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EARLY NEOLITHIC CHIPPED STONE IMPLEMENTS IN HUNGARY

Translation

This paper deals with chipped stone implements of the Körös culture, of the Alföld Linear Pottery culture /including Szilmeg group/, of the Transdanuvian Linear Pottery /including Zseliz group/ and of the Bükk culture. Although the latter is a Middle Neolithic development its chronological position and connections with ALP and TLP give reason to discuss it at this place. On the whole 303 implements collected from 35 settlements have been investigated. Localities which yielded only lumps of raw material or waste chips have not been cluded. A detailed treatment of the kirherto published material of these cultures has also been omitted. Owing to the limited number of implements subjected to our research /as the localities of the Hungarian Early Neolithic are generally poor in chipped stone tools/, the conclusions and results of the present study should be regarded with due caution.

The discussion of the material consists of two parts. The first is a typological-morphological description of the implements according to the Upper Palaeolithic-Mesolithic nomenclature as an adequate typology for Neolithic chipped stone implements is still lacking. The other part includes an analysis of the tool-material of different cultures and parallels. Furthermore when it was possible, we have tried to identify the probable function of neolithic chipped stone tools. These attempts have been based mostly on studies of A. S. Semeonov /1957/, E.N. Wilmsen /1968/, G. F. Korobkova /1969/ and R. Tringham /1972/. This paper is, however, de-

void of application of more "objective" methods /e.g. microscopic examinations/ which makes its conclusions necessarily unstable and tentative.

Besides, our intention was to compare the chipped stone implements of Hungarian Early Neolithic with those of local Mesolithic as well as, on the basis of literature, to extend these investigations to the adjacent territories. Though it is not the proper place to discuss this problem in full details, in case of necessity it has been mentioned in a summarized form.

Description and analysis of implements of different cultures

Körös culture

No.	Locality	Culture, other	Location, No.	Raw material dimensions in cms.	Description	Literature
1	2	3	4	5	6	7
1	Hódmező-vásárhely Kotacpart, Vata farm	settlement excavations of J.Banner 1933	Hódmező-vásárhely Tornyai J. Mus. 3244/33	grey silex d=2,5	high round-scraper, abruptly retouched	Sz. D. 1933-34 pp.54-73
5	"	"	3204/33	yellow silex l=3 w=1,5	two-planed, unretouched blade	"

1	2	3	4	5	6	7
I	Hódmezővásárhely Kotacpart Vata farm	settlement excavations of J.Banner 1933	3204/33	yellow silex	two-planed, unretouched blade with crust on its ventral face	Sz.D. 1933-34 pp.54-73
3	"	"	3242/33	grey silex l=2,5 w=2	end scraper made on a three-planed unretouched blade with a working edge of 60°	"
4	"	"	3229/33	dark grey silex l=2 w=2	end scraper made on a three-planed unretouched blade with a working edge of 50°, its base-part is missing	"
6	"	"	3241/33	white silex l=3 w=0,5	long, narrow, three-planed, unretouched blade	"
2	Hódmezővásárhely Kotacpart Vata farm	settlement excavations of J. Banner 1933	Hódmezővásárhely Tornyai J. Mus. 3248/33	yellowish red silex d=2,5	circular scraper with an asymmetrical ventral face, its working edge is abrupt	Sz. D. 1933-34 pp.54-73
7	"	"	3281/33	obsidian l=2 w=0,6	two-planed, unretouched blade with crust on its ventral face	"

1	2	3	4	5	6	7
10	Hódmezővásárhely Kotacpart Vata farm	excavations of J. Banner 1934	3971/34	yellowish red silex l=5,5 w=1,3	triangular-sectioned blade retouched of on both edges of its ventral face and on the left edge of its dorsal face	Sz.D. 1935 pp.47-120
13	"	"	3984/34	grey silex	end scraper made on a two-planed blade retouched on the right edge of its ventral face and on a short section on the left edge below the scraping edge, its working edge is of 60°	"
14	"	"	3954/34	red silex	flake scraper made on a flat, tree-planed D-shaped flake carefully retouched on its ventral face	"
11	"	"	3942/34	grey silex l=2,5 w=1,5	end scraper made on a symmetrical blade. Its basepart is missing. It is retouched on the left edge of its ventral face below the scraping edge which is of 45°	"

1	2	3	4	5	6	7
12	Hódmezővásárhely Kotacpart Vata farm	settlement excavations of J. Banner 1934	Hódmezővásárhely Tornyai Mus. 3979/34	black silex l=2 w=1,3	end scraper made on a symmetrical three-planed blade, the right edge of its ventral face is slightly curved, its scraping edge is of 40°	Sz.D. 1935 pp.47-120
8	"	"	3886/34	obsidian l=2,5 w=1	three-planed, unretouched blade	"
9	"	"	3949/34	obsidian "l"=1,5 "w"=1,7	fragment of a three-planed unretouched blade	"
15	Hódmezővásárhely Bodzáspart "Pap wheeler's land"	settlement excavations of J. Banner 1937	Hódmezővásárhely Tornyai J. Mus. 1906/37	yellowish brown silex l=7 w=0,8	three-planed, narrow, slightly curved blade carefully retouched on the left edge of its ventral face	Sz.D. 1937 p.66
17	"	"	1904/37	dark grey silex l=3 w=1	three-planed unretouched blade	"
II	"	"	1908/37	greyish silex l=2,7 w=1,8	two-planed unretouched blade	"

1	2	3	4	5	6	7
16	Hódmezővásárhely Bodzás-part "Pap wheeler's land"	settlement excavations of J. Banner 1937	1902/37	red silex "l"=2,5 w=2,2 h=0,3	fragment of an unretouched wide symmetrical trapezoidal-sectioned blade	Sz.D. 1937 p.66
19	"	"	1903/37	red silex	semicircular scraper with abruptly retouched working edge	"
III	"	settlement excavations of J. Banner 1938	1500/38	red silex l=1,7 w=1	three-planed, unretouched blade	Sz.D. 1938 p.196
20	"	"	1504/38	red silex l=2,2 w=0,5	two-planed, symmetrical, triangular-sectioned blade retouched on the right edge of its ventral face	"
18	"	"	1502/38	red silex l=3,5 w=1,4	three-planed, unretouched blade	"
26	Hódmezővásárhely Bodzás-part	settlement excavations of J. Banner 1948	Budapest HNM 48/1957/	obsidian l=2,5 w=0,8	three-planed unretouched blade	Acta Arch. pp. 1-7

1	2	3	4	5	6	7
23	Besenyszög flood-plain of Tisza	collected material 1967	Szeged Móra F. Mus. 68/99/16	light brown silex l=3,6 w=1,5	two-planed, flat triangular-sectioned blade retouched on the left edge of its ventral and dorsal faces	
22	Dévaványa	settlement collected by S. Gallus	Budapest HNM 14/1936/5	obsidian l=2,4 w=1,8	fragment of base of unretouched three-planed blade	Diss. Pann. II.23. pp.32-33
21	"	"	"	white silex l=3,5 w=1,7	fragment of a three-planed, unretouched blade	"
24	Röszke-Ludvár	settlement excavations of O. Trogmayer 1964/65	Szeged Móra F. Mus. 67/2/1056	dark greyish brown silex l=2 w=1,3	two-planed blade retouched on the left edge of its ventral face and on the left edge of its dorsal face	AÉ 1965 p.232; AÉ 1966 p.293
25	"	"	"	greyish yellow silex l=6 w=3,1	high two-planed blade of triangular section. Its thick elevated base ends abruptly. The right edge of its ventral face is strongly denticulate below the tip. The bulb is lime-coated	AÉ 1965 p.232; AÉ 1966 p.293

In her treatise upon the Körös culture I. Kutzián states that chipped stone implements were present in every locality of culture. Before her work more detailed informations were published only by K. Gubitza /1905/ about the implements of Monostorszeg-Opoljenik, by Gy. Kisléghi Nagy /1907/ about those of Bukova-puszta and by S. Farkas /1889/ about the tools of Szentes-Berekhát. The material of these localities has been collected on the surface and the authors have mainly described the carefully manufactured, sometimes extremely largesized blades and nuclei.

Of the localities included in this paper, Hódmezővásárhely, Kotacpart Vata farm has yielded the richest material with its 15 implements. With the exception of three obsidian blades all of them are made of silex. The best specimen among the silex blades is a large-sized, carefully made, simmetrical one which was probably a knife /No.10/. It is most likely that other blades /Nos. 5, 6 and 8/ were also cutting implements. The collection is relatively rich in end scrapers, all of them made of silex. Nos. 4, 11 and 13 are symmetrical specimens, their working edge is manufactured by the usual fan-shaped retouch. Scrapers Nos. 4 and 11 have relatively sloping /approx. 45-50°/ working edges which make them apt to work soft materials, e.g. leather. The abrupt /approx. 60°/ working edge of No. 13 was supposedly used for working harder materials. End scrapers were undoubtelly handled for increasing their efficiency and prolonging their duration. It seems quite plausible that No. 11 - a narrow,

relatively thin, i.e. fragile end scraper - was used also in this manner. Nos. 11 and 13 are retouched on their edges. Nos. 3 and 12 can also can regarded as end scrapers. in spite of their rather irregular scraping edge the retouch of which only slightly resembles typical fan-shaped retouches. Short, high, massive tool No. 3 with its abrupt working edge was some sort of plane. The definition of tool no. 12 is rather questionable because the placing of its "working edge" shaped by flat, lateral flaking does not exclude the possibility of its being even a side scraper. Implement No. 14 made on a blade-like flake may well have been a scratcher used for /?/skinning. A highly similar implement made on a symmetrical, thick blade was found in Mohelnice by R. Tichy /1962 b/. Its end is rounded like in our specimen, but retouched from both its dorsal and vetral faces. This indicates that this tool-type was made on blades and bladelike flakes alike.

There is a round scraper /No. 1/ and a more or less semicircular scraper /No. 2/ in the assemblage. The latter was probably used as a plane on hard material. Its asymmetrical working edge and its also asymmetrically placed retouch on the margin of its scraping edge bear withess that the tool was bevirly employed.

Eight implements were found at Hódmezővásárhely-"Pap wheeler's land". Four of them /Nos. 17, 18, II and III/ are unretouched, rather atypical blades. The fifth unretouched piece /No. 16/ is a fragment of an extremely wide, flat, symmetrical and originally very large blade. A narrow, nice

blade /No. 15/ carefully retouched on its edge was probably a knife. It is possible that No. 2o was a knife, too. A semi-circular scraper /No. 19/ was probably used as plane, nevertheless its shape does not exclude the possibility that it was a side scraper.

A carefully manufactured silex blade /No. 23/ found at Besenyszög was very abruptly retouched, almost blunted on the left edge of its dorsal face suggesting that the tool was a backed cutting implement.

Two silex implements were found at Röszke-Ludvár. One is a base-fragment of a two-planed, retouched, rather thick blade /No. 24/ which can be regarded as a scraper. The other one /No. 25/ is a massive, high blade resembling more or less the large, thick, crude blades of the Bükk kulture. The strong abrupt retouch below its tip indicates heavy use. This slightly denticulated working edge was suitable for cutting, scraping or slashing sinews or vegetable fibre.

The chipped stone implements of Körös culture discussed in this paper are generally medium-sized specimens. Their average length is between 2 and 4 cms, their width is between 0,5 and 2 cms. There are some very long and narrow specimens among the blades; it seems that the culture had a marked tendency for manufacturing such large-sized blades. Certain length : width proportions were carefully kept. at least in making larger blades. The culture tried to make blades the longer the narrower.

An overwhelming part of the implements was made of flint.

Obsidian was also known and used by the culture, though the degree of its use was very different in various localities.

The chipped stone material discussed in this paper represents an ordinary early Neolithic blade-industry without mesolithic types. It is very similar to the material of surrounding territories belonging to the Körös /Starcevo, Cris etc./ culture. In those regions there is also a rather common poor blade-industry of "Upper Palaeolithic" character with the only exception of Gura Baciului in Roumania where a non-geometrical microlithic industry was pund. According to N. Vlassa /1972/ level I of the locality chronologically precedes Thessalian Pre-Sesklo and ethnically it is connected with the Lepenski Vir culture. Levels II and III are contemporary with earliest Starcevo. Thus the special position of this industry is corroborated also by the early date and connections of the locality.

Alföld Linear Pottery Culture

No.	Locality	Culture, other	Location, No.	Raw material dimensions in cms.	Description	Literature
1	2	3	4	5	6	7
34	Tiszavalk Négyes	early phase settlement excavations of P.Patay 1969	Budapest HNM 9/1970/20	obsidian l=2,9 w=0,9	three-planed, unretouched blade	AÉ. 1969 p.255

1.	2.	3	4	5	6	7
35	Tiszavalk Négyes	early phase settlement excavations of P.Patay 1969	9/1970/134	obsidian l=1,2 w=1 h=0,3	fragment of an unretouched, three-planed blade	ÁÉ. 1969 p.255
31	"	"	9/1970/298	obsidian l=2,4 w=1,4 h=0,3	three-planed blade retouched on the left edge of its ventral face	"
32	"	"	"	obsidian l=2 w=1,4	fragment of a three-planed, unretouched blade	"
33	"	"	"	obsidian l=4 w=1,6	fragment of a three-planed unretouched blade	"
36	"	"	9/1970/133	obsidian d=4 h=1,2	high scraper with semicircular working edge made on a massive flake. It has an abrupt, almost vertical working edge. The surface is slightly crusted with scars on it	"
29	"	"	9/1970/161	yellow silex l=6,4 w=2,3	two-planed slightly curved unretouched blade with triangular section	"
27	"	"	Budapest HNM 9/1970/21	light grey silex l=3,2 w=2	fagment of a three-planed, unretouched blade	ÁÉ. 1969. p.255

1	2	3	4	5	6	7
3o	Tiszavalk Négyes	early phase settlement excavations of P.Patay 1969	Budapest HNM 9/1970/93	white silex l=5 w=2 h=0,5	fragment of an unretouched trapezoidal-sectioned blade	ÁÉ. 1969 p.255
28	"	"	9/1970/297	yellow silex l=4,5 w=2 h=0,8	two-planed, triangular-sectioned blade retouched on the left edge of its ventral and on the right edge of its dorsal face	"
38	Tiszavalk Tetes	later phase settlement excavations of Patay P. 1968	Budapest HNM 69/81/53	obsidian l=2,2 w=1,2 h=0,3	three-planed, unretouched blade	ÁÉ. 1969 p.255
39	Nyiri	later phase old collection of HNM	Budapest HNM 6/1958/8	reddish grey silex	triangular-shaped, wide, unretouched flake	
IV.	Kisköre-Gát	later phase settlement excavations of J.Korek 1966	Budapest HNM 2/1967/165	yellow silex d=3 h=3	fragment of a more or less conical nucleus with negatives of some 0,5 cm wide blades	ÁÉ. 1967 p.219
37	"	"	2/1967/122	obsidian l=4 w=1,5	three-planed, symmetrical, trapezoidal-sectioned blade deliberately retouched on the right edge of its ventral face	"

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1	2	3	4	5	6	7
49	Jászberény Cserőhalom	later phase	Szolnok Damjanich J. Mus. 62/17/24	white silex l=5,4 w=1,6	blade-like flake unretouched, slightly curved, crusted in the left side of its ventral face	
46	"	"	62/17/26	white, brown-spotted silex l=2,7 w=1	lateral fragment of a three-planed unretouched blade	
47	"	"	"	yellowish red silex l=2 w=1	two-planed, unretouched blade	
48	"	"	62/17/30	obsidian l=1,3 w=0,8	two-planed, unretouched blade	
43	Nagyecsed	later phase? collected material	Budapest HNM 11/1967/8	obsidian l=2,4 w=1,3 h=0,3	three-planed, unretouched blade	
44	"	"	"	obsidian l=2,6 w=1,8 h=0,3	two-planed, unretouched blade, its base in damaged	
45	"	"	"	obsidian l=3 w=1,2 h=0,3	two-planed blade retouched on the right edge of its ventral face	
42	"	"	"	obsidian l=2,8 w=1,6	three-planed, unretouched blade	

1	2	3	4	5	6	7
40	Szamossály	later phase? excavations of J.Korek 1963	Budapest HNM 1/1964/36	obsidian	wide, flat, unretouched flakelike blade, slightly curved, lime-coated on the left side ot its ventral face	
41	"	"	"	obsidian l=4,2 w=1,2	two-planed, triangular-sectioned, unretouched blade	
50	Tiszapolgár, Basatanya	Szilmeg group settlement excavations of I.Kutzián	Budapest HNM 2/1953/285	white, brown-striped silex l=4 w=3	wide, twoplaned, concave, unretouched blade	
51	"	"	2/1953/286	white, brown striped silex l=3,5 w=1,6	two-planed, unretouched, triangular-sectioned blade	
54	Folyás-Szilmeg	Szilmeg group excavations of J.Csalog-Gy.Török	Budapest HNM 77/1952/234	yellow silex l=4,9 w=1,6 h=0,4	two-planed, triangular-sectioned, unretouched blade	
53	"	"	77/1952/205	yellowish white silex l=5,5 w=1,8 h=0,5	fragment of a three-planed, unretouched blade	

1	2	3	4	5	6	7
56	Folyás-Szilmeg	Szilmeg group excavations of J.Csalog-Gy.Török	Budapest HNM 77/1952/259	yellow silex l=3,5 w=1,9 h=0,5	three-planed, thick, unretouched, flakelike blade	
52	"	"	77/1952/568	grey silex l=4,7 w=1,8 h=0,3	fragment of a triangular-sectioned, three-planed, unretouched blade	
57	"	"	77/1952/203	obsidian l=3,5 w=1,5 h=0,2	trapezoidal-sectioned, unretouched blade	
58	"	"	77/1952/502	obsidian l=2,4 w=1,7	fragment of a threeplaned, slightly curved blade, retouched on the left edge of its ventral face	
59	"	"	77/1952/502	obsidian l=4 w=1,2	three-planed, unretouched blade, notched on both sides	
61	"	"	"	obsidian l=4,5 "w"=1	fragment of a nucleus, irregular-shaped with negatives of 0,5 cm wide blades. One of its edges is retouched	
60	"	"	77/1952/280	obsidian 2,5x2,2	fragment of a nucleus, with negatives of two 0,5 cm wide and one 0,2 cm wide bladelets. One of its edges is retouched	

1	2	3	4	5	6	7
55	Folyás-Szilmeg	Szilmeg group excavations of J.Csalog-Gy.Török	Budapest HNM 77/1952/204	yellow silex l=3 w=1,3	two-planed, unretouched, slightly concave blade	
V.	"	"	77/1952/570	grey silex l=4,3 w=1,5 h=0,2	two-planed, unretouched blade	

In addition to the material described above J. Korek has published from Uppony-Malomgát /older phase of ALP/ a semicircular quartzite scraper, a silex nucleus, several flakes and waste chips and from Uppony-Mogyorósoldal /later phase of ALP/ a chisel made of pink wood opal partly chipped on its surface. In front of the Aggtelek Cave J. Korek has found unretouched silex and obsidian blades in the layer below the mud-plaster level of the excavated area. In his opinion the elements of the Bükk kulture and those of ALP are mixed in the material, but the latter are predominaut O. Trogmayer has published retouched silex and obsidian blades and an unretouched obsidian blade from Tápé-Lebő found during the 1966 excavationx in area "B" yielded the oldest material of the locality. The pottery of both the Körös culture and ALP were found at the locality making the proper place of chipped stone implements uncertain.

Chipped stone implements described in this paper represent the oldest phase of ALP /Szatmár group: Tiszavalk-

Négyes/, the "classical" ALP /Tiszavalk-Tetes, Nyiri, Jászberény-Cserőhalom, Nagyecsed, Szamossály, Kisköre-Gát/ and a younger phase of it /Szilmeg group: Tiszapolgár-Basatanya, Folyás-Szilmeg/.

Ten implements were found at Tiszavalk-Négyes. Six of them were made of obsidian. This proportion is remarkable because even this small quantity clearly indicates that the locality is near to obsidian quarries. Although implements made of obsidian are generally smaller than the others, occassionally larger tools made of this material also occur. E.g. No. 33, fragment of an obsidian blade originally was not smaller than others made of silex or quartzite. The same is tone for semicircular scraper No. 36 which is an unique specimen.

The material found at Tiszavalk-Négyes consists of eight blades, one blade-like flake and a semicircular scraper. Silex blades are long, wide and relatively thick specimens, there is no secondary working on them; obviously they were cutting implements. Triangular-sectioned high, blade-like flake No. 28 was, however, most probably a side scraper. The possible function of obsidian blades is uncertain because of their fragmentary condition. No. 34 is a fragment of a characteristic, carefully made bladelet being well-known in every culture using obsidian. At the localities of Bükk culture this "type" may run to even lo per cent of the whole material. These generally unretouched bladelets were rarely made of silex or quartzite. Presumably this group of extremely

smallsized blades had a special function, since their negatives are frequently found on nuclei. This may indicate that they were made for some special purpose.

No. 35 can only partly be regarded as a true semicircular scraper, being really a misture of a semicircular type and a massive high scraper made on a thick flake. The bulky appearance of the tool proves that it was rather heavily employed. Besides its working edge is very wide and abrupt so it can be regarded as a plane-like tool used probably for woodworking. Although both semicircular and flake scrapers are very widespread, especially from Upper Palaeolithic onwards it is highly probable that within these types and even within the in combinations there are functionally fairly different specimens. It means that real analogies of the Tiszavalk specimen must have similar working edge and more or less the same size and shape. M.Brudiu /1971/ published a similar scraper from the Late Tardenoisian site Beresti in Moldavia. According to S. Vencl /1960/ this type of scrapers is characteristic of Stichbandkeramik culture in Czechoslovakia. The most similar example published by G.F. Korobkova /1969/ derives from Kyrk-Szaryz, a locality belonging to Early Neolithic Kara-Bogaz complex.

There is only one locality belonging to the oldest phase of ALP in the veighbouring territories, i.e. in Ciumesti-Berea in Roumania representing the younger phase of the Szatmár-group /N.Kalicz-J. Makkay 1972/. According to A. Paunescu /1963/ the material of the settlement consists of

mainly unretouched and retouched blades /70 per cent/, trapezes /5 per cent/ and some double blade borers, scrapers, truncated blades, blade borers, blunted blades, massive flake scrapers and prismatic, pyramidal and irregular-shaped nuclei. 83 per cent of the implements is shorter than 3,5 cm. In the vicinity of this Neolithic settlement there is a Mesolithic locality; Ciumesti-Pasune, representing the so-called "Dune-Tardenoisian" type of Middle European Late Mesolithic, i.e. a geometrical microlithic industry. While the industry found at Ciumesti-Pasune is a real geometrical microlithic one, that of Ciumesti-Berea is a microlithic industry including only one genuine geometrical type, i.e. the trapeze. Altough the presence of trapeze is hot a positive proof for Mesolithic connections, in this case the vicinity of the two localities, the unquestionable similarities between the two industries as well as some changes in the composition of tool-material coused by possible changes in the way of life speak for these connections.

On the other hand, there is a marked difference between the chipped stone material of Tiszavalk-Négyes and that of Ciumesti-Berea. Above all, no ometrical types, blade lorcos or blunted and truncated blades are present at Tiszavalk. In other words the material of Ciumesti-Berea is much more similar to that of Ciumesti-Pasune than to that of Tiszavalk. At the moment, infortunately no sufficient explanation can be given for this phenomenon because of the scarcity of material. Thorough investigations on a much

richer comparative material would show the tool-types characteristic of the Szatmár group. This would elucidate the question whether the Early Neolithic Industry in Ciumesti-Berea was a special phenomenon developed from local Mesolithic/Pre-Neolithic or not.

Otherwise the comparison of the length:width proportion of blades of the Szatmár group and of younger ALP does not display any difference between the two groups.

On the whole there were only 14 tools found at localities of classical ALP. Morphologically they are blades or blade-like flakes. The use of obsidian can be obsered even in regions /e.g. Jászberény/ lying relatively far from obsidian quarries. Dimensions of tools made of obsidian and silex are fairly similar. Blades are generally symmetrical specimens. High trapezoidal-sectioned retouched silex blade No. 37 found at Kisköre-Gát was probably a scraper.

The chipped stone material of the Szilmeg group is represented by lo specimens found in Folyás-Szilmeg and by two insignificant blades found in Tiszapolgár-Basatanya. The fact that approximately half of the tools found at Folyás-Szilmeg was made of obsidian well illustrates both the geographical position of the locality and the influence of the Bükk culture. Blades - first of all No. 53 - were probably knives. A promiveut piece of the collection is No. 60, a fragment of an obsidian nucleus the shape of which reminds of a nucleus scraper. This specimen, however, greatly differs

from regular nucleus scrapers by having relatively sharp retouched edges suggesting that the tool must have been a cutting implement. Yet it is very difficult to determine its real function; at any rate the tool-makers wanted to reuse this fragment by subsequent reshaping.

Fragment of an originally conical nucleus No. 21 retouched at its fracture may also have been used for some sort of work. Various tools reshaped from nuclei or from their fragments are highly characteristic of Neolithic tool-making.

In brief, chipped stone implements of ALP were made of silex and obsidian, generally of the same size. They represent a more or less typical Neolithic blade-industry with only few characteristic types /e.g. No. 36/. There are no Mesolithic types in the material found in Hungary.

Average width of both silex and obsidian blades and bladederivatives is between 1 and 2 cms. The tendency for making long and wide blades is present in manufacturing of both obsidian and silex blades. Over 4 cm's length, however, silex tools - and to a lesser extent - also obsidian tools can be divided into two groups. One is a group of long, relatively narrow blades the length:width proportion of which is rather constant; the other group consists of blades the length of which is only slightly but their width is rapidly increasing. This proportions, however, are not connected with any definite tool-type. The only connection noticeable between certain dimensions and a - supposed - tool-type is in the group of small obsidian blades.

No.	Locality	Culture, other	Location, No.	Raw material dimensions in cms.	Description	Literature
1	2	3	4	5	6	7
73	Zalavár	/?/early and later phase /Zselizi-group/ excavations of B.Bálint 1954 settlement	Budapest HNM 35/1955/167	red silex l=2,5 w=1,8 h=0,3	three-planed trapezoidal-sectioned blade, retouched on the left edge of its ventral and dorsal face	ÁÉ. 1958 p.82.
67	"	"	35/1955/349	red silex l=2 w=1	fragment of a three-planed, unretouched trapezoidalsectioned blade	"
62	"	"	35/1955/347	red silex l=4,2 w=1,1	two-planed blade retouched on both edges of its ventral and dorsal face	"
72	"	"	35/1955/351	red silex l=2,8 w=1	two-planed blade slightly curved with tipped end finely retouched from its dorsal face, the bulb remained	"

1	2	3	4	5	6	7
63	Zalavár	/?/early and later phase /Zselizi-group/ excavations of B.Bálint 1954 settlement	Budapest HNM 35/1955/348	red silex l=3,6 w=1,1 h=0,7	three-planed, triangular-sectioned blade, obliquely truncated on one end, retouched on the right edge of its ventral face and on both edges of its dorsal face	AÉ. 1958 p.82.
75	"	"	35/1955/126	red silex l=2,7 w=1,9	two-planed, unretouched "B"-shaped blade	"
64	"	"	35/1955/27	red silex l=3,2 w=1,1	two-planed blade with roundes and retouched base. The tool is otherwise unretouched	"
68	"	"	35/1955/172	red seilex l=2,5 w=1,4	fragment of a three-planed, symmetrical, trapezoidal-sectioned, unretouched blade	"
84	"	"	35/1955/178	dark brown silex l=5,2 w=1,2	three-planed, flat, wide, trapezoidal-sectioned, unretouched blade	"
69	"	"	35/1955/169	red silex l=3,3 w=1,5	fragment of a two-planed, unretouched blade	"
65	"	"	35/1955/170	red silex l=3,2 w=1	fragment of a two-planed, unretouched blade	"

1	2	3	4	5	6	7
66	Zalavár	/?/early and later phase /Zselizi group/ settlement excavations of.B.Bálint 1954	Budapest HNM 35/1955/180	red yellow dotted silex l=1,8 w=0,9	fragment of a two-planed, unretouched blade	AÉ. 1958 p.82.
71	"	"	35/1955/350	red silex l=3,2 w=1,1 h=0,4	three-planed, trapezoidal-sectioned blade obliquely truncated on both ends, retouched on the left edge of its ventral face	"
77	"	"	35/1955/28	red, white dotted silex l=1,5 w=1,2	base fragment of a two-planed blade, retouched on its base and on right edge of its dorsal face and on its ventral face near the end of its ridge	"
74	"	"	35/1955/125	red silex l=2,5 w=1,1	end scraper made on a three-planed, flat blade, retouched on the right edge of its dorsal face	"
70	"	"	35/1955/171	grey silex l=3 w=1,5	fragment of a three-planed, triangular-sectioned, unretouched blade	"

1	2	3	4	5	6	7
VI.	Zala-vár	/?/early and later phase /Zseliz group/ settlement excavations of B.Bálint 1954	Budapest HNM 35/1955/28	red, white dotted silex l=1,5 w=1,2	fragment of a two-planed, unretouched blade	AÉ. 1958 p.82.
82	"	"	35/1955/26	red silex l=0,6 w=1,1	fragment of a two-planed blade blunted on its right edge	"
86	"	"	35/1955/277	red silex l=2,6 w=2	crude, flake-like blade with tipped end bending backwards like a bill, retouched on both edges of its ventral face, there is an abrupt retouch on the right edge being denticulated	"
85	"	"	35/1955/352	red silex l=2,4 w=1	three-planed balde, its tipped end bends backwards like a bill, its right edge of its ventral face is abruptly retouched	"
90	"	"	35/1955/362	greyish-yellow silex "h"=4	fragment of a probably conical nucleus, with the negatives of 1 cm wide bladelets, one of its edges is retouched	"

1	2	3	4	5	6	7
83	Zala-vár	/?/early and later phase /Zseliz group settlement excavations of B.Bálint 1954.	Budapest HNM 35/1955/24	red silex 1x1,2	trapezoidal fragment of a two-planed blade, its longer, parallel edge is very finely denticulated, one of its oblique edges is retouched	AÉ. 1958 p.82
78	"	"	35/1955/362	red silex l=1,7 w=1,2 h=0,3	wide, thick, threeplaned blade notched and retouched below its fractureline on the ventral face, its end is missing	"
76	"	"	35/1955/168	red silex l=2 w=1,1 h=0,6	high, triangular-sectioned flake retouched on both edges of its ventral face	"
79	"	"	35/1955/356	red silex d=1,9 "m"=0,4	scraper made on a circular, more or less triangular-sectioned flake with scars on its surface. There is a semicircular working edge on the right side, traces of retouch on the left side	"

1	2	3	4	5	6	7
91	Zalavár	/?/ early and later phase /Zseliz group/ settlement excavations of B.Bálint 1954.	Budapest HNM 35/1955/360	yellowish grey silex l=5,5 w=3	massive, irregular-shaped flake with scars on its surface, retouched at its distal end	AÉ. 1958. p.82
94	"	"	35/1955/175	red silex l=3,5 w=3 h=1,2	massive, triangular-sectioned flake with scars on the left side of its ventral face and retouched on the rigth edge of its dorsal face	"
92	"	"	35/1955/362	yellowish grey silex d=2,6	high, massive more or less circular flake retouched on a short section along its edge	"
93	"	"	35/1955/355	light brown silex l=3 w=2,3	flake with high, convex ventral face with scars on it, the right edge of its ventral face and both edges of its smooth dorsal face are retouched	"
95	"	"	35/1955/357	yellowish grey silex l=3,4 w=2,5	quadrangular fragment of a flat, trapezoidal-sectioned, slightly concave blade, lime-coated on the distal end of its ventral face and abruptly retouched on the right edge of its ventral face	"

1	2	3	4	5	6	7
89	Zalavár	/?/early and later phase /Zseliz group/ settlement excavations of B.Bálint 1954	Budapest HNM 35/1955/129	red silex l=3,8 w=2,7 h=1,2	flake scraper high, flat, triangular-sectioned; unretouched with abrupt working edge	AÉ. 1958. p.82
88	"	"	35/1955/178	dark brown silex "l"=4 w=0,8	chip of nucleus unretouched, triangular-sectioned, broken in an obtuse angle	"
87	"	"	"	dark brown silex "l"=5 w=1,2	chip of nucleus, unretouched, triangular sectioned, broken in obtuse angle, similar to No.88	"
80	"	"	35/1955/179	dark red silex l=3,1 w=1,1	fragment of a chip similar to Nos. and 88, triangular-sectioned, unretouched	"
81	"	"	35/1955/177	dark red silex length of the edge of its base =1	fragment of a nucleus similar to a nucleus scraper, but it has no scraping edge. Its base is an almost regular quadrate, finely, retouched on two edges. There are negatives of five narrow bladelets on its ventral face	"
96	Szentgyörgy-völgy	old collection of HNM	Budapest HNM 50/1880/19	red, white dotted silex l=3,3 w=1,2	two-planed blade, retouched on the middle of its left edge on its dorsal face	"

1	2	3	4	5	6	7
97	Szentgyörgyvölgy	old collection of HNM	Budapest HNM 50/1880/20	yellowish grey silex l=4,3 w=1,5	blade, two-planed, truncated obliquely at one end, retouched on the left edge of its dorsal face and on both edges of its ventral face	AÉ 1958. p.82
98	"	"	50/1880/6	red silex d=3,5 h=1,5	fragment of nucleus, broken regularly with parallel line of the base. Originally its shape was by all means conical. There are negatives of symmetrical, 1,2 cm wide blades on it	
99	Keszthely Zsidi street	Zseliz group settlement excavations of Balaton Mus.1969	Keszthely Balaton Mus. 70/13/1	reddish brown silex l=2,2 w=0,8	two-planed, unretouched blade	
100	"	"	"	reddish brown silex l=2,5 w=1,2	three-planed blade, slightly damaged on the right side of its ventral face, retouched on the left edge of its ventral face	

1	2	3	4	5	6	7
101	Keszthely Zsidi street	Zseliz group settlement excavations of Balaton Mus.1969	Keszthely Balaton Mus. 70/13/1	reddish brown silex l=3,5 w=1,5 h=0,5	three-planed, symmetrical, trapezoidal-sectioned blade, notched on the left edge of its ventral face, both edges of its ventral face and on the left edge of its dorsal face	
102	"	"	"	reddish brown silex "l"=3,5 w=2,5 h=0,5	great, more or less quadrangular lump of silex, with smooth dorsal face and negatives of blades on its high ventral face. The left edge of its ventral face and the right edge of its dorsal face is retouched	
103	"	"	70/13/2	light grey silex "l"=1,4 w=1,3	fragment of a three-planed, simmetrical trapezoidal-sectioned very flat blade, retouched on the right edge of its ventral face	
104	"	"	70/14/18	reddish brown silex length of an edge: 2,8	more or less triangular-shaped flake finely retouched on two edges of its ventral face	

1	2	3	4	5	6	7
105	Keszthely Zsidi street	Zseliz group settlement excavations of Balaton Mus.1969	Keszthely Balaton Mus. 70/14/19	light grey silex l=3 w=1	sickle-blade two-planed, with high gloss on its retouched left edge of its ventral face, with triangular-shaped brilliot gloss on the upper right and upper left corner of its ventral and dorsal faces, respectively	
107	"	"	70/14/20	reddish grey basalt l=5 w=2	big, crude, thick triangular-sectioned, unretouched "blade", perhaps a half-product	
106	"	"	"	grey silex l=2,5 w=2	blade-like flake, triangular-sectioned, more or less triangular-shaped, abruptly retouched on the left edge of its ventral face, its dorsal face is smooth	
108	"	"	"	greyish white quartz pebble l=4	fragment of an oval pebble with traces of chipping on one side	

1	2	3	4	5	6	7
109	Sármelék	?Zseliz group collected by K.Dornyay 1943	Keszthely Balaton Mus. R.19.43.	chalcedon greyish blue l=7 w=1,8	two-planed, flat, symmetrical, triangular-sectioned blade retouched on the left edge of its ventral face	MRT I. p.138
114	Békásmegyer	Zseliz group settlement excavations of F. Tompa 1932	Budapest HNM 9/1937/3	obsidian l=3,2 w=0,9	two-planed, slightly concave, unretouched blade	BRGK 24/25 p.30
110	"	"	"	red silex l=5 w=2	three-planed unretouched, sligthly concave blade	"
111	"	"	"	red silex l=4,7 w=1	three-planed blade obliquely truncated at both ends, retouched on the left edge of its ventral face and on both edges of its dorsal face	"
112	"	"	9/1937/2	red silex l=3,6 w=2,4	end scraper, made on a thick three-planed blade; the right edge of its ventral face is lime-coated, retouched on the right edge of its ventral and dorsal faces	"

1	2	3	4	5	6	7
113	Békás-megyer	Zseliz group settlement excavations of F.Tompa 1932	Budapest HNM 9/1937/2	white silex l=2,2 w=1,3	scraper made on a two-planed blade. On the base part the centre ridge of the tool becomes a fan-shaped retouch. The base part is damaged	BRGK 24/25 p.30.
115	"	"	9/1937/4	obsidian d=1,5 h=3	conical nucleus with negatives of several very narrow bladelets	"
133	Pomáz-Zdravlyak	Zseliz group settlement, collected by Gy.Sárközi excavations of I.Kutzián 1956	Budapest HNM 34/1957/253	obsidian l=1,7 w=1,2	fragment of a two-planed, unretouched blade	AÉ. 1958. p.81.
134	"	"	"	obsidian l=3,7 w=1,2	three-planed, trapezoidal-sectioned, unretouched blade	"
136	"	"	"	obsidian l=3,1 w=1,7	blade, truncated at its distal end, its base is rounded, blunted on both edges of its ventral face, the tool is slightly concave with flat surface retouch on its ventral face, the dorsal face is smooth, with bulb	"

1	2	3	4	5	6	7
135	Pomáz Zdravlyak	Zseliz group settlement, collected by Gy.Sárközi excavations of I.Kutzián 1956.	Budapest HNM 34/1957/255	obsidian l=3,2 w=1,5	massive, concave unretouched flake with surface scars	AÉ. 1958. p.81
129	"	"	34/1957/267	red, yellow dotted silex d=1 h=0,3	round scraper retouched abruptly	"
117	"	"	34/1957/259	red silex l=3 w=1,5	three-planed slightly concave, unretouched blade	"
121	"	"	"	red silex l=2 w=1,2	three-planed, unretouched blade	"
118	"	"	"	red silex l=3,2 w=1,4	three-planed, unretouched blade	"
126	"	"	"	liber-coloured silex l=3,3 w=2	two-planed unretouched blade	"
125	"	"	"	grey silex l=3,6 w=1,8	three-planed unretouched blade	"
119	"	"	"	red silex l=4 w=1,5	three-planed unretouched blade	"

1	2	3	4	5	6	7
119	Pomáz-Zdravlyak	Zseliz group settlement collected by Gy.Sárközi, excavations of I.Kutzián,1956	Budapest HNM 34/1957/259	red silex l=4 w=1,5	three-planed unretouched blade	AÉ. 1958. p.81
116	"	"	"	red silex l=2,5 w=1	fragment of a two-planed unretouched blade	"
120	"	"	34/1957/256	red silex l=4 w=1,4	three-planed unretouched blade	"
124	"	"	"	red silex l=4 w=2	fragment of a three-planed unretouched blade	"
122	"	"	"	red silex l=3,5 w=1,2	two-planed unretouched blade	"
123	"	"	"	red silex l=2,5 w=1,4	short, thick three-planed unretouched blade	"
127	"	"	34/1957/259	yellowish white silex l=1,5 w=2	base fragment a two-planed, unretouched blade	"

1	2	3	4	5	6	7
132	Pomáz Zdravlyak	Zseliz group settlement collected by Gy.Sárközi, excavations of I.Kutzián 1956	Budapest HNM 34/1957/260	red, yellow dotted silex l=2,4 w=1,2	two-planed triangular-sectioned blade blunted on both edges of its ventral face	AÉ. 1958. p.81
128	"	"	34/1957/261	red silex l=2,5 w=1,1 h=0,5	blade-borer-scraper made on a two-planed blade blunted on both sides of its ventral face, its base is retouched like a semicircular scraping edge, its tip is retouched from both faces	"
131	"	"	34/1957/262	dark brown silex l=2,2 w=1	blade borer made on a two-planed blade, its base part is missing. The whole outline of the tool is finely retouched from the ventral face /except below the tip/, the tip is retouched from both sides	"
130	"	"	34/1957/268	grey silex l=3,3 w=2,2	end scraper made on an unretouched, wide, three-planed blade	"

Beside the implements described above S. Mithay published some atypical silex blades and a nucleus from Győr-Pápai vám /Zseliz group/. V.Gábori-Csánk /1964/ mentioned a few silex blades and an obsidian nucleus from Békásmegyer /Zseliz group/.

There is no other material in eluded in this paper representing the older phase of TLP than the highly disputable Zalavár collection a part of which may be regarded older than the Zseliz group.

The collection of Zalavár consists of 35 tools, more than half of which are blades and blade-derivatives. All specimens are made of silex, they are mostly mediumsized. Blades are often manufactured by secondary working, e.g. No.63, 71 and 83 are truncated obliquely, Nos. 65, 73 and 82 are slightly denticulated. No. 82 is a blunted blade,No. 65 must have been a knife with a steep, slightly denticulated edge. Perhaps Nos. 66 and 73 and also No. 64 were cutting implements. No. 64 was probably used with its bulb "upwards". It may be proved by traces of the bulb which otherwise has generally been removed to facilitate handling. A carefully worked blade /No.62/ retouched on both edges was also a cutting implement. Its deliberate retouch served for sharpening and resharpening. One of the two truncated blades /No. 63/ has a remnant of the nucleus on it. It is very likely that the tool was not a half-product, thus this remnant of nucleus may have been used as chisel. Blunted blade No. 82, base fragment of blade No. 77 and small notched blade No. 78 are

in fragmentary condition which considerably agravate s the definition of their function.

In the material there is only one end scraper made on a narrow blade /No. 74/. It has a relatively abrupt working edge.

Tool No. 83 is a trapezoid denticulated very carefully on one of its longer sides and retouched on one of its oblique edges.

There were severel nucleus fragments in the locality. Nos. 76 and 88 - pointed, retouched specimens with triangular cross-section - or Nos. 80 and 76 must have been reused for some sort of work /cutting, boring, etc./

There are also several retouched flakes of various shape in Zalavár. High, almost circular-shaped flakes like Nos. 92 and 94 were probably used as side scrapers. Perhaps No. 91, was a scraper, too. High, massive flake No. 93 was suitable for sliding or scraping in various directions, perhaps it was used for making soft hide and skin. High, massive scraper No. 89 made on a bladelike flake has a very abrupt working edge which gives the tool the character of a plane. Scraper No. 79 was made on a circular-shaped flake having a sloping working edge suitable for sliding on soft materials.

Two implements /Nos. 85 and 86/, one of them made on a blade, the other on a flake, remind of the so-called "burin bec de perroquet". They have, however, no real chisel edge. Perhaps they were used as borers or awls. At the same time

their convex edge is blunted, so it is not exluded that they had another working edge /? cutting edge/ on their concave side, too.

Tool No. 81 made of a nucleus is very similar to an implement made of an obsidian nucleus found at Folyás-Szilmeg /No. 60/.

Localities belonging to the younger phase of TLP are; Keszthely-Zsidi street, Békásmegyer, Pomáz-Zdravlyák, Szentgyörgyvölgy.

The material found at Szentgyörgyvölgy consists of an obliquely truncated silex blade /No. 97/ resembling similar tool-types of Zalavár, several nuclei with negatives of fairly regular blades frequently of the same size per nuclei. An average specimen is well represented by No. 98. An extensive tool-making activity must have been characteristic of the settlement, perhaps they even exported their products.

Implements found in Keszthely-Zsidi street were made of silex with the single exception of a high, crude, triangular-sectioned basalt blade which seems to have been a half-product /No. 107/. There are six blades among the implements; Nos. 101 and 103 were probably knives. No. 101 is a narrow-angled specimen, one of its edges is sharpened, the other is blunted. There is also a notch on the tool the purpose of which is undeterminable because of the surface crust.

There is an obliquely placed high gloss on the edge of blade No. 105. The tool belongs to G. Behm-Blancke's "A" type of reaping tools used in the Linear Complex /1962-63/. It is similar to a sickle blade published by E. Comsa /1960/ from Glavanestii Vechi also quoted by B. Behm-Blancke as a characteristic specimen. There is also a brilliant gloss along the opposite side of the blade presumably caused by handling.

More or less triangular-shaped flake No. 104 was used perhaps as a borer or - because of the strong deliberate retouch on its left edge - as a side scraper. Presumably strongly retouched blade-fragment No. 106 was also used as craper.

In the material there is a retoucher made of a quartzite pebble /No. 108/.

A fragment of a nice, extremely large-sized, symmetrical blade /No. 109/ was found at Sármellék.

The material of Békásmegyer /Zseliz group/ located in HNM consist of five tools and five nuclei. Two relatively large blades were made of silex, one of them is wide, thick, unretouched /No. 110/, the other one is a narrow, truncated specimen also retouched on its edges /No. 111/. There are two end scrapers in the material; one of them was made on a large, wide blade /No. 112/, the other one on a small, narrow blade /No. 113/. Not only the different size and shape but also the different material of the two Scrapers suggest a functional difference between them. No. 112 is more massi-

ve, its shape slightly widens toward the working edge, its abrupt working edge proves that it was used for working hard materials - perhaps for wood-working. No. 113 has a rather sloping working edge very apt for work by soft materials perhaps hide or skin. Its base is missing, so it cannot be stated with any certainty whether the shallow flakes at the lower part of the implement ramifyng from the ridge of the tool belonged originally to another scraping edge - i.e. the tool was morphologically a duble scraper - or the lower part of the tool was retouched to facilitate handling. As no. 112 was made of radiolarite a raw material of extremely high quality, it may righthy be assumed that it was an important specimen made and treated with special care. No. 113 on the other hand, was made of silex of inferior quality. Carefully manufactured, long, narrow blade No. 111 was probably a cutting implement. A blade-fragment /No. 114/ and a small conical nucleus /No. 115/ with the negatives of very narrow bladelets were made of obsidian. This raw material got to this region by contacts with the Bükk culture. Nucleus No. 115 is very similar to those known from localities of the Bükk culture, e.g. to Nos. 151, 156 or 246.

27 implements were found at Pomáz-Zdravlyák. Four of them were made of obsidian, the others of silex. The age and geographical site ot the locality is similar to Békásmegyer, thus the presence of obsidian here can well be explained the same way as there. There are 12 unretouched blades among the tools, one of them /No. 112/ is truncated. Blades Nos. 112,

124 and perhaps also 118 as well as Nos. 133 and 134, were probably used as cutting implements. The three former specimens were made of silex, the two latter of obsidian.

There is a relatively large, high silex end scraper made on a more or less triangular-sectioned blade in the material. Its sloping working edge suggests to use it as a craper on soft materials. The only round scraper of the collection is a small, carefully worked specimen with abrupt retouch /No. 129/. It is very diffucult to determine its function. It seems to be too small to be handled, probably it was used for scraping like a finger-nail. No. 128 is a combination of a scraper and a blade borer made of red silex of high quality. Its edges are blunted. Perhaps it was even originally a combined tool /a "grattoir-percoir"/, however the possibility is not exluded that an original end scraper was later reshaped for a borer. The scraping edge of the tool was probably used for working hard materials.

No. 131 is a carefully retouched pointed tool made on a blade, probably a borer. It is not clear whether its present condition was fragmentary or it was broken intentionally; at any rate none of these factors would modify essentially our view of the function of the tool. If it is fragmentary, it has several analogies among blade borers of almost all the Upper Palaeolithic and even of some Mesolithic cultures, e.g. Late Tardenoisian. It is well-known also from the Early Neolithic in the Near East sufficeit to mention only Beidha, level II; Scha'ar ha Golan /yarmoukien/, from

Cardium and Danilo cultures as well as from the material of the Younger Linear Complex /e.g. Müddersheim or Köln-Lindenthal/, or from the localities of Lengyel culture. Its most significant analogy can be found however at Borovce, Czechoslavakia /Zseliz group/. But if the tool was intentionally broken, very similar specimens can be observed e.g. at Fiera-Cleanov, Oltenia, described by S. Nicolaescu-Plopşor /1937-40/ as arrow-heads or borers. It is worth mentioning that the pointed part of these tools was made virtually with the same technique as the peduncle of pedunculate points. In this respect tools made with this technique can also be regarded as analogies of the Pomáz specimen, e.g. points of Swidry, swiderio-tardenoisian and related groups. But the tool found at Pomáz was undoubtedly a borer representing the type "Durchbrechbohrer" called so by L.F. Zotz /1928/. Similar specimens are widespread in several cultures e.g. in Magdalenian /e.g. Laugerie Basse, Oelberg-Kuckucksbad/, in Late Tardenoisian /Sered/, in younger phase of the Linear Complex /Säckingen-Buchbrunnen/, etc.

No. 136 is a highly questionable specimen being morphologically a truncated blade with rounded base and flat retouch over all its ventral face. Its surface retouch makes its appearence more or less similar to implements flaked over their whole surface. These tools have become more and more widespread in Europe from the Late Neolithic onwards. This specimen, however, is more similar to the obsidian blades and blade-like flakes worked with the same technique that

were published by V. Milojčić /1960/ from the tumulus near Marathon and from the vicinity of Athens. He described them as Pre-Ceramic Neolithic tools. At the same time the Pomáz tool has an obviosly "young" character caused by its "unusual" forma, namely the part below the truncated line is notched from both edges, so it forms almost a crude "peduncle". Despite this the tool was not a projectile head, since its upper part is missing, its base is rounded, the bulb remained and the implement is slightly curved. Conseguently, these characteristics made it unsuitable for being used as a projectile head. Most probably it was used for scraping.

The chipped stone tools found in the localities of the Zseliz group in Hungary are fitting fairly well into the group of chipped stone implements found in earlier phases of the Linear Complex in Middle and Eastern Europe and even in the earliest phases of the culture in Western Europe. They represent rather undifferentiated blade-industries of "Upper Palaeolithic" character with very few types and without Mesolithic types. They do not adapt true microlithic technique. /H. Quitta 1960, S. Vencl 1960, R.A. Newell 1972, M. Tringham 1972/. This picture can be completed by consequences drawn by R. Tichy /1962 a,b/ from the material of Mohelnice that belongs to the older phase of Linear Ceramics in Moldavia. According to R. Tihcy the Mohelnice implements have strong affinities to Pre-Ceramic Neolithic tools. The material of the Hungarian localities reminds first of all the

tools found at Borovce and Šarovce of the Zseliz group. /B. Novotny 1961, T. Kolník-J. Paulík 1957/. It is clearly noticable that the Zseliz group had already relatively more tool-types than the earlier phase. In the typological respect the disputed material of Zalavár only slightly differs from that of the Zseliz group. An overwhelming majority of their tool-types is common, particularly their blades are similar. Wide, massive scraper, borer and borer-scraper are lacking in the material of Zalavár, but part of them is absent also from other localities of the Zseliz group. Furthermore, none of these types are characteristic of only one culture or horizon. The only tool which is present at Zalavár and absent from other localities is the trapezoid. This tool, however, is not the classical "Mesolithic" geometrical type or its derivative /chiselended or transverse arrow-heads/ known also from other cultures. The Zalavár specimen is highly similar to e.g. trapezoids used as sickle-blades found at Olszanicza, Poland /Zseliz group/ published by S. Milisauskas /1973/. The shape of the Zalavár specimen is similar to them, but there is no high gloss on it. Taking into consideration that there are no true geometrical types /or even more or less geometrical ones like this trapezoid/ in the material found at Zalavár, and that the industry had a rather developed, true Neolithic character, it is possible that either the whole chipped stone material of the locality or at least part of it represent the Zseliz group.

The chipped stone material of TLP discussed in this

paper shows the tendency for making long and wide blades. This tendency is far more marked in this culture than in others. An other interesting phenomenon is that blades narrower than 1 cm are not found in the material, although - according to their negatives on nuclei - they must have existed. The industry used mostly medium-sized implements. The average length is between 1,5 and 4,5 cms, the average width is between 1 and 1,5 cms. This figures are valid for both the Zalavár and the Zseliz group.

Bükk culture

No.	Locality	Culture, other	Location, No.	Raw material dimensions in cms.	Description	Literature
1	2	3	4	5	6	7
137	Eger-Kis-eged	settlement old collection of HNM	Budapest HNM 79/1925/15	white silex l=5 w=2,2 h=0,6	two-planed high, symmetrical, triangular sectioned unretouched blade	
VII.	"	"	79/1925/14	white quartzite l=3,7 w=2 h=0,3	two-planed, flat triangular-sectioned unretouched blade	
138	"	"	79/1925/17	obsidian l=3,4 w=2,1	three-planed, unretouched blade	

1	2	3	4	5	6	7
139	Eger-Kis-eged	settle-ment old collection of HNM	Budapest HNM 79/1925/18	obsidi-an l=3,3 w=1,7	three-planed, + symmetrical blade, retouched on both edges of its ventral face and on the left edge of its dorsal face	
142	"	"	79/1925/16	violet coloured silex l=7 w=1,5 h=0,3	three-planed blade truncated at one end, retouched on both edges of its ventral face and on the right edge of its dorsal face	
140	"	"	79/1925/13	violet colured white dotted silex "d"=3,5	almost circular flake scraper, flat, with scars on its ventral face, with great bulb on its dorsal face, the tool is slightly retouched at its distal end	

+All localities known till that time - except Viskó and Hidas-németi-are included in J. Korek-P. Patay: The Distribution of Bükk Culture in Hungary /R.F. II. 2. 1958./

1	2	3	4	5	6	7
141	Eger-Kis-eged	settle-ment old collecti-on of HNM	Budapest HNM 79/1925/9	black quaartzite l=8 w=3 h=1,5	high, triangu-lar-sectioned, unretouched bla-de-like pieces, probably half-products+	
146	Hernád-céce Misz-longa-tető	settle-ment col-lected by J.Korek 1960	Budapest 15/1969/2	greyish white quartzite l=6,1 w=3,1	three-planed unretouched blade	AÉ. 1960. p.232
147	"	"	15/1969/3	light yellow quartzite l=6,3 w=3	triangular-sectioned, unretouched, slightly concave, point-ed, crudely made blade	"
144	Viskó	old collec-tion of HNM	Budapest HNM 7/1878/1	obsidian h=3,5 d=2	conical nucleus with rounded tip, with nega-tives of very narrow bladelets The specimen is partly lime-coated	
143	"	"	7/1878/4	obsidian l=2,8 w=2 h=0,6	three-planed, high, trian-gular-section-ed blade re-touched on the left edge of its ventral face	

+There are seven similar pieces in the material collected in 1925 at Eger-Kiseged. Their raw material, shape, size and manufacturing are roughly the same. The length of the grea-test specimen is 10 cm, its width is 4 cm, its height is 2,5 cm.
The length of the smallest specimen is 5 cm, its width is 2,5 cm, its height is 1 cm. In the list above No. 141 rep-resents average dimensions.

1	2	3	4	5	6	7
149	Kőlyuk cave	B.I-II. excavations 1953	Miskolc Herman O. Mus. 53/76/1	yeloowish grey silex l=6,5 w=2	two-planed blade with great bulb, retouched on the left edges of its ventral and dorsal face	
VIII	"	" excavations of G.Megay 1950.	53/85/1	obsidian "l"l=3 "w"=2	fragment of a /probably conical / nucleus, its shape is more or less quadrangular with convex ventral face, with negatives of narrow bladelets on it	
150	" "Elő-barlang"	" excavations 1953	53/78/1	obsidian l=2,8 w=1,8	three-planed, unretouched blade with great bulb	
151	"	"	53/78/2	obsidian h=2,5 d=1,5	cylindrical nucleus with negatives of very narrow bladelets, the specimen is strongly lime-coated	
148	Bükkaranyos	excavations	Miskolc Herman O. Mus. 68/40/437	greyish red silex l=4,2 w=1,2	two-planed, rather high, triangular-sectioned blade, strongly retouched and notched on the left edge ot its ventral face	
154	Hidasnémeti	donation	Miskolc Herman O. Mus. 68/43/7	yellow silex l=3,6 w=1	fragment of a narrow, three-planed, unretouched blade	

1	2	3	4	5	6	7
153	Hidasnémeti	donation	Miskolc Herman O. Mus. 68/43/7	grey silex l=3 w=1	three-planed blade, both edges of its ventral face are carefully retouched	
152	"	"	68/43/5	yellow silex l=5 w=2,5	fragment of an extremely large-sized, three-planed, crudely made, unretouched blade	
155	"	"	"	yellow silex l=4 w=1,6	massive, bledelike flake with surface scars, unretouched	
IX	"	"	68/43/6	yellow silex l=4,5 w=2	fragment of a high, triangular-sectioned, unretouched blade	
156	"	"	68/43/8	obsidian h=5 d=2	conical nucleus with negatives of narrow blades	
X	"	"	68/43/9	obsidian "d"=2,5	amorphous fragment with negatives of very narrow bladelets, strongly lime-coated	
XI	"	"	68/43/10	obsidian l=4,2 w=2	two-planed, unretouched blade, lime-coated on the right side of its ventral face	

1	2	3	4	5	6	7
XII	Hidas-németi	dona-tion	Miskolc Herman O. Mus. 68/43/10	obsidian l=3 w=1,5	two-planed, unretouched blade-like flake	
XIII	"	"	"	obsidian l=3,3 w=2	two-planed, unretouched blade-like flake, rectangular-shaped, with surface scars	
161	"	"	"	obsidian l=2,7 w=1,2	two-planed, flat, triangular-sectioned blade, carefully retouched on both edges of its ventral face	
158	"	"	"	obsidian l=3 w=1,8	two-planed, flat, triangular-sectioned blade, deliberstely retouched on the left edge and retouched on the right edge of its ventral face; notched on the left edge	
157	"	"	"	obsidian l=5 w=1	three-planed, narrow blade, deliberately retouched on the right edge of its ventral and on both edges of its dorsal face	
160	"	"	"	obsidian l=3 w=1,6	two-planed blade, deliberately retouched on the left edge of its dorsal face	

1	2	3	4	5	6	7
159	Hidas-németi	dona-tion	Miskolc Herman O. Mus. 68/43/11	obsidian l=3,3 w=0,6	three-planed, unretouched, slightly concave blade	
164	"	"	"	obsidian l=1,5 w=0,7	three-planed, unretouched blade	
162	"	"	"	obsidian l=2,4 w=0,5	three-planed, unretouched blade	
163	"	"	"	obsidian l=1,8 w=0,6	three-planed, unretouched blade	
165	"	"	"	obsidian l=2 w=0,7	fragment of a twoplaned, unretouched blade	
XIV	"	"	"	obsidian h=2,3 w=0,5	three-planed, unretouched blade	
XV	"	"	"	obsidian l=2,8 w=1,3	three-planed unretouched blade	
XVI	"	"	"	obsidian l=2 w=0,8	two-planed, unretouched blade	
166	Aggtelek cave "Denevérág"	excavations of S. Gallus 1932 B I-III with ALP elements	Budapest HNM 36/1939/7	grey silex l=7 w=1	three-planed, unretouched, symmetrical, trapezoidal-sectioned blade	

1	2	3	4	5	6	7
169	Aggtelek cave "Denevérág"	excavations of S.Gallus 1932 B I-III with ALP elements	Budapest HNM 36/1939/8	dark red silex l=4 w=1,5	three-planed, symmetrical blade, retouched on the left edge of its ventral face	
168	"	"	"	obsidian l=2 w=1,8	base fragment of a two-planed blade, retouched on the left edge of its ventral and dorsal faces	
167	"	"	"	obsidian l=1,1 w=0,7	three-planed, unretouched blade	
170	Büdöspest cave	B II	Budapest 58/1952/1	obsidian l=5,3 w=2	four-planed, unretouched, trapezoidal-sectioned blade, the middle part of its ventral face is slightly convex	
171	Lambrecht K.cave	excavations of L. Vértes 1952	Budapest HNM 86/1952/29	greyish red silex l=5 w=1	two-planed, flat triangular-sectioned, unretouched blade	
172	"	"	86/1952/30	obsidian l=3,5 w=1,5	three-planed, trapezoidal-sectioned blade retouched on both edges of its dorsal face	

1	2	3	4	5	6	7
17	Lambrecht K.cave	excavations of L.Vértes 1952	Budapest HNM 86/1952/30	obsidian l=3 w=1	three-planed blade, retouched on both edges of its ventral and dorsal faces	
17	"	"	"	obsidian l=2 w=1,5	three-planed, unretouched blade	
XVII	"	"	"	yellow silex l=4,5 w=1,2	flat, three-planed, unretouched blade broken lengthwise	
XVIII	"	"	"	obsidian l=2,8 w=1	blade-like flake, three-planed, more or less triangular-sectioned, slightly concave	
175	Herman O. cave		91/1951/35	obsidian l=3 w=1,2	three-planed, unretouched, blade, lime-coated on the left edge ot its ventral face	
176	"	"	"	obsidian l=3 w=1	two-planed, unretouched blade	
177	"	"	"	obsidian l=2,5 w=0,5	three-planed, unretouched blade	

1	2	3	4	5	6	7
178	Herman O. cave		Budapest HNM 91/1951/35	obsidian l=2,5 w=0,5	two-planed, triangular-sectioned, unretouched blade	
179	"		"	obsidian l=2,5 w=1	three-planed, unretouched blade	
XIX.	"		"	obsidian l=3,5 w=1,2	three-planed, unretouched, slightly concave blade, lime-coated on the left side of its ventral face	
xx	"		91/1951/33	quartzite dark grey l=7 w=1	three-planed, high, triangular-sectioned unretouched blade	
186	"		"	greyish red quartzite l=5,5 w=2,5 h=0,5	three-planed, massive unretouched blade	
184	"		"	dark grey quartzite l=9,5 w=2	massive, blade-like flake with scars	
XXI	"		"	dark grey silex l=5 w=2,5	high, trapezoidal-sectioned, unretouched blade with uneven surface	

1	2	3	4	5	6	7
185	Herman O. cave	excavations of L.Vértes 1952	Budapest HNM 91/1951/33	dark red quartzite l=7	large-sized, high, more or less triangular-shaped flake with scars	
182	"	"	91/1951/32	grey white dotted silex l=3 w=1	three-planed, unretouched blade	
180	"	"	"	black silex l=4,5 w=2	symmetrical, three-planed, concave, trapezoidal-sectioned, unretouched blade, slightly lime-coated	
181	"	"	"	light grey silex l=3,4 w=2	triangular-sectioned blade, retouched on the right edge of its ventral face	
183	"	"	"	grey silex "l"=2,5 "w"=3	base fragment of an extremely large-sized three-planed, flat, symmetrical, unretouched blade	
193	Peskő cave	excavations of L.Vértes 1955	61/1955/15	obsidian l=2,8 w=1,2	three-planed, slightly concave, unretouched blade, partly lime-coated on its ventral face	

194	Peskő cave	excavations of L.Vértes 1955	Budapest HNM 61/1955/14	obsidian l=3,2 w=0,5	fragment of a pointed blade, two-planed, flat, triangular-sectioned, with flat surface retouch on its whole ventral face, very finely retouched on both edges of its ventral face. Also retouched with flat retouch on a very narrow band along both edges of its dorsal face and on the bulb	
190	Boldogkővár-alja-Tóhegy	settlement B II excavations of T.Kemenczei 1964	Budapest HNM 38/1964/7	yellow quartzite l=3,5 w=2	three-planed unretouched, lime-coated blade	AÉ. 1964. p.253
187	"	"	"	yellowish white quartzite l=3,5 w=0,8 h=0,6	fragment of a triangular-sectioned, unretouched blade	"
188	"	"	"	yellowish grey quartzite l=4 w=1,5 h=0,7	two-planed, triangular-sectioned, unretouched blade	"

1	2	3	4	5	6	7
189	Boldogkővár-alja-Tóhegy	settlement B II excavations of T.Kemenczei 1964	Budapest HNM 38/1964/7	yellowish grey quartzite l=4 w=1,5 h=0,6	two-planed triangular sectioned, unretouched blade	AÉ. 1964. p.253
XXIII	"	"	38/1964/8	yellowish grey quartzite l=3 w=2	three-planed blade-like, unretouched flake	"
191	"	"	38/1964/4	yellowish grey quartzite l=4 w=1,5 h=0,6	three-planed, slightly concave, unretouched blade, partly lime-coated with great bulb	"
192	"	"	38/1964/5	greyish red quartzite l=4,5 w=2,5	blade-like, flat three-planed, unretouched flake	"
195	Megyaszó Csákó	collected material	Budapest HNM 5/1952/3	obsidian l=2,5 w=1,5	three-planed, irregular trapezoidal-sectioned, unretouched blade	
196	"	"	"	obsidian l=3 w=2	wide, three-planed blade truncated on one end	
197	"	"	"	obsidian l=3,5 w=0,5	two-planed blade, retouched on the left edge of its ventral face	

1	2	3	4	5	6	7
198	Megyaszó Csákó	collected material	Budapest HNM 5/1952/3	obsidian l=2,5 w=0,5	two-planed, unretouched blade, lime-coated on the left side of its ventral face	AÉ. 1964. p.253
199	"	"	"	obsidian l=,27 w=1	three-planed, unretouched blade	
XXIV	"	"	"	obsidian l=,25 w=1	three-planed, slightly curved, unretouched blade	
XXV	"	"	"	obsidian l=2,5 w=1	two-planed, unretouched blade	
XXVI	"	"	"	obsidian l=2,5 w=0,7	two-planed, unretouched flake	
XXVII	"	"	"	obsidian l=,25 w=1,2	three-planed, unretouched blade	
200	Megyaszó Nagyrépáshill	collected material	Budapest HNM 19/1935/1	obsidian l=6 w=1	symmetrical, long, narrow blade, trapezoidal-sectioned, unretouched	
201	"	"	"	obsidian l=2 w=1,6	fragment of a three-planed, trapezoidal-sectioned unretouched blade partly lime-coated	

1	2	3	4	5	6	7
202	Megyaszó Nagyrépáshill	collected material	Budapest HNM 19/1935/1	obsidian l=1,5 w=1	three-planed, slightly concave trapezoidal-sectioned, unretouched blade	
203	"	"	"	obsidian l=2 w=1,1	two-planed, unretouched blade	
XXVIII	"	"	"	obsidian l=1,4 w=1,7	two-planed, unretouched blade	
XXIX	"	"	19/1935/2	obsidian l=,3,2 w=1,7 h=3	two-planed blade, unretouched, lime-coated on the left side of its ventral face	
204	"	"	19/1935/4	yellow silex l=3 w=1	end scraper made on a two planed, symmetrical, triangular-sectioned blade, its working edge is of 60°	
205	"	"	19/1935/5	grey silex l=4 w=1	fragment of a three-planed, unretouched blade	
207	"	"	19/1935/5	red silex l=2,7 w=0,6	three-planed blade-fragment, retouched on the right edge of its ventral face, slightly concave	

1	2	3	4	5	6	7
208	Megyaszó-Nagyrépás-hill	collected material	Budapest HNM 19/1935/5	red silex l=3 w=1 h=0,5	two-planed, triangular-sectioned blade, partly limecoated, unretouched, notched on the right edge of its ventral face	
209	"	"	19/1935/6	grey silex l=3 w=2 h=0,5	saw, quadrangular-shaped, flat, triangular-sectioned with flake-scars on its surface, its back is broken, its working edge is deliberately retouched and denticulated with a band of brilliant gloss	
206	"	"	19/1935/7	red, white dotted silex "l"=4,5 "h"=2,5	irregular-shaped fragment of a nucleus, with more or less triangular base with very narrow "negatives of bladelets" on one side; the other sides are smooth	
246	Borsod-Derek-egyháza	settlement excavations of J.Korek P.Patay 1949	Budapest HNM 15/1949/5	obsidian d=1,7 h=3	conical nucleus with negatives of narrow blades	T.IV. 8+

+ The material is partly published in R.F. II. 1958. pp. 22-26, on photographs T. IV. 1-26.

1	2	3	4	5	6	7
245	Borsod-Derek-egyháza	settlement excavations of J.Korek-P.Patay 1949	Budapest HNM 15/1949/6	obsidian l=4,2 w=0,6	two-planed slightly concave blade with great bulb, deliberately retouched on both edges of its ventral face	T.IV. 9
235	"	"	15/1949/7	obsidian l=3 w=0,8	three-planed unretouched blade	
240	"	"	15/1949/8	obsidian l=2,8 w=0,5	fragment of pointed part of a three-planed, unretouched blade	T.IV. 5
227	"	"	15/1949/9	obsidian l=3,5 w=2 h=1,4	burin made of a nucleus with flake-scars on the ventral face as well as with negatives of some narrow blades. The tip is retouched from the left side of the ventral face, the base part is somewhat higher	
226	"	"	15/1949/36	obsidian "l"=4 "w"=2	more or less triangular-shaped fragment of a /?/blade /base/, three-planed, retouched onthe right edge of its dorsal face	T.IV. 14.

1	2	3	4	5	6	7
XXX	Borsod-Derekegy-háza	settle-ment J.Korek-P.Patay excavati-ons 1949	Budapest HNM 15/1949/36	obsidian l=2,5 w=0,8	two-planed, unretouched blade, partly limecoated	
XXXI	"	"	"	obsidian l=2,2 w=1,3	two-planed, unretouched blade, partly limecoated	
XXXII	"	"	15/1949/37	quartzite yellowish red l=4,3 w=1,3	three-planed, unretouched, slightly cur-ved blade	
215	"	"	15/1949/76	reddish grey quartzite l=4 w=1,8	sickle-blade, three-planed, flat, trapezo-idal-sectioned, unretouched, both ends are broken, there is oblique high gloss on the left edge of its ventral face and on the right edge of its dorsal face	
214	"	"	"	grey silex l=2,5 w=1,3	unretouched base-frag-ment of a three-planed blade	T.IV. 19.
225	"	"	15/1949/77	obsidian l=2,5 w=1	two-planed blade re-touched on the left edge of its dorsal face	T.IV. 6.

1	2	3	4	5	6	7
220	Borsod-Derekegy-háza	settle-ment ex-cavations of J.Korek-P.Patay 1949	Budapest HNM 15/1949/77	obsidian l=4,5 w=1,5	three-pla-ned blade finely reto-uched on both edges of its ventral face	T.IV. 13.
223	"	"	"	obsidian l=3,5 w=2,7 h=0,5	wide, two-pla-ned, trapezo-idal-sectioned blade, reto-uched on the right edge of its ventral face	
224	"	"	"	obsidian l=3 w=1,7	two-planed blade, reto-uched on the right edge of its ventral face	
XXXIII	"	"	"	obsidian l=2,9 w=1 h=0,5	two-planed, high, triangu-lar-sectioned blade with sur-face crust on the right edge of its ventral face	
228	"	"	"	obsidian l=3,2 w=1,7	three-planed blade, delibe-rately retouch-ed on the left edge of its ventral face	
234	"	"	"	obsidian l=2,3 w=1	fragment of a three-planed, symmetrical, unretouched blade	

1	2	3	4	5	6	7
232	Borsod-Derek-egyháza	settlement excavations of J.Korek - P.Patay 1949	Budapest HNM 15/1949/77	obsidian l=4 w=1	two-planed, unretouched blade	T.IV. 12.
233	"	"	"	obsidian l=3 w=0,8	three-planed, symmetrical blade, finely retouched on the left edge of its ventral face	T.IV. 7.
231	"	"	"	obsidian l=3 w=0,8	fragment of a three-planed blade, retouched on both edges of its ventral face	
237	"	"	"	obsidian l=4,2 w=0,7	three-planed, unretouched blade, lime-coated on its tipped end	
242	"	"	"	obsidian l=2 w=0,5	fragment of an unretouched two-planed blade	
XXXIV	"	"	"	obsidian l=2 w=0,4	fragment of an unretouched, two-planed blade	

1	2	3	4	5	6	7
XXXV	Borsod-Derek-egyháza	settlement excavations of J.Korek - P.Patay 1949	Budapest HNM 15/1949/77	obsidian l=2,3 w=0,8	fragment of an unretouched, two-planed blade	T.IV. 4.
243	"	"	"	obsidian l=1,8 w=0,9	fragment of a three-planed, unretouched blade	T.IV. 3.
XXXVI	"	"	"	obsidian l=1,5 w=0,9	fragment of a three-planed, unretouched blade	
XXXVII	"	"	"	obsidian l=1,8 w=0,6	two-planed, unretouched blade	T.IV. 2.
222	"	"	15/1949/188	obsidian l=4,6 w=1	slightly curved, unretouched blade	
XXXVIII	"	"	"	obsidian l=2,6 w=0,6	fragment of a three-planed, slightly curved, unretouched blade	
221	"	"	"	obsidian l=4 w=1,7	three-planed blade deliberately retouched on the left edge of its ventral face	

1	2	3	4	5	6	7
238	Borsod-Derek-egyháza	settlement excavations of J.Korek-P.Patay 1949	Budapest HNM 15/1949/188	obsidian l=2,4 w=0,8	pointed blade, three-planed, its pointed part is retouched from both edges on its ventral face	
XXXIX	"	"	15/1949/189	obsidian	amorphous fragment of a conical nucleus with negatives of 1 cm wide blades	
XL	"	"	"	obsidian l=1,5 w=1	fragment of a two-planed, unretouched ed blade	
XLI	"	"	"	obsidian	two-planed, unretouched blade-fragment, lime-coated on the left edge of its ventral side	
236	"	"	"	obsidian l=2,5 w=1	three-planed blade, partly lime-coated	
230	"	"	"	obsidian l=3,5 w=1	two-planed, slightly concave blade, limecoated on the right edge of its ventral face, retouched on the left edge of its ventral face	

1	2	3	4	5	6	7
213	Borsod-Derek-egyháza	settlement excavations of J.Korek-P.Patay 1949	Budapest HNM 15/1949/158	quartzite yellowish grey l=2,7 w=1	three-planed unretouched blade	
212	"	"	15/1949/190	quartzite yellowish red l=3,5 w=1,5	two-planed, rather high, triangular-sectioned, unretouched blade-fragment	
216	"	"	15/1949/190	dark brown silex l=2,5 w=1,2	sickle-blade T.IV. three-planed,21. simmetrical, trapezoidal-sectioned blade, retouched on the right edge of its ventral face, there is an oblique high gloss in the right lower and in the left lower corner of its ventral and dorsal faces, respectively	
211	"	"	15/1949/191	yellowish grey quartzite l=2,2 w=1,3	fragment of a three-planed, unretouched blade	
210	"	"	"	yellow quartzite l=3,2 w=1,5	three-planed, unretouched blade	

1	2	3	4	5	6	7
XLII	Borsod-Derek-egyháza	settlement excavations of J.Korek-P.Patay 1949	Budapest HNM 15/1949/158	yellowish grey quartzite l=2,5 w=1,2	fragment of a two-planed, unretouched blade	
218	"	"	15/1949/273	obsidian l=4 w=1,3 h=0,5	two-planed, symmetrical, triangular-sectioned blade, retouched on the left edge of both of its faces	
239	"	"	15/1949/276	obsidian l=2,5 w=0,5	fragment of a pointed and of three-planed blade, retouched on the right edge of its ventral face	
229	"	"	15/1949/277	obsidian l=2 w=1,3	three-planed blade with surface scars, retouched on the right edge of its ventral face	
244	"	"	15/1949/281	obsidian d=3,5 h=4	almost regular, conical nucleus with oval base and with the negatives of narrow blades	T.IV. 16.

1	2	3	4	5	6	7
217	Borsod-Derek-egyháza	settlement excavations of J.Korek - P. Patay 1949	Budapest HNM 15/1949/282	dark greyish red silex l=2,5 w=1,7	end scraper made on a symmetrical, three-planed blade, with a 65° working edge, both edges of its ventral face are finely retouched	T.IV. 22.
219	"	"	15/1949/289	obsidian l=3,5 w=0,7	two-planed, unretouched blade	
XLIII	"	"	15/1949/284	obsidian l=1,5 w=1	two-planed, unretouched blade	

The relatively rich material of the locahties Boldogkőváralja-Tóhegy and Boldogkőváralja-Leányvár was published by J. Mihalik /1897/. Silex and obsidian blades, end scrapers and nuclei of various size and shape were found there. J. Mihalik reported also on chipping floors with quantity of tools, halfproducts and waste chips. He thought that a flintmine must have existed nearby. The material of the settlement was later analyzed by L. Vértes /1965 a/, who compared it with the material of a locality of the Bükk culture in the valley of the Arka brook. He pointed out that the Tóhegy industry is already a "true" Neolithic industry in contrast

to the more primitive products of the Arka valley. He made a comparison of the settlement in the Arka valley with the Mesolithic industries found at Korlát and Avas Hill /Miskolc/. He succeeded in establishing several links between them; in his view the local Mesolithic population of the region must have been influenced by flourishing Neolithic cultures of the south. The earlier phase of this process is represented by the implements found in the Arka valley, while Boldogkőváralja displays a fully developed, "true" Neolithic industry.

The depot of silex blades found by T. Kemenczei at Boldogkőváralja in 1964 was also investigated by L. Vértes /1965 b/. He described them as highly standardized blades of the same form, size and function, representing the excellent tool-making - and perhaps also trading - activity of the people that lived there.

Beside the material discussed in the present paper, J. Korek and P. Patay /1958/ and F. Tompa /1927/ described several silex and obsidian blades, end scrapers and nuclei from Borsod-Derekegyháza.

S.Gallus /1936/ published 12 rather atypical blades from Tállya, and J. Visegrádi /1912/ reported on some obsidian blades and nuclei from Sátoraljaujhely.

In their paper written on the distribution of the Bükk culture in Hungary /1958/ J. Korek and P. Patay enumerated the following localities where silex and obsidian blades and flakes had been found: Miskolc /Görömbölytapolca-

Vizesbarlang/, Ónod, Sajókeresztur, Szendrő /Ördöggát-Csengőbarlang/, Onga, Abaujdevecser, Hejce and Baktakék.

The material collected at Eger-Kiseged shows clearly some characteristica of the chipped stone industry of the Bükk culture, especially the use of three raw materials /silex, obsidian, quarzite/. A retouched /No. 139/ and an unretouched /No. 138/ blade are made of obsidian. Both are rather long specimens. They were probably cutting implements similarly to a long, unretouched silex blade /No. 137/. There is a very carefully manufactured, long, narrow, retouched and truncated blade /No. 142/ in the collection, which was perhaps a knife. A large, leaf-shaped flake scraper was probably a reshaped and reused specimen /No. 140/. A significant part of the material comprises large-sized implements made of quartzite. One of them, No. 145, represents fairly well the average shape and size of the sight very similar tools found at the same locality. They are big, crudely made, more or less triangular-shaped pointed specimens, perhaps semi-products. Two obsidian blades and an obsidian nucleus have beer found at Viskó /old material of HMN /. One of them is an insignificant blade-fragment /No. 145/, the other /No. 143/ is similar to two blades of Zalavár /Nos. 85 and 86/. This tool, though retouched only on a short section of its convexe edge, may well have had the same function as the Zalavár specimens had. Negatives of narrow bladelets on a small conical obsidian nucleus /No. 144/ are sound proof of the existence of

fine micro"-blades.

Two quartzite blades have been found at Hernádcéce-Miszlonga-tető, one of them /No. 147/ was similar to those found at Eger-Kiseged. The other blade fragment was probably a cutting-tool /No. 146/.

The deliberately retouched left edge of a triangular-sectioned silex blade found at Bükkaranyos goes to show that the tool was a scraping knife.

Ar overwhelming part of the tools found at Hidasnémeti were made of obsidian. No. 156 is a circular-based nucleus. Blades Nos. 157 and 161, both of tem carefully made long specimens, were probably cutting implements. Cutting edge of No. 157 was carefully resharpened from both faces several times. Perhaps Nos. 161 and 154 were also knives. Unfortunately the function of fragmentary tools Nos. 158 and 153 is uncertain. Obsidian blade fragment No. 160 was undrubtely a scraper used for working soft materials.

There are several small, unretouched, obsidian blades in the material /Nos. 162-165/. One of them is a fine, pointed blade /No. 159/ which was perhaps used as an awl /?/. Baside them two blade-like flakes /Nos. 152 and 155/, a high, crudely made silex blade, four atypical unretouched obsidian blades, two obsidian flakes and a lime-coated fragment of an obsidian nucleus form the tool-material of Hidasnémeti.

Boldogkőváralja is represented in this paper by six atypical unretouched quartzite blades. Three of them are more carefully made, high, triangular-sectioned specimens /Nos.

187-189/, the others are wider, fletter ones /Nos. 190-192/. They are far from the degree of standardization of the famous depot found at Boldogkőváralja, nevertheless an adherence to certain dimensions is clearly noticeable even in this meagre material. The collection shows that finer implements were made of quartzite, too /e.g. Nos. 187, 180, 189/.

Eight obsidian blades have been collected at Megyaszó-Csákó. They are atypical baldes /Nos. 198, 199, XXIV and XXVII/, No. 197 was perhaps a knife. The end of a massive, three-planed blade /No. 196/ was broken perhaps because of the heavy employment - or maybe already during its preparation. A narrow band of this fracture was later blunted.

12 tools have been found at Megyaszó-Nagyrépás-hill. Half of them were made of silex, half of them of obsidian. There is a very carefully made, long, narrow, unretouched knife /No. 200/ in the material; Nos. 201 and 202 were probably also cutting implements. Blade No. 105 made of silex is very similar to No. 200, so it was by all means a knife. Blade No. 207 was probably used as a scraper. The working edge of a triangular-sectioned end-scraper /No. 204/ was made with very abrupt fan-shaped retouch, so the tool is almost blunted. It was probably used on hard materials, perhaps for grooving wood. On a piece of silex /No. 206/ the negatives of three narrow bladelets, can be found thus the specimen can be regarded as a fragment of a nucleus. /It is not eworthy that these negatives are as small as those on obsidian nuclei, i.e. the bladelets were made of silex, too. For the time being

whether there was any functional difference between small blades made of obsidian and those made of silex./ The form of this nucleus /No. 206/ resembles a plane-scraper or nucleus-scraper; it was perhaps a plane or some sort of chisel. A significant specimen of the collection is a saw/?/ made of grey silex. The back of the implement is lime-coated which prevents us from reconsting ing its original condition, although it seems to be an intact specimen /No. 209/. As a matter of fact it is similar to a chisels - all the more so because its shape is strongly resembling that of polished stone shisel and its shole surface in manufactured by flat flaking indicating the effort to make it even. Its strongly retouched and denticulated edge does not contradict to use it as some sort of shisel. Neverthelese, there is a narrow band of brilliant gloss on it; parallel with its edge, which can be seen on tools used as a saw /C. Curwen 1930/.

A relatively great quantity of shipped stone tools were found at Borsod-Derekegyháza. Two third of them were made of obsidian, the others of silex and quartzite. Quartzite tools are mostly mediu-sized, unretouched blades /Nos. 210-213/. They were probably cutting implements except No. 210. A symmetrical flat blade /No. 215/ with trapezoidal section was a sickle blade. It has an obliquely placed high gloss on one edge. It belongs to that group of sickle blades which the specimen found at Keszthely Zsidi street /No. 105/ belongs to. No. 216 is also a sickle blade of similar type with the only difference that the previous blade is unretouched while the cutting-edge of the latter specimen was resharpened several times. An extraordinarily nice silex end-scraper /No. 217/ was made on a fragment of a wide, flat, symmetrical blade. It is carefully retouched on both edges, its scraping edge is of approx. 60°; its is very regular and semicircular. It was probably used for working not too hard materials; perhaps for scraping hide and skin.

An overwhelming majority of the tools made of obsidian are blades. The relatively larger, carefully made specimens are Nos. 218, 220, 221, 224 and 228. All are retouched. No. 218 is a deliberately retouched, high, triangular-sectioned blade; it was a scraping knife as well as No. 228. Nos. 220-222 and perhaps 219 were knives.

No. 223 is a high, wide blade of almost flake-like character, it is possible, however, that it was also some sort of cutting implement, probably a scraping knife. No. 224 is a highly problematic specimen. Its unretouched edge has a narrow angle and at the same time its opposite edge is retouched abruptly; it is almost blunted. Although its narrow angled, unretouched edge may be regarded a cutting edge, the retouch on the opposite side indicates clearly that this edge was really used, i.e. it is not the back of the implement. Other carefully retouched obsidian blades in the material, like Nos. 229, 231, 230 and 233 were probably knives. Naturally other small, atypical obsidian blades such as Nos. 234, 235, 241 and 243 can be regarded as cutting implements, too. Two different-sized specimens of the same slightly cur-

ved, pointed type of blade are represented by Nos. 232 and 237. There are some fragments of pointed bladelets in the material /e.g. 240 and 242/. No. 238 is a carefully retouched blade point; the small ones as e.g. Nos. 239 and 245 were probably knives. Large-sized obsidian flake No. 226 is in fragmentary condition so its function is quite uncertain. No. 227 is a combination of a rather irregular burin and a borer/?/ made on a nucleus-fragment. Furthermore, there are four small, insignificant, unretouched fragments of bladelets in the collection. The two intact nuclei /Nos. 244 and 246/ are almost conical specimens.

A fragment of large-sized, silex blade /No. 149/, an unretouched obsidian blade /No. 150/ and two fragments of obsidian nuclei /Nos. 151 and VIII/ were found in Kőlyuk Cave. The shape of the silex blade is irregular, widening at the middle of the specimen, its retouch however renders possible to use it as a scraping knife. No. 151 is a conical nucleus with negatives of narrow blades. It is similar to nuclei found in other settlements of the culture.

There was only a piece of strikingly large-sized, carefully manufactured, unretouched obsidian blade in the material found in Büdöspest Cave /No. 170/.

There were only a few specimens found in the Aggtelek Cave. Two nice silex blades /Nos. 166 and 169/ and two obsidian blades /Nos. 167 and 168/ were found in part of the cave called "Denevérág". No. 166, a very nice, long narrow

blade was probably a knife and perhaps No. 169 was also a cutting implement. No. 168 is a base fragment of a wide retouched obsidian blade used perhaps as a scraper, the small obsidian blade /No. 167/ is rather atypical.

An unretouched silex blade /No. 171/ - probably a knife - and three obsidian blades were found in Lambrecht Kálmán Cave. Obsidian blade No. 172 sharpened on both edges of its dorsal face, was used maybe as a scraper or scraping knife, while carefully made, deliberately retouched blade /No. 173/ was perhaps a cutting implement.

The tools of Herman Ottó Cave were made of the three raw materials /obsidian, silex, quartzite/ characteristic of the culture. Obsidian blades are relatively small, atypical specimens /Nos. 175-177, 179/. Only No. 178, a small, pointed blade is worth mentioning here which was probably a pricking implement. Silex blades Nos. 182 and 183 were probably cutting implements, the latter because of its width, can be regarded a scraper as well. Silex blade No. 181 was probably also a scraper - and not a cutting tool - because there are some shallow flakes resembling fan-shaped retouch on the base part of its ventral face. There are two relatively large, unretouched blades /Nos. 186 and XX/ in the material that recall other large-sized quartzite blades of the culture. As a matter of fact No. 184 is not far from pic-like tools widely used in Late Palaeolithic and Mesolithic cultures of macrolithic character. These tools were also known in the northwestern regions /e.g. Holland, Belgium, France, Alsace, etc./

of the Linear Complex where they got from the tool-material of native Mesolithic populations. But the specimen found in the Herman Ottó Cave displays similar characteristics to these types only on one side of it, its other side is blade-like. At least one blade seems to have been renoved from its surface, so it can be regarded also some sort of "nucleus". Thus the implement was either originally a "pic"/ or rather a massive lump of raw material roughly preparated to be a picking implement/ later used as a nucleus; or originally it was a large-sized nucleus the amorphous fragment of which was later used for picking. The function of No. 185 in highly questionable, too. It is similar either to an extremely high flake scraper or to a "nucleus" /i.e. to a more or less regular piece of raw material from which blades or flakes were removed. It cannot be regarded a real scraper because it has no regular scraping edge, nevertheless it is possible that it was used asa scraper or as a scraping and skinning knife at least along one side. At the same time its tip could have been used as a borer or perhaps an awl.

There were orly two obsidian blades found in the Peskó Cave. One of them /No. 193/ is an atypical unretouched blade, the other is a remarkable pointed/?/ blade /No. 194/. This latter specimen is actually a fragment of a small, narrow, thin triangular-sectioned blade. Its whole surface is manufactured by flat surface retouch resembling the so-called "solutrean"retouch. Its shape is indeterminable because of its fragmentary condition, its analogies however, prove that

originally it had a tipped end. Its analogies are well-known e.g. in almost all Near Eastern Neolithic cultures where the large group of projectile heads was manufactured with this technique. This "solutrean" technique, on the other hand, was practically unknown is Europe is early Neolithic times /except those areas - e.g. the above-mentioned northwestern regions of Linear Ceramics - where some Mesolithic influence seems possible; although the technique of flat surface retouch applied by Neolithic industry differs from that used by Mesolithic industries/. Flat surface retouch be came widespread in Europe from Late Neolithic onwards. It is interesting that similar specimens found in the Near East are generally unretouched on their edges, while the specimen is the Peskó Cave is very finely retouched on both edges. Perhaps in this case this retouch conserved the edge of the tool. It cannot be excluded either that the tool has some affinit, to the so-called "fleche perçante" well-known from Late Neolithic in Western Europe, mainly in France. It is generally a flat, leaf-shaped type, a very effective weapon having great pervasiveness as well as sharp cutting-edges /M. Escalon de Fonton 1953/. At any rate this is the only specimen among tools discussed in this paper ehich has an appearance and technique similar to Late Neolithic and Chalcolithic tool-types in Europe.

The chipped stone material of the Bükk culture discussed above - with the exception of the quartzite tools of

"macrolithic character" found in the Herman Ottó Cave and the obsidian blade with "solutrean" retouch found in the Peskő Cave - represent a developed Neolithic blade-industry with few types. Blades and blade-derivatives are predominant. There is no typological difference either between the material of settlements belonging to various phases of the culture nor between those of open-air and cave-sites. Those localities where the ceramic material shows a mixture of ALP and Bükk culture elements yielded the same material as the settlements where "pure" Bükk ceramics were found.

This picture is not modified by implements of other already published localities of the culture, except the above-mentioned material of Arka valley investigated by L.Vértes. There is some similarity between the tools of the settlement in Arka valley and those found in the Herman Ottó Cave, as a group of crude "macrolithic" tools resembling in some respect, local Mesolithic implements were present in both localities. This "Mesolithic" character, however, is much more definite and well-founded in the Arka valley - for the very reason that the material of this settlement is far richer than that of the Herman Ottó Cave. At any rate, in view of the whole material of the Bükk culture the few "macrolithic" tool of the Herman Ottó Cave prove but the presence in some localities of tool-types differenc from the types of developed Neolithic blade-industry. /The number of these localities is perhaps rather small because nearly the whole chipped stone material of the Bükk culture is included in this paper/.

Blades and blade-derivatives of the Bükk culture can be divided into definite size-groups belonging to definite raw materials. For example, length-values over 7 cm and width-values over 2,5 cm are mostly connected with quartzite implements; the length-values between 1,5 and 2,8 cms and the width-values between 0,5 and 1 cms are connected with obsidian tools. Dimensions of silex implements fall into both categories, their scattering is considerable. An overwhelming part of obsidian tools as well as approximately half of the silex tools and almost half of the quartzite ones are between the length-values of 2,2-5 cms and width-values of 0,8-2 cms. Consequentley near obsidian quarries /Tokaj Mountain this material of high quality was more boldly used than in other regions. Thus obsidian tools of the Bükk culture are not "economically" smaller than in other cultures. About 50 per cent of the quartzite tools of the culture is bigger than its obsidian tools. At the same time quartzite - altough mostly large, crude tools were made of it - was suitable also for making finer, smaller tolls. Approximately half of the tools were made of obsidian, the number of quartzite tools amounts to half of those made of obsidian and the number of silex tools is roughly equivalent to one-third of obsidian ones. This shows the great significance of the two raw materials found locally; their fregmency surpass even the common est silex. Highest degree of standardization is noticable with obsidian implements, among which cetain length-values are fairly constant /e.g. 2 and 3 cms/. Naturally a

very strong standardization exists occassionally in quartzite tools, too /e.g. the depot of Boldogkőváralja/. The tendency for making blades the longer the wider is more definite among quartzite and silex tools.

Distribution of Tool-types in Various Localities

Körös Culture

Locality	Tool-type	Piece	Raw material	Piece
Hódmezővásárhely Kotacpart, Vata farm	blade	7	silex	4
			obsidian	3
	end scraper	5	silex	5
	round scraper	1	silex	1
	simicircular scraper	1	silex	1
	flake scraper	1	silex	1
	sum total	15		
Hódmezővásárhely "Pap wheeler's land"	blade	7	silex	7
	semicircular scraper	1	silex	1
	sum total	7		
Hódmezővásárhely Rodzáspart	blade	1	silex	1
Besenyszög, flood-plain of Tisza	blade	1	silex	1
Röszke-Ludvár	blade	2	silex	2
Dévaványa	blade	2	silex	1
			obsidian	1

Sum total: 20 blades /16 silex, 4 obsidian/
5 end scrapers /silex/
2 semicircular scrapers /silex/
1 flake scraper /silex/

Alföld Linear Pottery Culture

Locality	Tool-type	Piece	Raw material	Piece
Tiszavalk-Négyes	blade	8	silex	3
			obsidian	5
	semicircular scraper	1	obsidian	1
	flake	1	silex	1
	sum total	10		
Nyiri	flake	1	silex	1
Nagyecsed	blade	4	obsidian	4
Tiszavalk-Tetes	blade	1	obsidian	1
Szamossály	blade	2	obsidian	2
Jászberény-Cserőhalom	blade	3	silex	2
			obsidian	1
	blake	1	silex	1
	sum total	4		
Kisköre-Gát	blade	1	obsidian	1
	nucleus	1	silex	1
	sum total	2		
Polgár-Basatanya	blade	2	silex	2
Folyás-Szilmeg	blade	11	silex	8
			obsidian	3
	implement made of a nucleus	2	obsidian	2
	sum total	13		

Sum total: 32 blades /15 silex, 17 obsidian/
1 semicircular scraper /obsidian/
1 nucleus /silex/
2 implements made of nuclei /obsidian/
1 flake /silex/

Transdanubian Linear Pottery Culture

Locality	Tool-type	Piece	Raw material	Piece
Zalavár	blade	21	silex	21
	end scraper	1	silex	1
	side scraper	1	silex	1
	trapezoid	1	silex	1
	nucleus	1	silex	1
	implement made of nucleus	1	silex	1
	chip of nucleus	3	silex	3
	flake scraper	1	silex	1
	flake	5	silex	5
	sum total	35		
Keszthely, Zsidi street	blade	5	silex	4
			basalt	1
	sickle-blade	1	silex	1
	nucleus	1	silex	1
	flake	2	silex	2
	retoucher	1	quartzite /Pebble/	1
	sum total	10		
Pomáz-Zdravlyák	blade	16	silex	13
			obsidian	3
	round scraper	1	silex	1
	end scraper	1	silex	1
	blade borer-scraper /combined tool/	1	silex	1
	borer	1	silex	1
	flake	1	obsidian	1
	sum total	21		
Békásmegyer	blade	3	silex	2
			obsidian	1
	end scraper	2	silex	2
	nucleus	1	obsidian	1
	sum total	6		

Locality	Tool-type	Piece	Raw material	Piece
Szentgyörgyvölgy	blade	2	silex	2
	nucleus	8	silex	8
	sum total	10		
Sármellék	blade	1	silex	1

Sum total: 48 blades /43 silex, 4 obsidian, 1 basalt/
4 end scrapers /silex/
1 sickle blade /silex/
1 side scraper /silex/
1 trapezoid /silex/
1 tound scraper /silex/
1 blade borer-scraper /combined tool/ /silex/
1 borer /silex/
11 nucleus /10 silex, 1 obsidian/
1 implement made of nucleus /silex/
3 chips of nucleus /silex/
1 flake scraper /silex/
8 flakes /7 silex, 1 obsidian/
1 retoucher /quartzite-pebble/

Bükk Culture

Eger-Kiseged	blade	13	silex	2
			obsidian	2
			quartzite	9
	flake scraper	1	silex	1
	sum total	14		
Hernádcéce-Miszlongatető	blade	2	quartzite	2
Viskó	blade	2	obsidian	2
	nucleus	1	obsidian	1
	sum total	3		

Locality	Tool-type	Piece	Raw material	Piece
Kőlyuk Cave	blade	2	silex	1
			obsidian	1
	nucleus	2	obsidian	2
	sum total	4		
Bükkaranyos	blade	1	silex	1
Hidasnémeti	blade	17	silex	4
			obsidian	13
	blade-like-flake	3	silex	1
			obsidian	2
	nucleus	2	obsidian	2
	sum total	22		
Aggtelek Cave	blade	4	silex	2
			obsidian	2
Büdöspest Cave	blade	1	obsidian	1
Lambrecht Kálmán Cave	blade	5	silex	2
			obsidian	3
	blade-like-flake	1	obsidian	1
	sum total	6		
Herman Ottó Cave	blade	14	silex	5
			obsidian	6
			quartzite	3
	pic-like tool	1	quartzite	1
	flake	1	quartzite	1
	sum total	16		
Peskő Cave	blade	1	obsidian	1
	blade point with "solutrean" retouch	1	obsidian	1

Locality	Tool-type	Piece	Raw material	Piece
	sum total	2		
Boldogkőváralja	blade	5	quartzite	5
	flake	2	quartzite	2
	sum total	7		
Megyaszó-Csákó	blade	8	obsidian	8
	flake	1	obsidian	1
	sum total	9		
Megyaszó-Nagy-répás Hill	blade	9	silex	3
			obsidian	6
	end scraper	1	silex	1
	saw	1	silex	1
	nucleus	1	silex	1
	sum total	12		
Borsod-Derek-egyháza	blade	42	silex	1
			obsidian	35
			quartzite	6
	sickle blade	2	silex	1
			quartzite	1
	blade point	1	obsidian	1
	end scraper	1	silex	1
	burin-borer /combined totol/	1	obsidian	1
	nucleus	3	obsidian	3
	sum total	50		

Sum total: 125 blade /22 silex, 78 obsidian, 25 quartzite/
1 blade point /obsidian/
1 blade point with "solutrean" retouch /obsidian/
2 sickle blades /1 silex, 1 obsidian/
1 flake scraper /silex/
2 end scrapers /silex/
1 saw /silex/
1 burin-borer combined tool /made from an obsidian nucleus/
1 pic-like implement /quartzite/

9 nuclei /1 silex, 8 obsidian/
4 flakes /2 obsidian, 2 quartzite/
4 blade-like flakes /1 silex, 3 obsidian/

Comparing the tool-material of the four cultures, it becomes evident that they contain more or less the same types. Blades and blade-derivatives are predominant, scrapers are also fraquent, first of all end scrapers, whereas semicircular, round and flake scrapers are not so often met with. Borers, saws, multi-purposed implements such as borer scrapers, blade or burin borers are rare. Three blades can be determined as sickle-blades. Tools made from nuclei are widespread as well as flakes and fragments of nuclei later reused.

The material of the Körös culture consists of round, semicircular, end and flake scrapers. In ALP there is a special type which can be regarded the combination of semicircular and flake types, round, flake and end scrapers are also present. Flake and end scraper are known from the Bükk culture. It would be wrong to suppose, however, that other types of scrapers were unknown in e.g. ALP - their lack can be due to the scarcity of material. Such inequalities seem to be more real in TLP the material of which discussed in this paper does not contain semicircular scraper. As is well-known that this type was eclipsed in the whole territory of the great Linear Complex by other scraper-types, it probably means that semicircular scrapers were known also by TLP,

but rarely used. It is worth mentioning that according to S. Milisauskas /1973/ the most characteristic tool-type of the Linear Complex was the end scraper.

The material of the Bükk culture does not contain either round scrapers or semicircular ones. Considering that virtually the whole material of the Bükk culture has been discussed in this paper, it probably means that together with the improvement of Neolithic blade-technique, the so-called "long" types of scrapers, i.e. those made on blades, mostly on long, narrow ones, become more and more conspicuous on account of "short" types.

Fundamentally, there are no two or more localities the material of which would be strikingly similar to each other. However tools very similar to each other can be observed in different localities; or example Nos. 85 and 86 from Zalavár /tipped blades resembling "burin bec de perroquet"/ which recalls No. 143 /obsidian blade/ found in Borsod-Derekegyháza /Bükk culture/. Another tool from Zalavár, No. 81 - an implement made from a fragment of a small silex nucleus - is very similar to an implement found in Folyás-Szilmeg which was made from a fragment of an obsidian nucleus /No. 60/. No. 61 is another fragment of an obsidian nucleus from the same locality which could be compared with a probably reused fragment of a conical silex nucleus from Zalavár /No. 90/. In all cases also the dimensions of these implements are very close to each other. The comparison also indicates that the same tool-types were made from different

raw materials.

Such similarities, however - especially as far as blades and fragments of nuclei are concerned - do not refer to direct connections between cultures since they are based on blades being more or less similar without special characteristics. Nevertheless the similarity between fragments of nuclei Nos. 81 and 60 seems to be not quite accidental.

The resemblance of a strikingly large fragment of silex blade from Hódmezővásárhely "Pap wheeler's land" /No. 66/ and a blade- fragment /No. 183/ found in the Herman Ottó Cave or a quartzite blade-fragment /No. 146/ from Hidasnémeti is mere coincidence. It indicates only the same demand for manufacturing such blades thet existed in both cultures. This can be proved also by the presence of large blades in other localities of these cultures. Otherwise, the use of extremely large blades is widespread in other cultures, too, suffice it to at this place the 7 cms long fragment of the nice, symmetrical blade /No. 109/ from Sármellék.

Great similarity between the conical obsidian nucleus /No. 115/ found in Békásmegyer and those of the Bükk culture indicates direct contact between the two cultures - which naturally goes back to obsidian trade. From this point of view it is worth mentioning that the two sickle-blades known from the Bükk culture /Nos. 215 and 216/ are the same type as the specimen found in Keszthely, Zsidi street /No. 105/.

The similarity between large-sized silex blades of the Szilmeg group /e.g. Polgár-Basatanya, No. 50/ and those

of some localities of the Bükk culture /e.g. Eger-Kiseged, No. 141, Hidanémeti No. 152, Herman Ottó Cave, No. 186, Hernádcéce Nos. 146, 147/ indicates also the well-known relations between the two cultures.

At the same time there are some blades in the material of Tiszavalk-Négyes /Szatmár group/ - first of all Nos. 28 and 29 - which resemble the abovementioned blades of the Bükk culture; first of all those of Eger-Kiseged. In this case a direct contact is excluded for chronological reasons; it is probably a mere convergence since blades fairly similar to e.g. No. 29 can be easily produced by all cultures using relatively large-sized conical nuclei.

Round scrapers in different cultures are fairly similar, too. There are great differences, however, within other types of scrapers where these morphological differences undonbtedly cover functional divergenes. For exapmle, semicircular scrapers No. 12 from Hódmezővásárhely-Vata farm and No. 19 from Hódmezővásárhely, "Pap wheeler's land" /Körös culture/ differ significantly from an obsidian scraper of the same morphological type found in Tiszavalk-Négyes /No. 36/. The three scrapers have more or less the same semicircular working edge, whereas, No. 36 has quite a different character, so they were determined for different purposes.

End scrapers are known from all localities, except from ALP. The specimen from Békásmegyer /Zseliz group/ made on a wide blade is a special type /No. 112/. It has some vague similarity to No. 36 mentioned above. Another end scraper from

Békásmegyer /No. 113/ made on a small, narrow blade is very similar to No. 4 /Hódmezővásárhely, Vata farm; Körös culture/ and to No. 204/ Megyaszó, Bükk culture/. Not only the shape but probably also the function of the abovementioned tools are similar. No. 17 from Zalavár and No. 128 from Pomáz - the latter is a combination of a blade borer and a scraper - belong to this group, too, although No. 74 had probably a slightly different function because of the placing of its retouch. Nos. 11 and 13 - wide, carefully retouched end scrapers from Hódmezővásárhely Vata farm - are also very similar to an end scraper /No. 217/ found in Borsod-Derekegyháza. A massive end scraper from Pomáz /No. 130/ slightly resembles a high flake scraper /No. 89/ found in Zalavár. In the material of Hódmezővásárhely Vata farm two atypical end scrapers are present, too. /Nos. 12 and 13./

Mention must be made that scrapers - except obsidian specimen No. 36 in Tiszavalk-Négyes - are made of silex in all cultures. Blades, blade points and borers were made of silex as well as of obsidian or quartzite. There are no sickle-blades made of obsidian in the material available.

Secondary working can be observed only on some blades of TLP and the Bükk culture. First of all straight and oblique truncation were used -frequently on both ends of the tool, e.g. Zalavár; Nos. 62, 63, 71; Szentgyörgyvölgy: No. 97 Békásmegyer No. 111; Pomáz 122; Eger-Kiseged No. 142 - all made of silex and the only truncated blade made of obsidian in Megyaszó-Csákó /No. 196/. It is interesting that - except

the short, wide fragmentary, later probably reshaped, obsidian blade the truncation of which is not a regular one - all the truncated specimens are carefully made, long, narrow blades, generally retouched on both sides. So it is evident that this was a real, by all means functional tool-type existing in different cultures and can be connected with definite raw materials, working methods and sizes. As a matter of fact, this is the only definite blade type in the whole material described in this paper. The next more or less well defined group is that of the small, unretouched, tipped blades which are common in Bükk culture /e.g. Megyaszó-Csákó Nos. 197, 198, Borsod-Derekegyháza Nos. 238-42; Hidasnémeti No. 154; Hermann Ottó Cave No. 178/ and sporadically known from ALP, too /Tiszavalk-Négyes No. 34, Jászberény-Cserőhalom No. 48/. According to negatives on nuclei, small blades were used also by the Zseliz group /Békásmegyer, nucleus No. 115/.

Blunting was rarely applied; it is present only on one blade fragment from Zalavár /No. 82/ and on the edges of the combined tool /borer and scraper/ in Pomáz /No. 128/.

Naturally, beside the everywhere dominant blades, every culture has tool-types which are absent in other ones, but, as I have mentioned above, it doesnot mean necessarily that other cultures ignored them. To tell the truth, the more material is available the more types can be observed. This increase of the number of tool-types, however, is not always in direct proportion to the quantity of material;

e.g. the Bükk culture that yielded 151 specimens, has only 11 types, whereas TLP in which the number of specimens is 83, has 12 types.

Partly the relatively small quantity of material partly the inevitably subjective definition of the function of tool-types do not allow me to determine any degree of a possible occupational specialization in different localities. That is why only the "traditional" morphological types have been included in the list of types.

Summary

The chipped stone industry of Hungarian Early Neolithic cultures is a non-microlithic blade-industry of "Upper Palaeolithic" character having relatively few types. There is only one specimen of definitely Late Neolithic character in the material available; that is the small obsidian with "solutrean" retouch found in the Peskő Cave, a locality of the relatively young Bükk culture. "Tardenoisian"-like true geometrical microliths or other mesolithic types are absent, except the Bükk culture where perhaps some "macrolithic" companent resembling the material of local Mesolithic industries can be observed. Thus the chipped stone material of the Early Neolithic localities of Hungary discussed in this paper do es not resemble Mesolithic industries described in Hungary or in surrounding territories.

Some relationship with certain Pre-Neolithic cultures, however, seems to be theoretically possible. Nevertheless, these questions can be answered after further thorough investigations.

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P L A T E S

Plate I: 1-2o Körös Culture
/1-14 Hódmezővásárhely-Kotacpart, Vata Farm; 15-20 Hódmezővásárhely-Bodzáspart, "Pap bognár land"/
/1-6, 1o-2o silex; 7-9 obsidian/ 1/1

Plate II: 21-26 Körös Culture; 27-33 Alföld Linear Pottery Culture Szatmár Group
/21-22 Dévaványa; 23 Besenyszög; 24-25 Röszke-Ludvár; 26 Hódmezővásárhely-Bodzáspart; 27-33 Tiszavalk-Négyes/
/21,23-25, 27-3o silex; 22, 26, 31-33 obsidian/ 1/1

Plate III: 34-36 Alföld Linear Pottery Culture Szatmár Group; 37-45 Alföld Linear Pottery Culture
/34-36 Tiszavalk-Négyes; 37 Kisköre-Gát; 38 Tiszavalk-Tetes; 39 Nyiri; 4o-41 Szamossály; 42-45 Nagyecsed/
/39 silex; 34-38, 4o-45 obsidian/ 1/1

Plate IV: 46-49 Alföld Linear Pottery Culture; 5o-61 Alföld Linear Pottery Culture Szilmeg Group /46-49 Jász-

berény-Cserőhalom; 5o-51 Polgár-Basatanya; 52-61 Folyás-Szilmeg/
/46-47, 49-56 silex; 48, 57-61 obsidian/ 1/1

Plate V: 62-79 Transdanubian Linear Pottery Culture
/62-79 Zalavár/
/62-79 silex 1/1

Plate VI: 8o-9o Transdanubian Linear Pottery Culture
/8o-9o Zalavár/
/8o-9o silex/ 1/1

Plate VII: 91-98 Transdanubian Linear Pottery Culture
/91-95 Zalavár; 96-98 Szentgyörgyvölgy/
/91-98 silex/ 1/1

Plate VIII: 99-1o9 Transdanubian Linear Pottery Culture
/99-1o8 Keszthely, Zsidi Street; 1o9 Sármellék/
/99-1o6 silex; 1o7 basalt; 1o8 qoartz pebble; 1o9 chalcedon/ 1/1

Plate IX: 11o-124 Transdanubian Linear Pottery Culture
Zseliz Group
/11o-115 Békásmegyer; 116-124 Pomáz-Zdravlyak/
/11o-113, 116-124 silex; 114-115 obsidian/ 1/1

Plate X: 125-136 Transdanubian Linear Pottery Culture
Zseliz Group
/125-136 Pomáz-Zdravlyák/
/125-132 silex; 133-136 obsidian/ 1/1

Plate XI: 137-145 Bükk Culture
/137-142 Eger-Kiseged; 143-145 Viskó/
/137,14o, 142 silex; 138-139, 143-145 obsidian; 141 quartzite/ 1/1

Plate XII: 146-154 Bükk Culture
/146-147 Hernádcéce-Miszlongatető; 148 Bükkaranyos; 149-151 Kőlyuk Cave /15o-151 "Előbarlang/; 152-154 Hidasnémeti/
/148-149, 152-154 silex; 15o.151 obsidian; 146-147 qoartzite/ 1/1

Plate XIII: 155-169 Bükk Culture
/155-165 Hidasnémeti; 166.169 Aggtelek Cave, "Denevérág"/
/155, 166, 169 silex; 156-165, 167-168 obsidian/ 1/1

Plate XIV: 17o-183 Bükk Culture
/17o Büdöspest Cave; 171-174 Lambrecht Kálmán Cave; 175-183 Herman Ottó Cave/

180-183 silex; 170-179 obsidian/ 1/1

Plate XV: 184-192 Bükk Culture

/184-186 Herman Ottó Cave; 187-192 Boldogkővár-alja-Tóhegy/

/184-192 quartzite/ 1/1

Plate XVI: 193-209 Bükk Culture

/193-194 Peskő Cave; 195-199 Megyaszó-Csákó; 200-209 Megyaszó-Nagyrépás Hill/

/204-209 silex; 193-203 obsidian/ 1/1

Plate XVII: 210-222 Bükk Culture

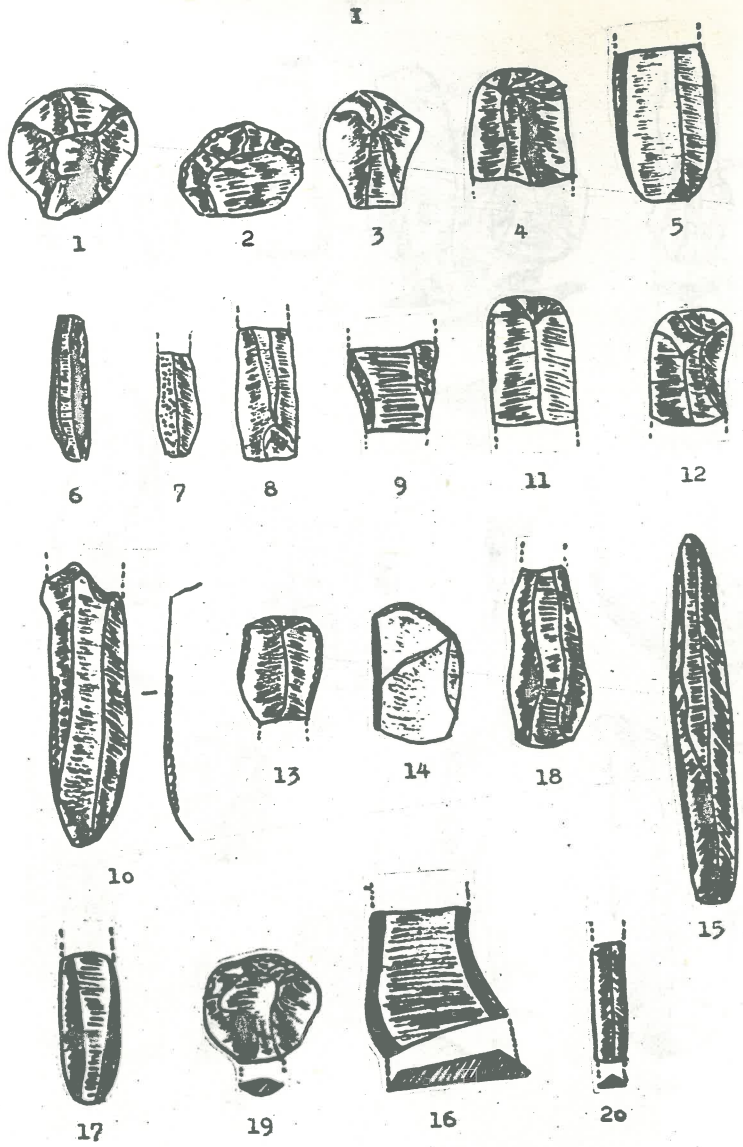
/210-222 Borsod-Derekegyháza/

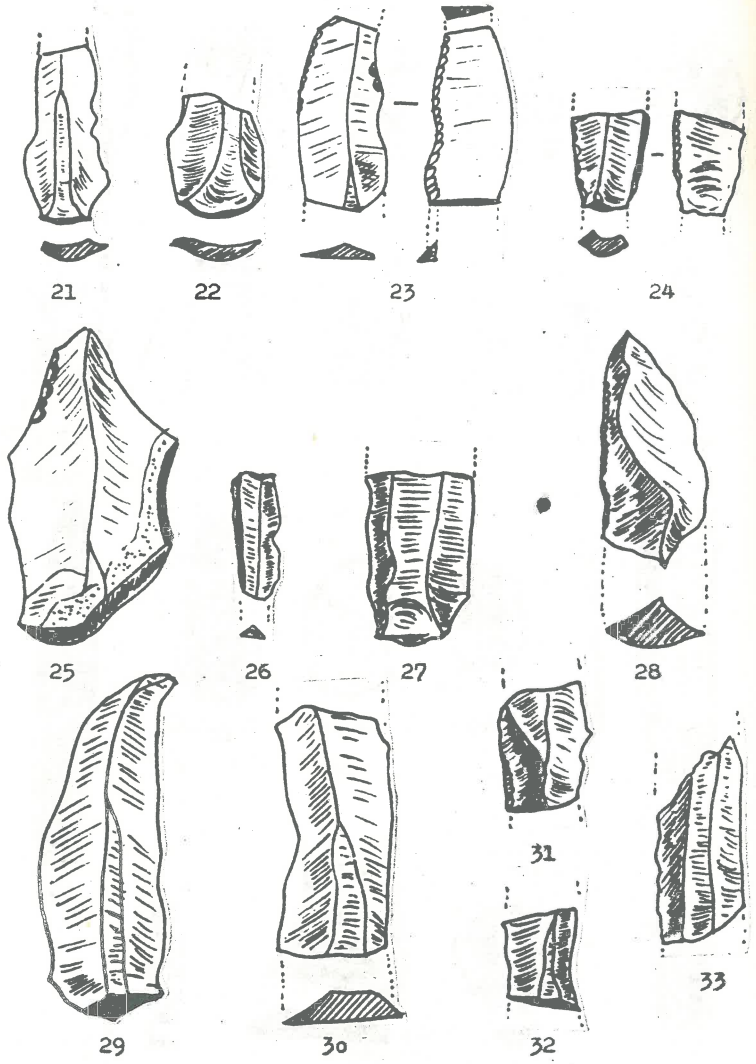
/214, 216-217 silex; 218-222 obsidian; 210-213, 215 quartzite/ 1/1

Plate XVIII: 223-246 Bükk Culture

/223-246 Borsod-Derekegyháza/

/223-246 obsidian/

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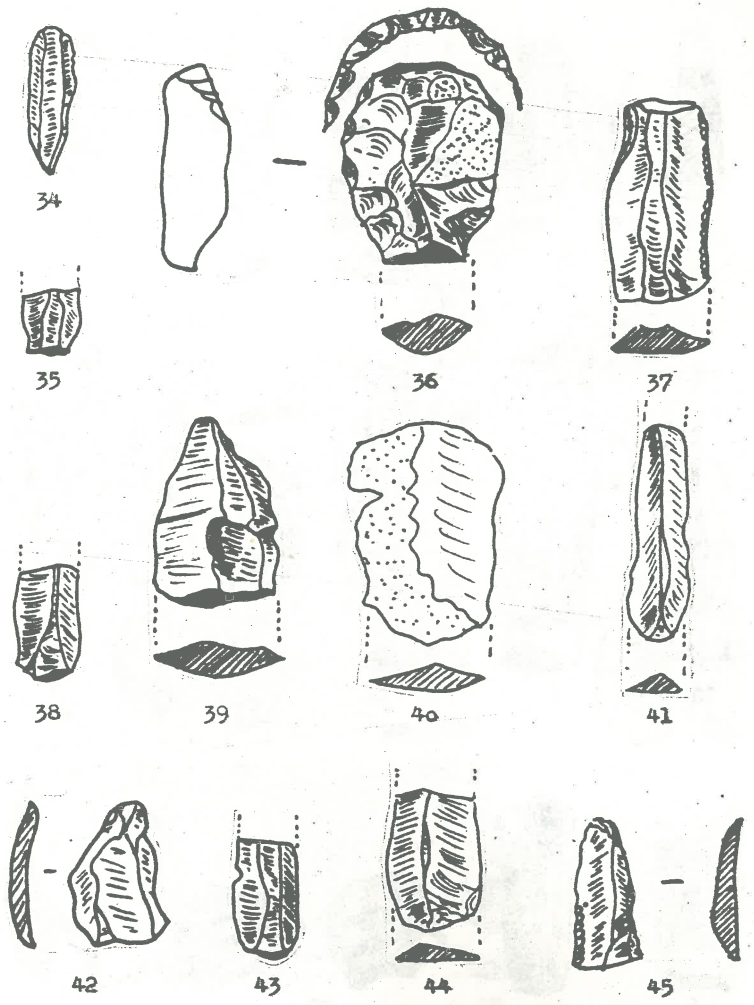
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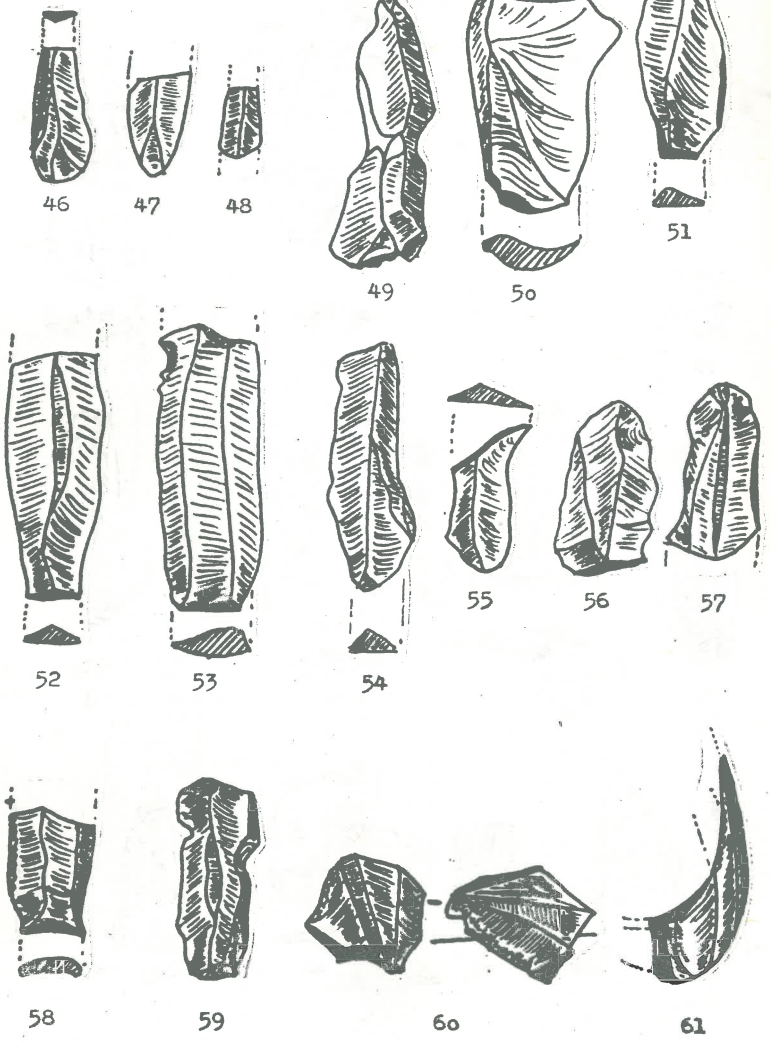
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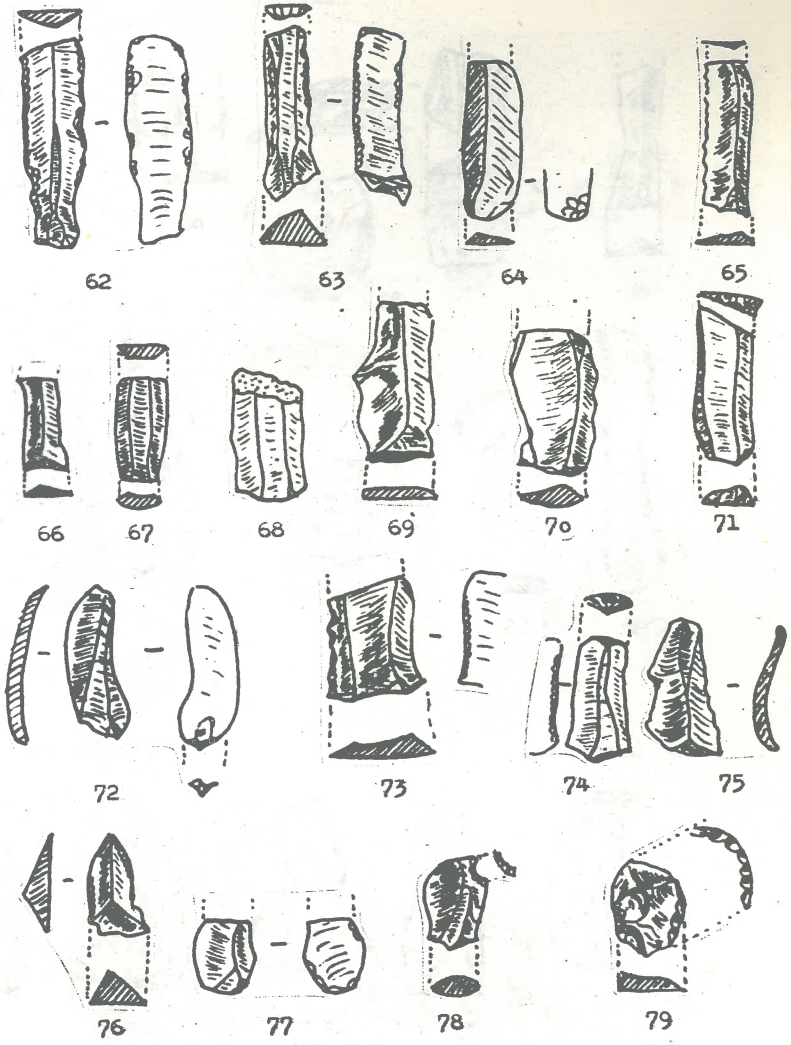
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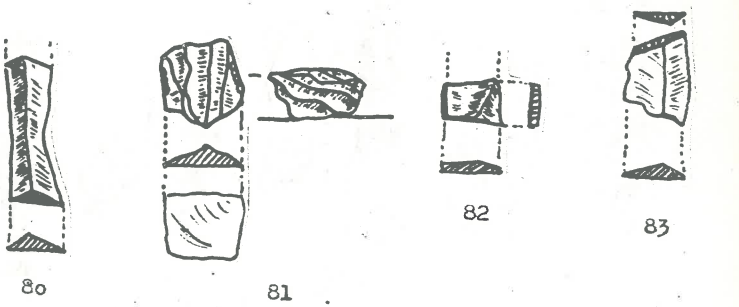
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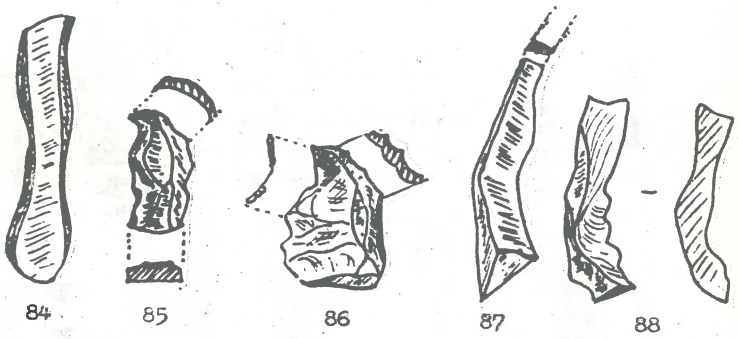
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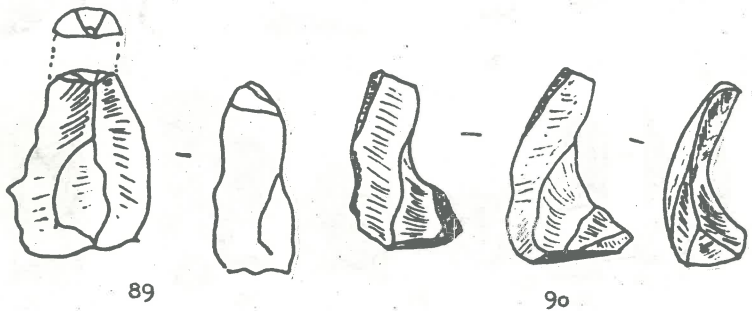
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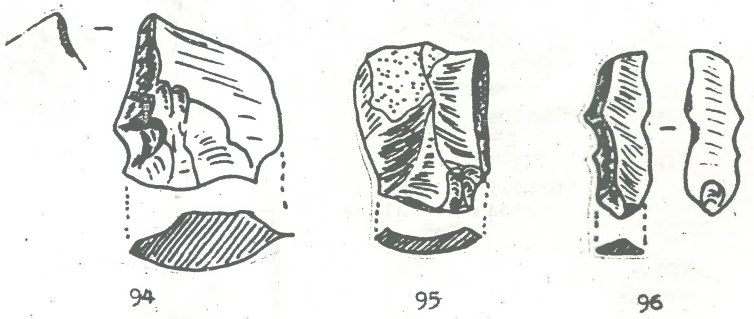
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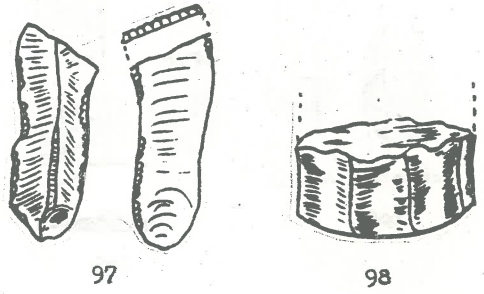
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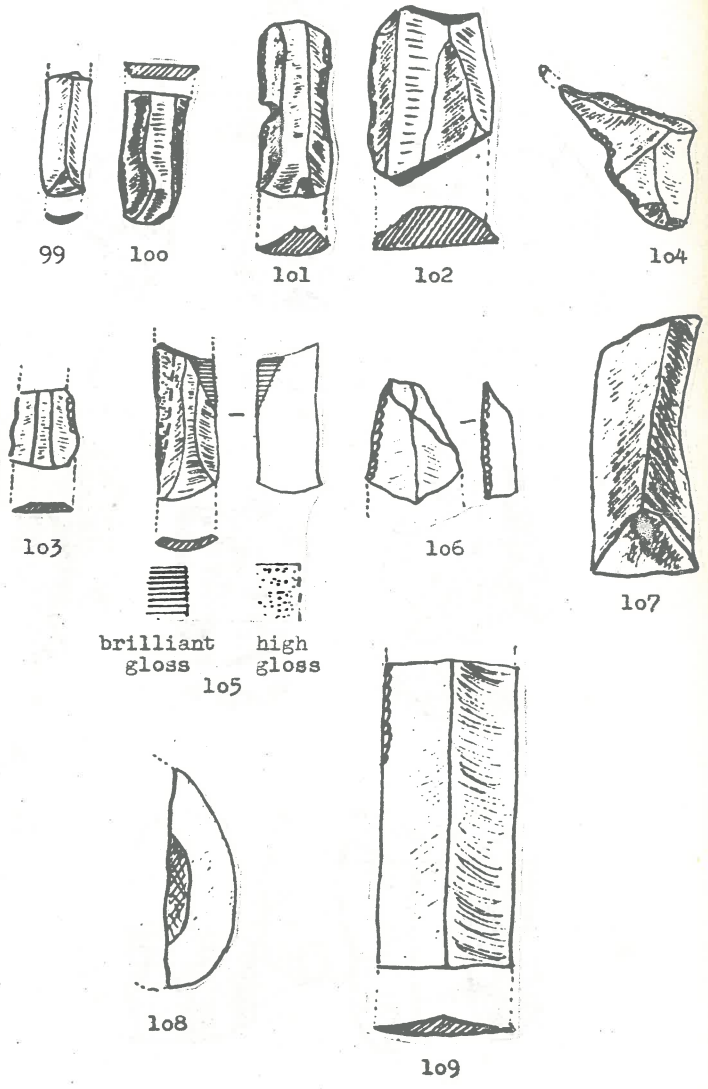
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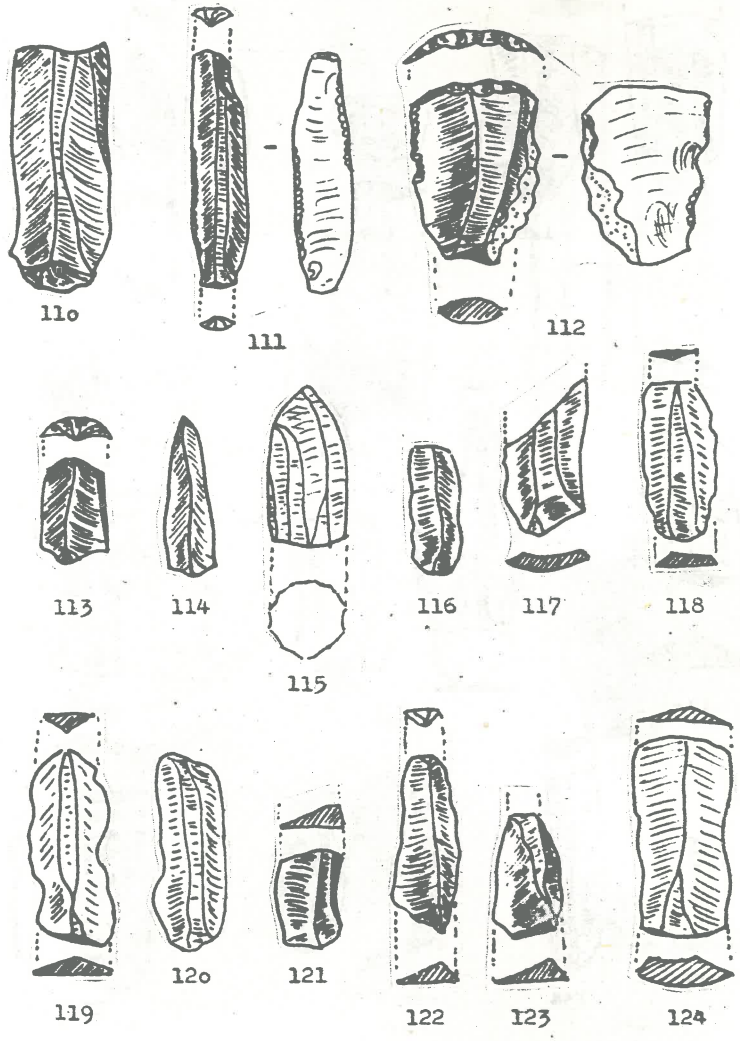
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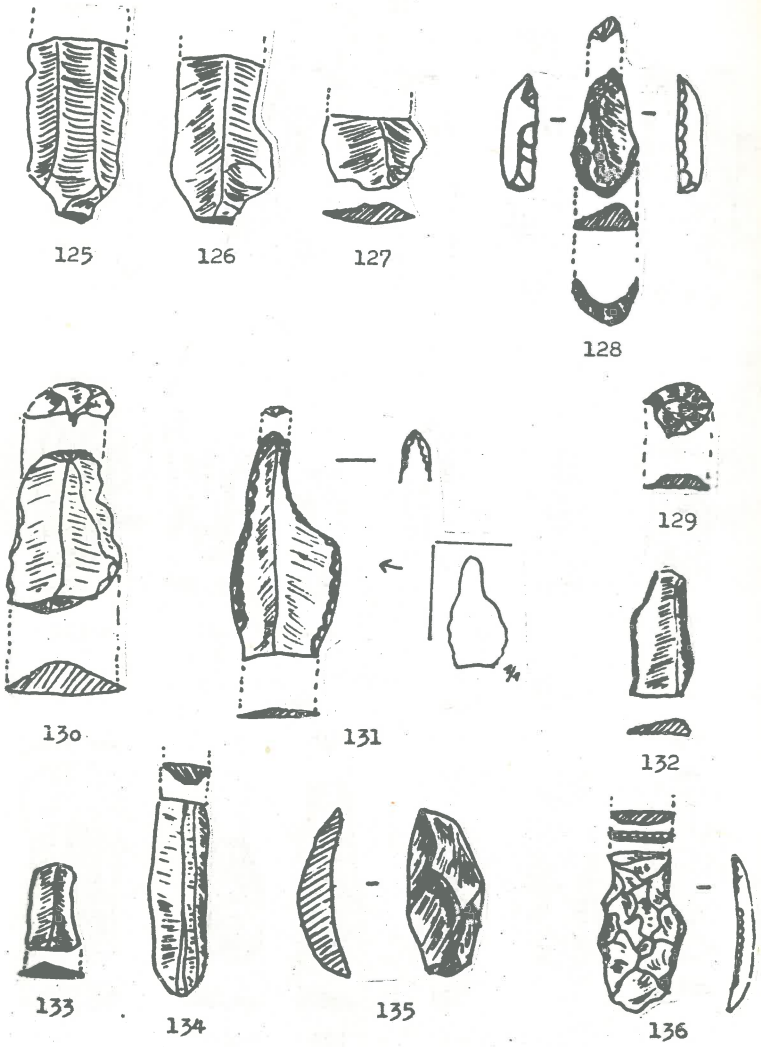
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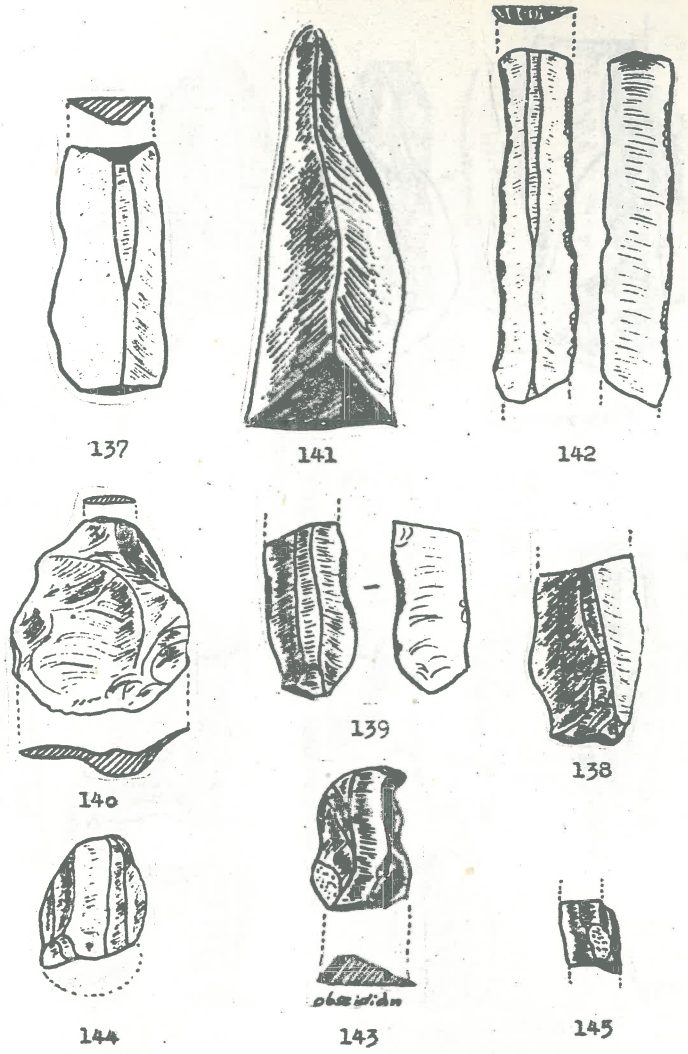
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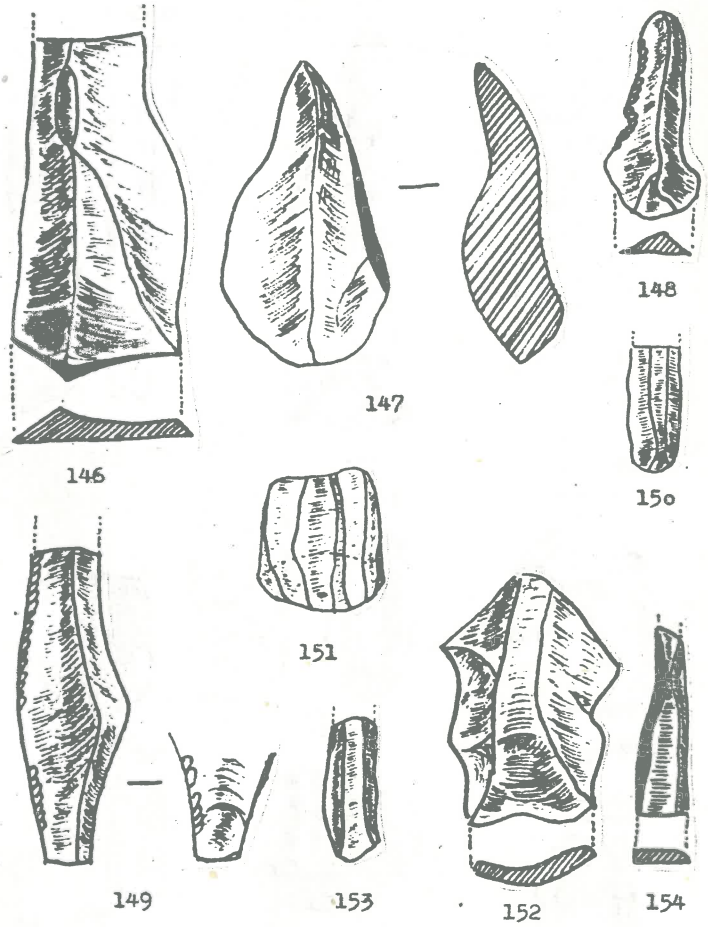
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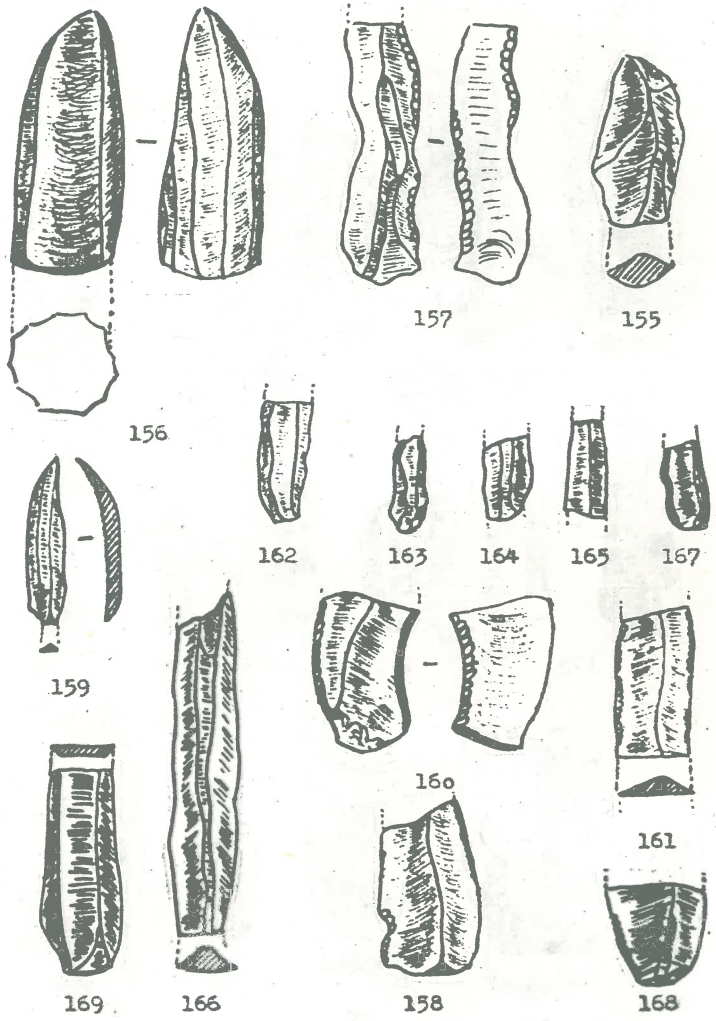
XIII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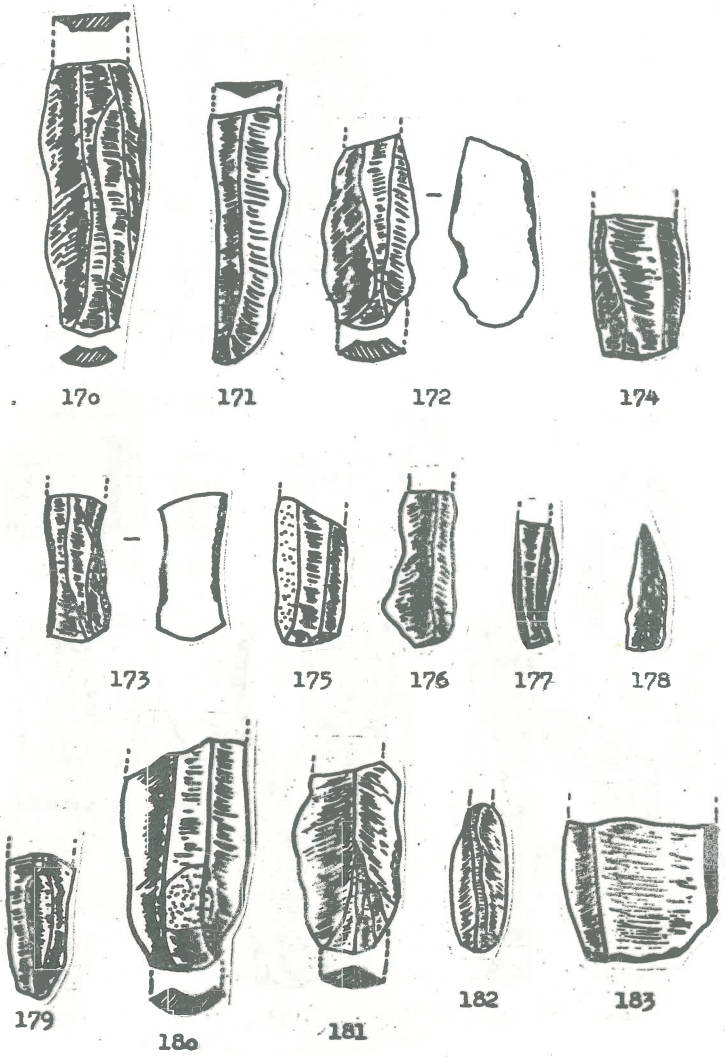
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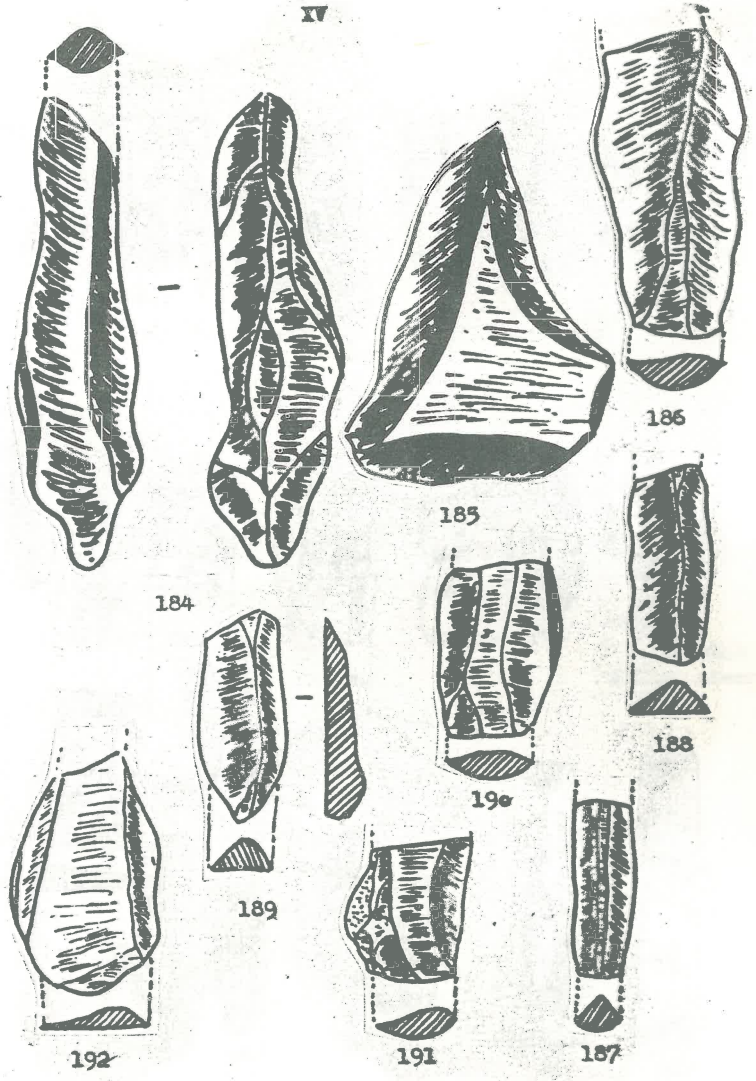
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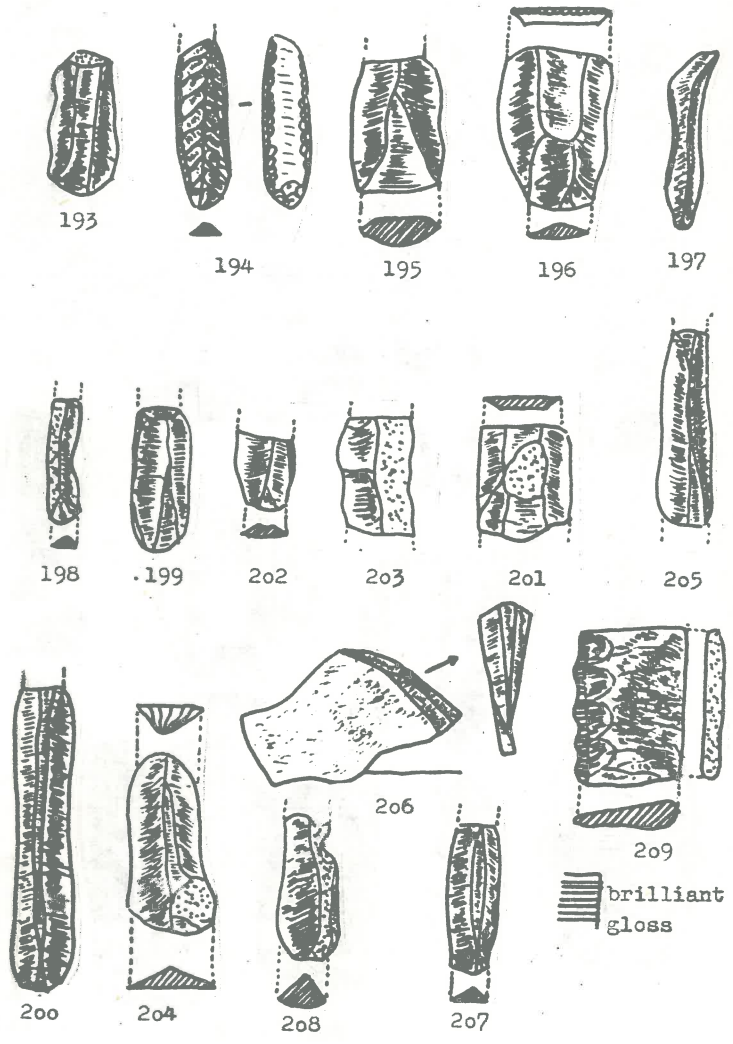
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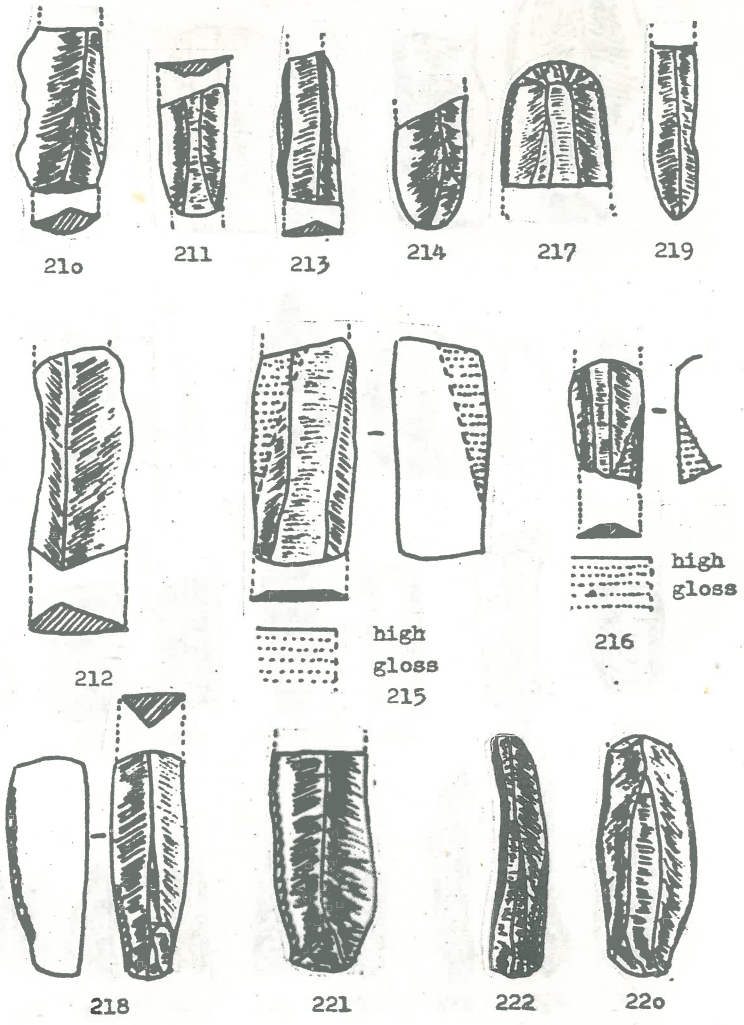
2o9
brilliant
gloss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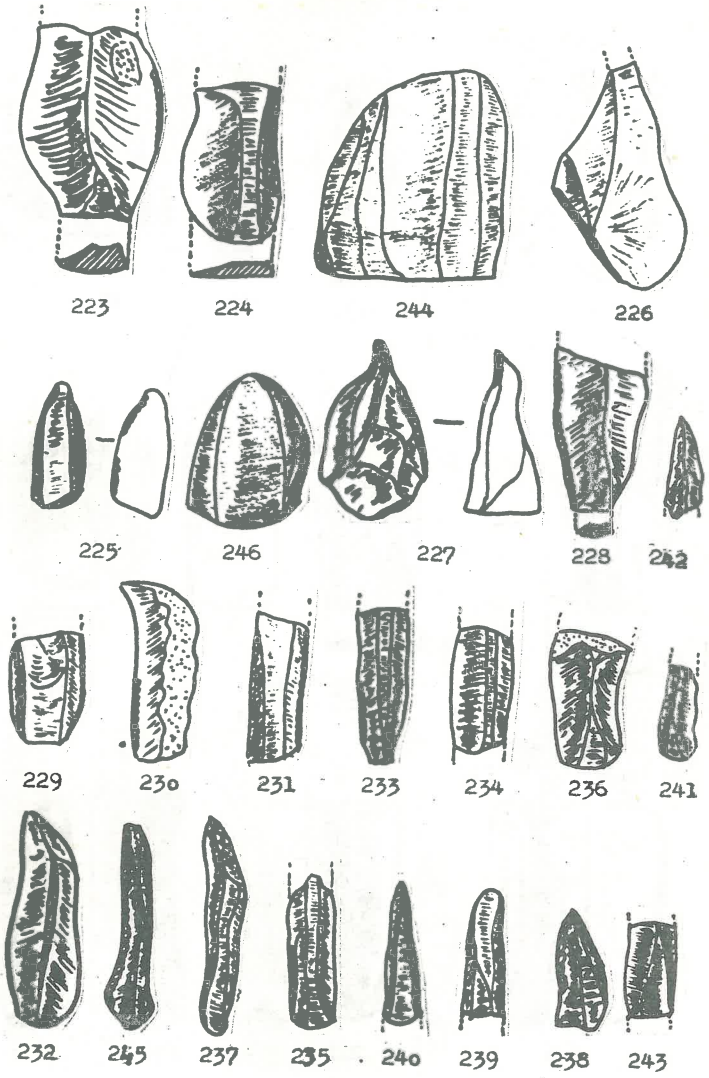
22o



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