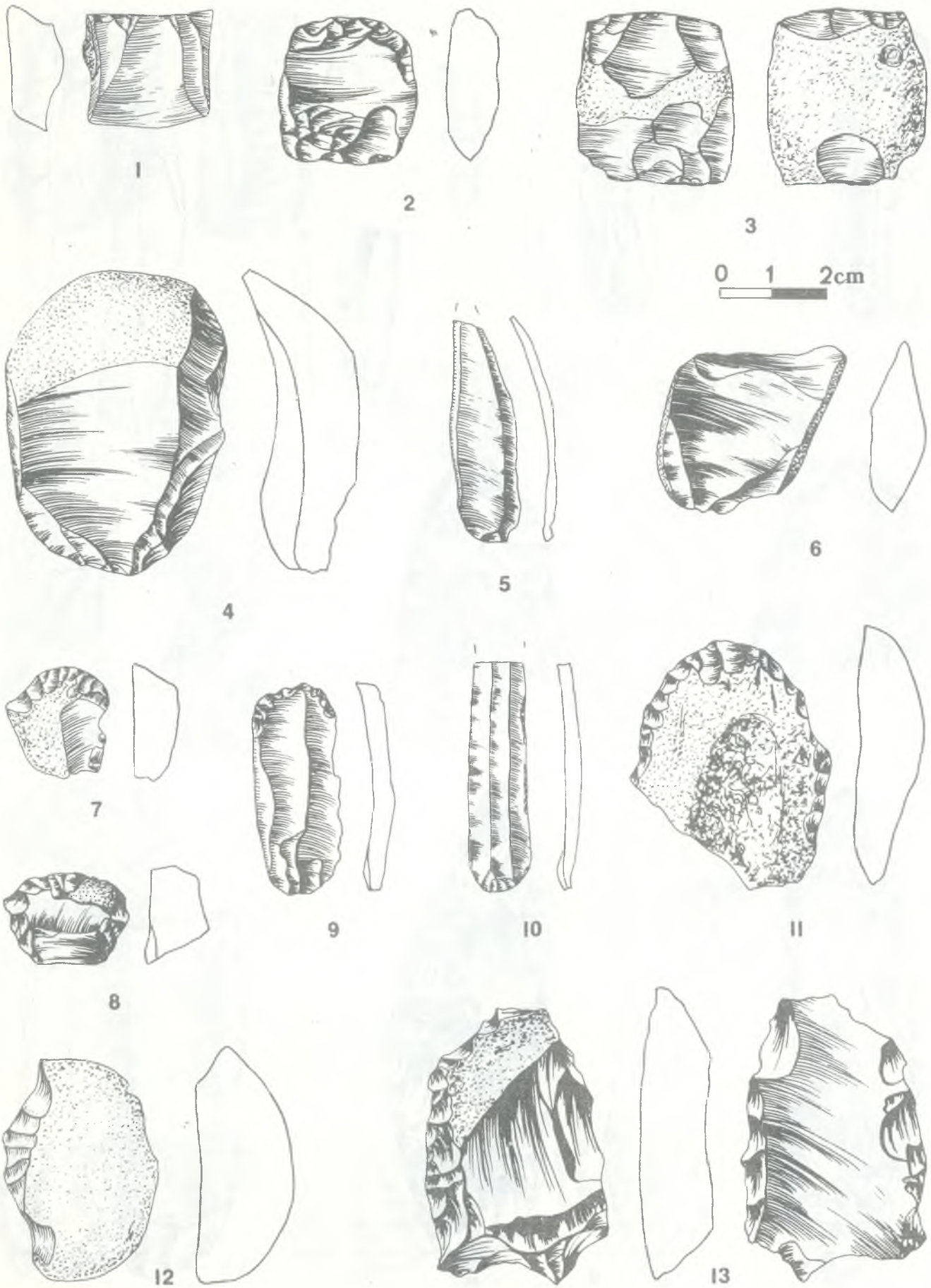

Plate XII. Dąbki 9. Peat trenches. Flints. Phase II

1 – single platform core for blades and flakes, *2, 3, 6* – scalled pieces, *4* – flake for single platform core, *5* – blade from single platform core, *7–9, 11* – end-scrapers, *10* – retouched blade, *12, 13* – side scrapers

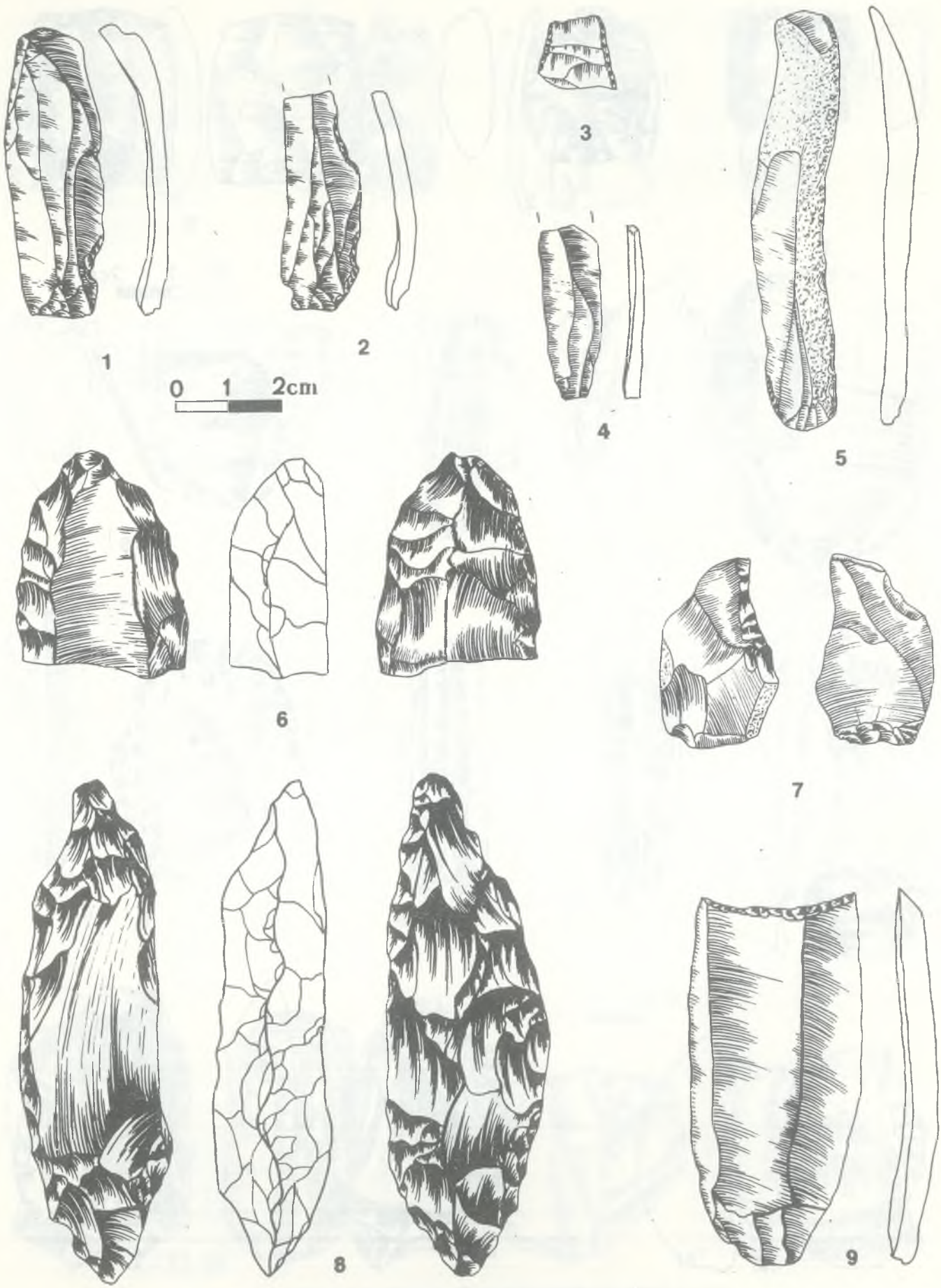

Plate XIII. Dąbki 9. Peat trenches. Flints. Phase II

1, 2, 5 – retouched blades, *3* – trapeze, *4* – blade from single platform core (secoundary position), *6* – axe, *7* – retouched flake, *8* – pic, *9* – truncation

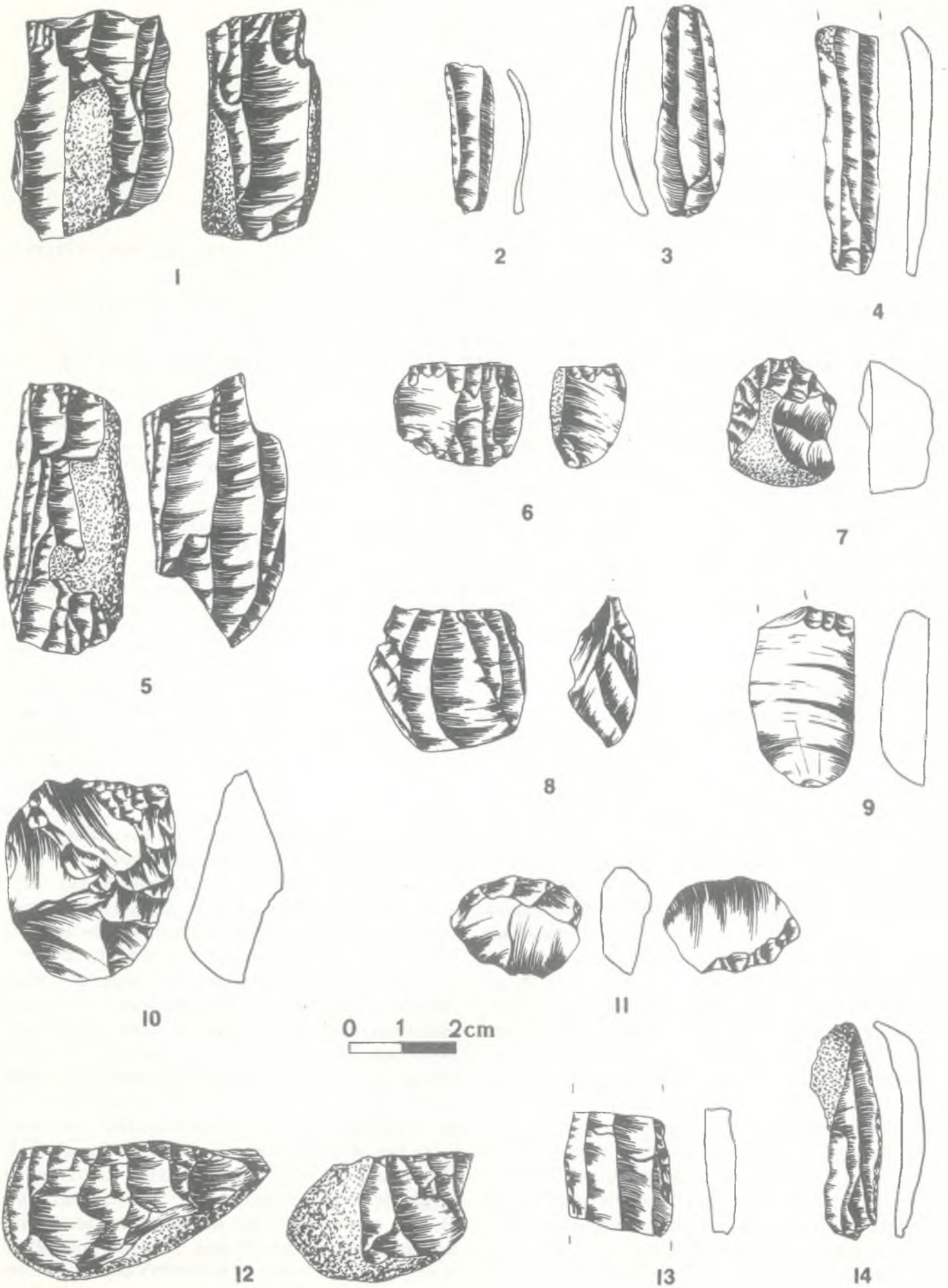

Plate XIV. Dąbki 9. Peat trenches. Flints. Phase III

1 – single platform core for blades, *2–4* – blades from single platform core, *5* – double platform from core, *6* – multi-platform core for blades, and lakes, *7, 10* – scalled pieces, *8* – multiplatform core for blades, *9* – retouched flake, *11* – end-scraper, *12* – single platform core for flakes (secondary position), *13, 14* – retouched blades