CORE EXPLOITATION PROCESS AT THE AURIGNACIAN SITE ZWIERZYNIEC I

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One of the most interesting Palaeolithic sites in Poland is the multiplayer site Zwierzyniec I know from many publications. It was excavated by A.Jura, L.Sawicki (1957) and, more recently, by W.Chmielewski (1975).

This article is a continuation of the work previously undertaken by the present author (Sachse-Kozlowska, 1978) and is a contribution to the monograph on Aurignacian cultures in Poland. The tool inventory from the above mentioned site, already fully published, was the basis for recognizing the so-called Zwierzyniec-Type Assemblages (one of the varieties of the typical Aurignacian culture). This paper analyses cores and debitage on the basis of a statistical sample of matérial recovered at what is known as Trench 3 (excavated area of 80 m^2), (Sachse-Kozlowska, Kozlowski, S.K., 1975).

The analysis of horizontal distribution and stratigraphy showed that the flint assemblage from Trench 3 is the most homogeneous one.

The object of this work is a preliminary analysis and presentation of processing cores and obtaining blanks in the Zwierzyniec-Type Aurignacian culture.

The analysed material was a numerous inventory of :

- 107 pre-cores and cores
- 1250 flakes
- 581 blades
- 73 retouched tools
- 11 hammerstones.

Raw material

The basic raw material in the Aurignacian assemblage Zwierzyniec I was the Upperoxfordian flint in different shades of gray and brown (a colour typical for this region). A characteristic feature of this type of flint is the large number of inner flaws which significantly reduce its value as a raw material. Furthermore, it was often frost cracked. Some items made of radiolarite, quartzite and other unidentified material were also found.

Horizontal distribution of artifacts

The artifacts evenly cover the whole area of Trench 3. There are no definite clusters in this trench and the only bigger cluster can be noticed in the vicinity of Trench 1.

Cores

In reconstructing the core-processing techniques, the cores are very important. Items in the statistical sample represent the following forms: precores, initial cores, cores in full exploitation, fully exploited cores including core fragments, repaired cores and remodelled cores. Given such a variety of cores items, a reconstruction of their exploitation may be carried out through a classification of cores and a dynamic analysis of each item. This will enable a reconstruction of all the important stages of core-working (preparation, exploitation, remodelling and reutilization), according to the types distinguished below.

Core analyses showed that the items are mostly single platform cores or cores with changed orientation. The latter were more often exploited from one platform than simultaneously from two. The several types of cores recognized were labelled from A to F. The synthetic characteristic and the reconstruction of core processing is as follows :

Type A

A frequent initial form was a large pre-core of almond or almond-like shape with lateral edges sometimes formed by core trimming; it has a flat retouch of a part or of the whole preflaking surface, and sometimes of the back. The cross-section is lens-shaped. Natural flat concretions were occasionaly used. The striking platform (often already prepared) was formed by retouch and it was frequently very oblique, sometimes covering almost the whole back of the item. Next, the broad, slightly convex flaking surface was exploited by striking off wide, massive blades (usually intended for retouched tools), following which e rejuvenation of the striking platform and further exploitation of the old flaking surface might have taken place.

Massive cortical flakes and ones with a natural dorsal surface (pre-core stage) were struck off from this type of core. The first blades might also have been cortical. The preparation and rejuvenation of the striking platform was done by the striking of the small non-cortical flakes.

The subsequent stages were connected with repairs of the deformed cores. The deformations might have been the result of a high degree of exploitation or of breaking of the core which resulted in a natural new striking platform or a platform prepared by retouch.

Type B

Massive tabular concretions with natural cortical sides or natural non-cortical sides were the initial form. Sporadically, the sides of the manufactures core were additionally prepared by flat retouch vertically starting from the striking platform downwards or horizontally. The bent pre-flaking surface for blades was made on the narrow side front of the tablet using sometimes lateral pre-formation. The striking platform positioned at a 90° or slightly more acute angle was natural or formed by retouch. In some cases the flaking surface reached also the sides of the core but the narrow flaking surface on the front was separated from the lateral flaking surface by a sharp bend. The cores of this type yielded short, medium-sized blades often resembling flakes.

The following specimens may be distinguished in Type B : single-platform cores and similar ones with changed orientation characterized by two opposed striking platforms and flaking surfaces sovering the front and the back of the specimen. The latter yielded a final product similar to single-platform cores and their flaking surfaces could have been exploited simultaneously which, however, is difficult to prove because they never reached each other. Cores with changed orientation were sometimes exploited to a very high degree. These cores also yield flakes from the back + front or the striking platform preparation. Blanks of type B cores were mostly used for the production of retouched tools.

Type C

This type is similar to type B. The characteristic features were a natural or prepared by retouch side converging on a trimmed or natural edge at the back. The flaking surface situated on the narrow side front of the flint tablet rarely reached the side; it was rounded and covered with negatives of wide blades used used for retouched tools. The striking platform was prepared by retouch. Smaller forms of double platform cores are also found. Specimens of this type were later remodelled into cores with changed orientation, presumably after the initial form was destroyed.

Type D

Natural small flint tablets or massive flakes were the initial form for this type. The short, narrow flaking surface was formed on the narrow edge of the concretion. Before blade exploitation the tablets went through a pre-core phase, i.e. the retouch of the future striking platform or the opposite part of the core, maybe even the pre-flaking surface.

This group may be divided into two sub-groups: distinctly tabular in shape and resembling massive burins; the other - short, resembling the so called carinated end-scapers. The latter had blade negatives on the sides. The striking platforms in some cases prepared by negatives,suggest the burin function of the items; this question will be more fully discussed in Type E.

This type of core-processing yielded small bladelets an flakelike blades of measurements within the lower limits of blade widths of the discussed assemblage.

Type E

Tabular cores corresponding to Type D in size and formation process differ mainly in secondary morphological features. They were formed on massive flakes or natural tablets which were prepared by retouch on the sides and edges, often also on the whole periphery of the piece. Single flaking surface, rarely double, are situated on the narrow sides of the concretion. They are covered by negatives of small, narrow, irregular blades less than 18.5 mm wide. The striking platforms were formed lateral retouch but sometimes also longitudinally by a burin-like blow.

Groups D and E did not provide blanks for the production of retouched tools. Their struck of blades constitute a large part of all the blades in the assemblage. It is possible they are not blanks but a kind of burin spalls of cores which are in fact massive burins or even high end-scrapers. "Core-burins" of the D and E Types as well as "core-end-scrapers" of the D Type fit into the set of typical tool forms known from the discussed assemblage (carinated burins and high end-scrapers. Regardless of the functional interpretation of both groups, the considerable technological and morphological homogeneity of the Zwierzyniec assemblage from Trench 3 remains a fact.

Type F

Small and massive blocky (polyhedral) items constitute the last group of cores in the Zwierzyniec assemblage. The small items are usually single platform cores sometimes well prepared by retouch.

The origin of the big items is complex. Some are simple single platform cores for blades and flakes but we mainly encounter highly exploited forms of larger cores. This intensive exploitation of different forms led to the over lapping of successive stages of preparation and exploitation first of the initial form (A-C) and then of the final form which is sometimes a result of breaking up a larger core and the later change of orientation, repairs etc.

This group of massive blocky cores cannot be treated as characteristic for the Aurignacian. It was the product of a specific raw material economy on a specific site where the frail and cracked material was probably collected from secondary deposits. This interpretation is not only supported by the fact some of cores are extremely irregular but also by the fact that they outnumber the retouched tools by 107 to 73. For this reason, the percentage criterion which would normally suggest a workshop character of the Zwierzyniec assemblage is of no

application here. This hypothesis is also supported by analogies to other Polish assemblages where groups A to C are represented but blocky cores are often absent.

Blade analysis

In the described material there where 82 whole blades and 499 fragments. Among the fragments there were 202 proximal parts, 194 medium parts and 119 distal parts.

The whole blades were mostly regular in shape with profiles usually straight or convex, rarely bent. The large majority of lades come from the exploitation of single platform cores. They have a cortex or traces there of on the dorsal surface which indicates that some of the cores did not go through the decortication stage. Their cross-section varies from the isosceles triangle, through the asymmetrical triangle to the symmetrical and asymmetrical trapeze. None of the cross-sections is numerically superiour to another. The majority of striking surfaces of the blades were prepared by retouch.

Morphometrical analysis of whole blades

The ratio of length to width to thickness indicates the existence of two groups of items :

I - wide blades (over 18.5 mm) which are shorter,

II - narrow blades (less than 18.5 mm), i.e. longer ones. The ratio of thickness to width of blade fragments was also established and it was found that most specimens can be included in the 1:2 and 1:3 standards.

The thickness is most often 2-10 mm and the width 7-22 mm and the items are grouped in 4 standards: 7-8 mm, about 10 mm, 13-17 mm and 19-21 mm. It appears that the differences in width may be connected with the differences in the typology of cores from which the flakes originate. The dimensions of the last negative on the cores groups these negatives into 6 standards according to the width: 6-7 mm, about 9 mm, 12-14 mm, 18-26 mm, 29-31 mm and 34-37 mm. These dimensions do not correspond closely with the dimensions of blades given above - there are numerous broad negatives. It seems that the absence of sufficient numbers of broad blades in the blanks is caused by their use in the production of retouched tools which in our material were made mostly from flakes over 17 mm wide. The width of remodelled blades (for tools) is in complete disagreement with the width of unretouched blades wich indicates that narrow blades in Zwierzyniec were not blanks, despite the fact that they cannot be treated as waste - they have their own cores (D and E). Therefore, we may either assume that the blades were used as unretouched tools or that they are wastes from the formation of carinated and tabular specimens which would then be end-scrapers and burins respectively and not cores.

The comparison of the thickness of raw blades and retouched blades confirms this hypothesis. Blades 8 mm and over were formed as retouched tools while those less than 7 mm thick dominate among the unretouched blades.

Conclusion

The aim of this paper was a preliminary analysis and characterization of core processing on the example of the Aurignacian assemblage from Zwierzyniec (Trench 3). The following was concluded :

1. Aurignacian core formation was meant to supply blade blanks of two standards:

a) wide massive blades, slightly bent, used for the production of retouched tools,

b) small blanks not meant for further processing. This second case is a tentative suggestion in view of the possible waste character of the small blades.

2. For the production of the specified blades, cores of several basic types (A-E) were formed and these may be divided into two size group:

a) large blade cores, often with a pre-core phase, with curved flaking surface, acute or right angles, edge sides but more frequently plane-like-natural or prepared by retouch.

b) small tabular cores for the production of b) - type blades, also prepared by retouch, morphologically similar to burins and end-scrapers.

3. Core formation involved the modelling of almond-shaped or tabular pre-cores prepared by retouch wherever the natural shape of the concretion did not conform to the planned shape of the core.

4. The exploitation phase most often involved one flaking surface but there are cases of changes of orientation which in some specimens may indicate the simultaneous exploitation of both striking platforms but which usually testifies to the remodelling of the initial core.

5. In the particular case of Zwierzyniec the remodelling was a result of poor quality to the raw material which often caused cracking of larger specimens which in turn prompted repairs, changes in orientation, i.e. deformations of the initial forms. Extreme case here are large blocky cores.

6. The workshop character of the asemblage suggested by the percentage method (large number of cores) is misleading and results from the exceptionally poor quality of the flint material.

7. It appears that the types of cores recognized in this paper are also found in Aurignacian assemblage outside Poland being a product of the characteristic and typical for the whole Aurignacian mode of core-formation. This claim, however, needs to be cheked on original material.

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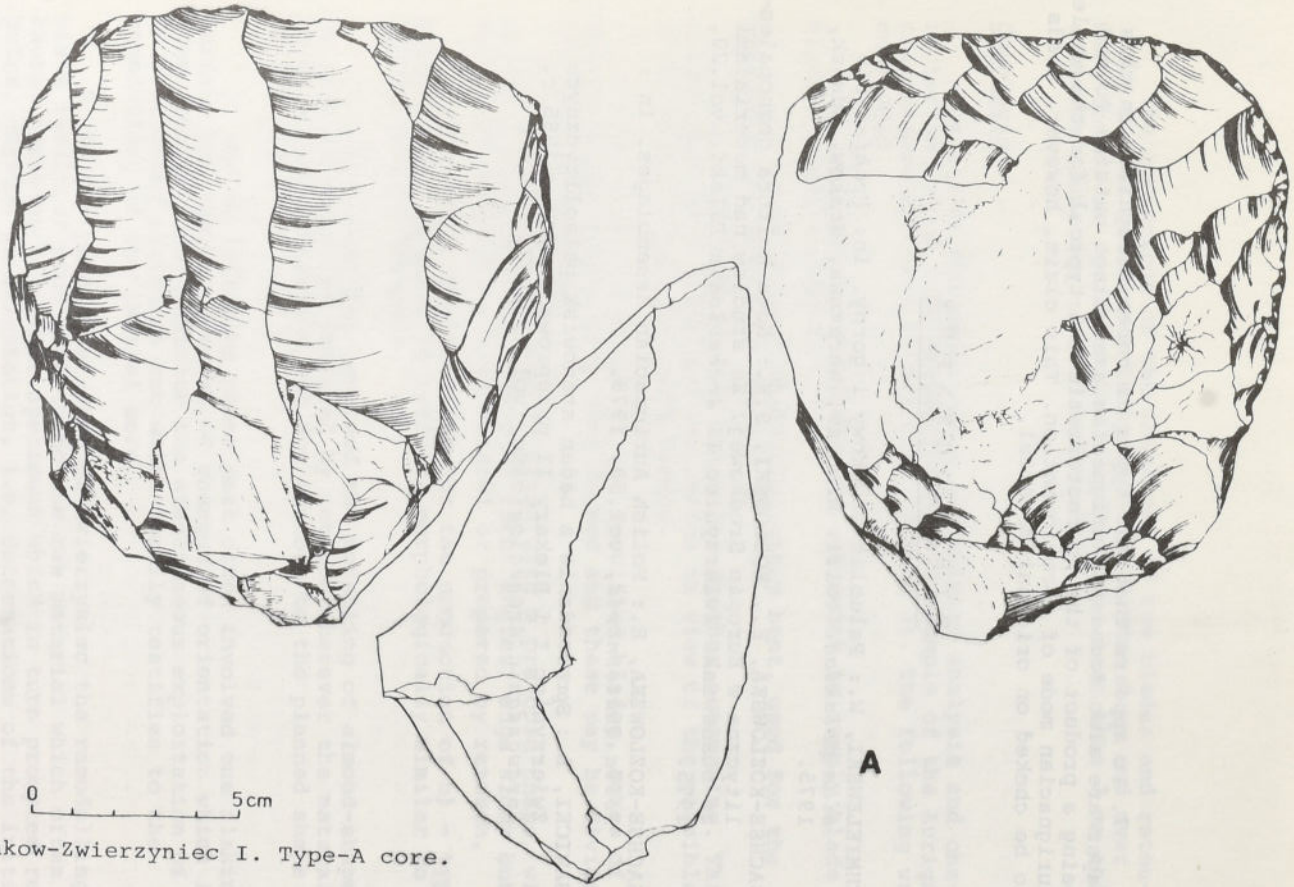

Fig. 1. Krakow-Zwierzyniec I. Type-A core.

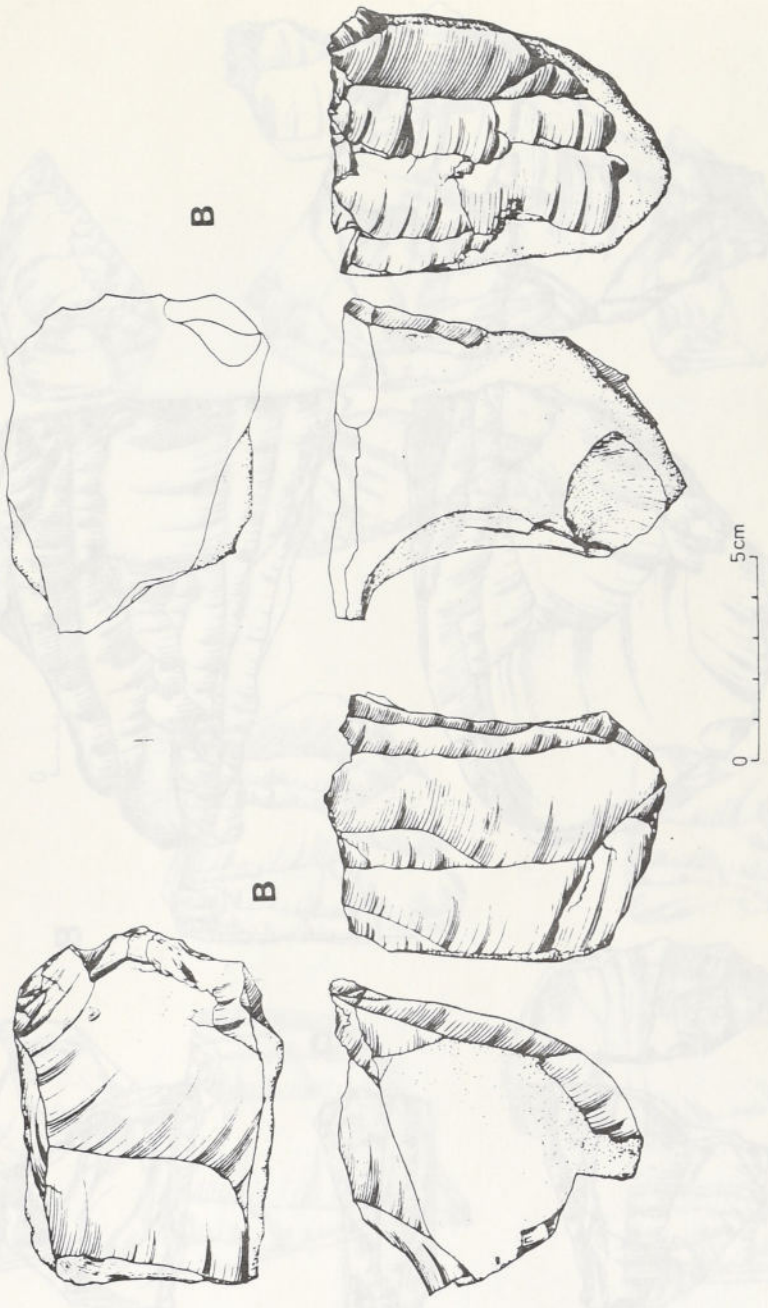

Fig. 2. Krakow-Zwierzyniec I. Type-B core.

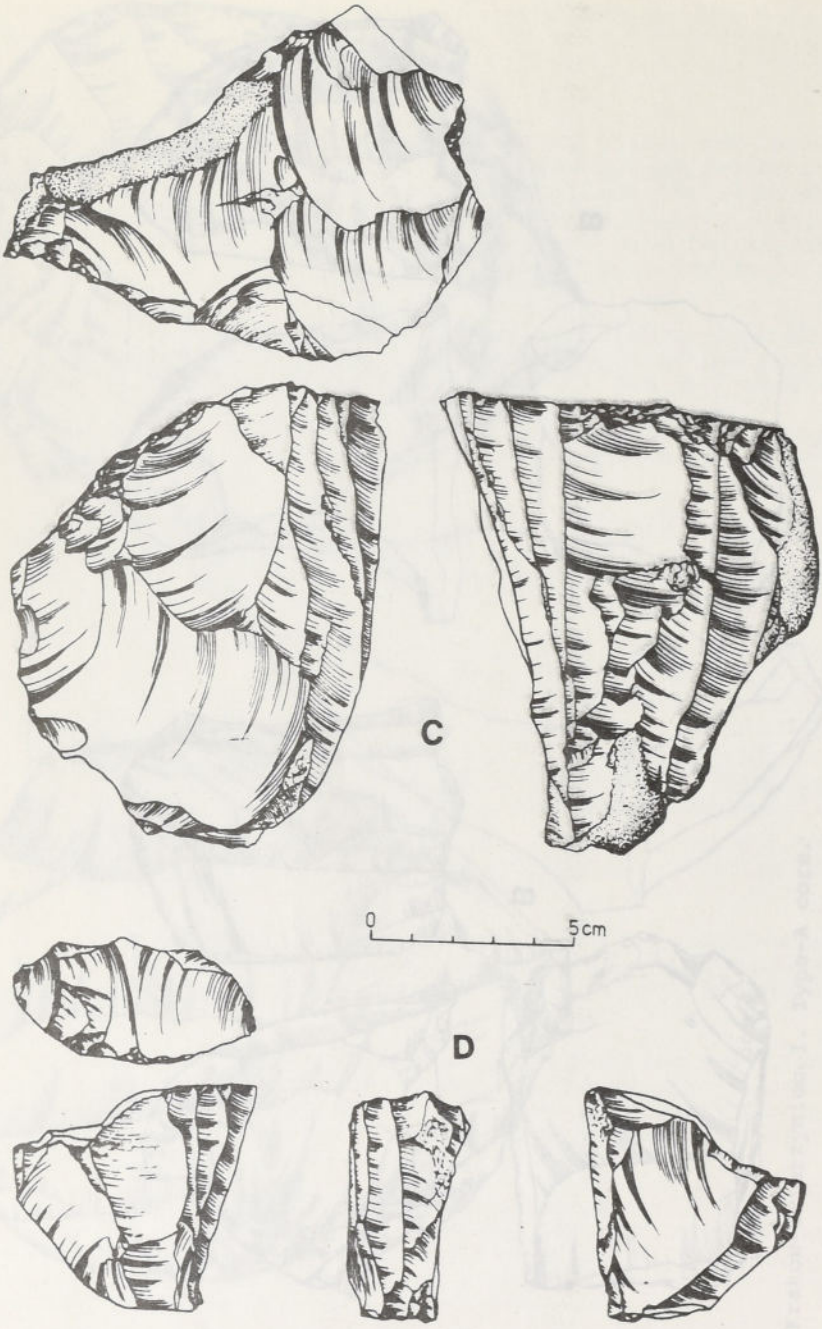

Fig. 3. Krakow-Zwierzyniec I. Type-C and D cores.

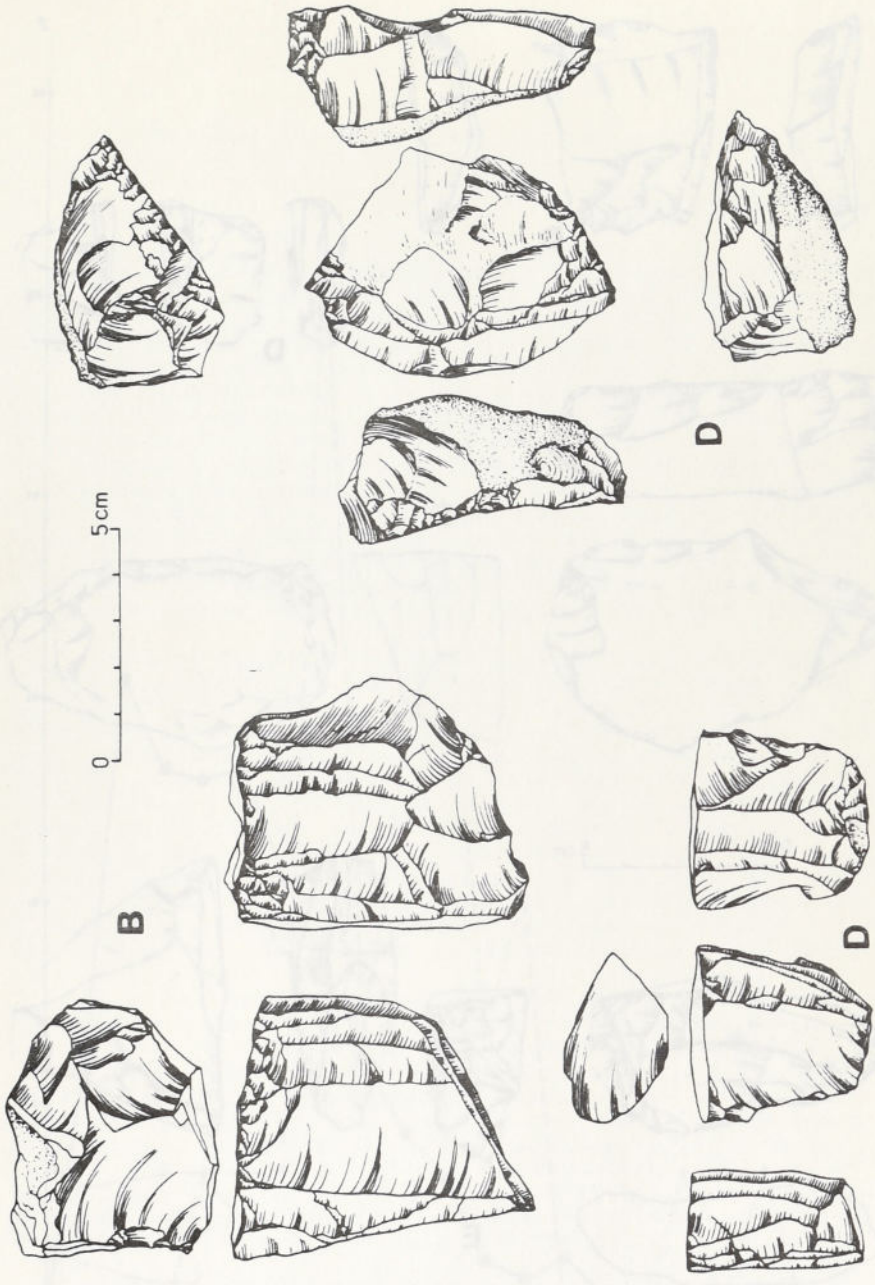

Fig. 4. Krakow-Zwierzyniec I. Types-B end D cores. B remodelled.

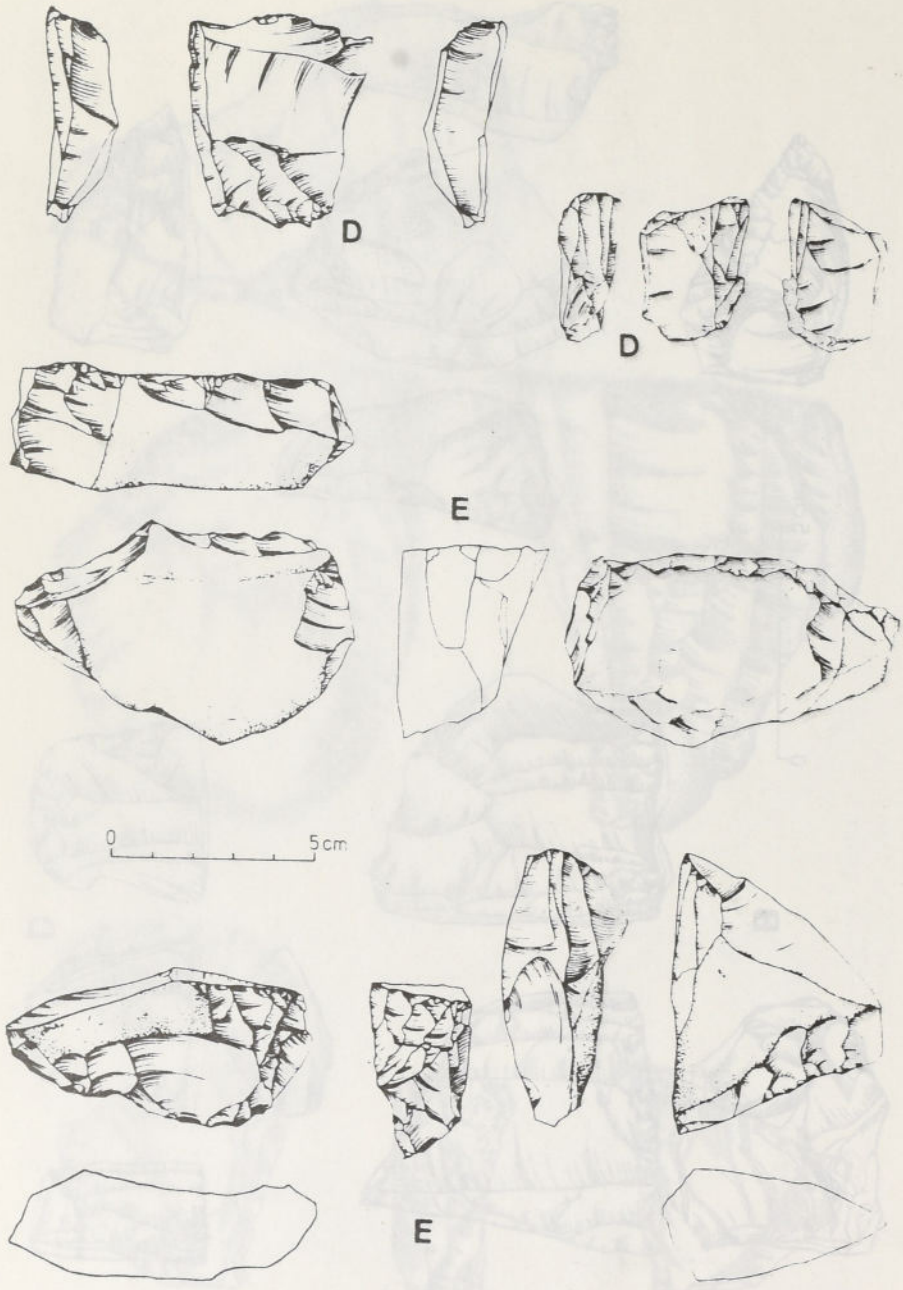

Fig. 5. Krakow-Zwierzyniec I. Types-D and E cores.

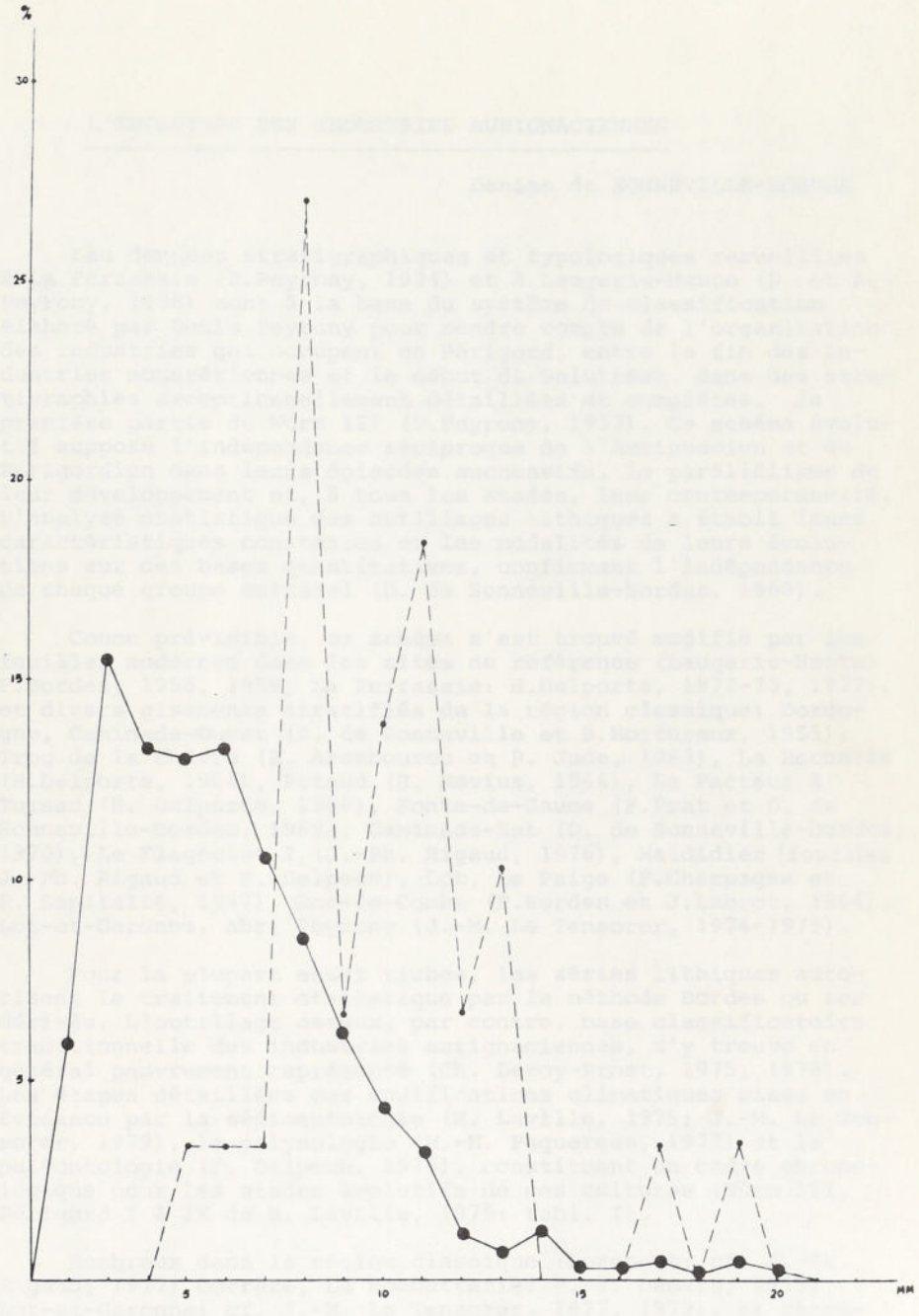

Fig. 6. Krakow-Zwierzyniec I. Thickness of unretouched blades (———) and retouched tools on blades (- - -) in milimetres.