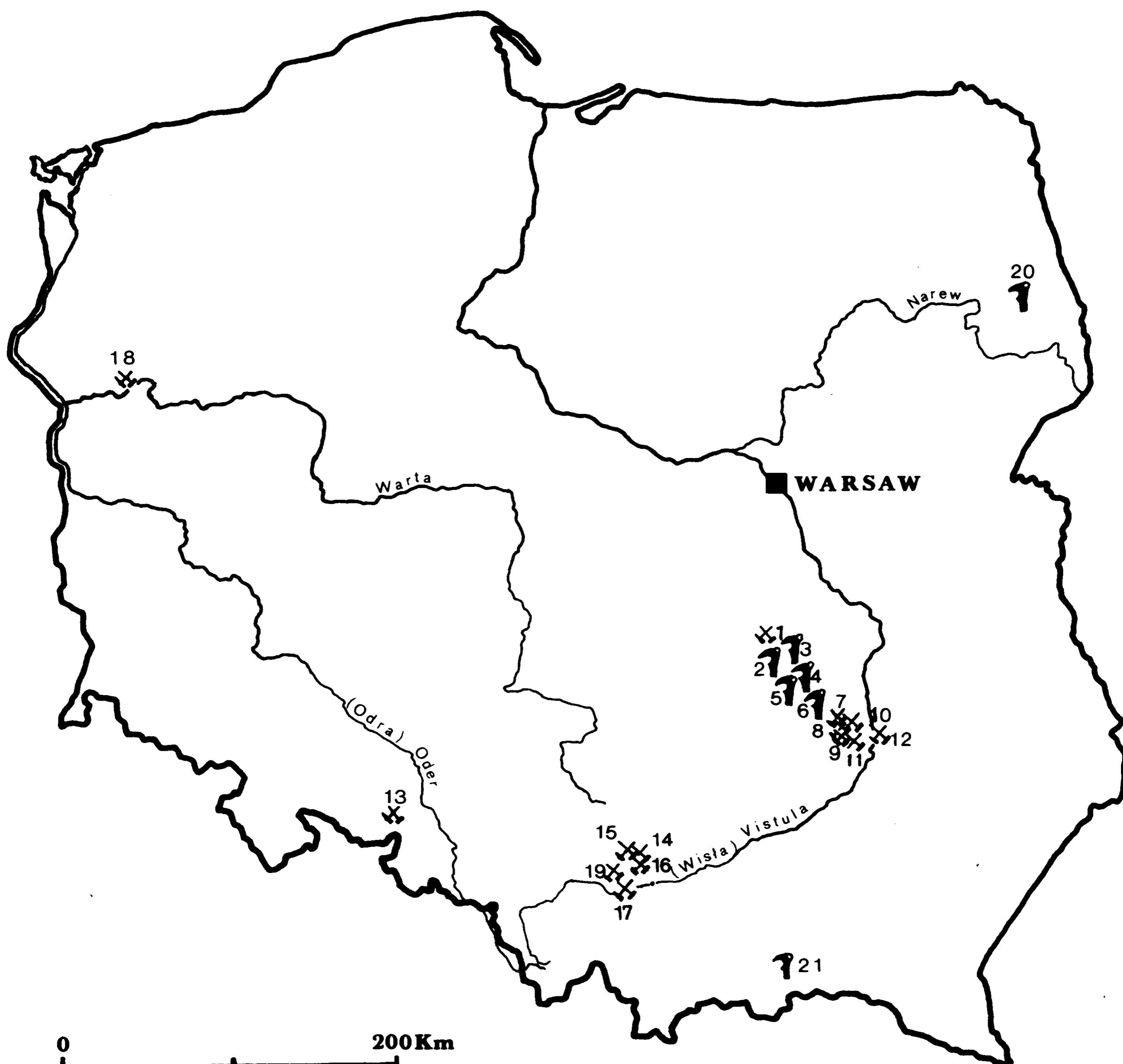


**PL 20 Rybniki, Białystok Province.
Prehistoric flint mining complex at
Rybniki-"Krzemianka" (Białystok
Province) — present state of research
and prospect**

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PL 20 RYBNIKI, BIAŁYSTOK PROVINCE

Prehistoric flint mining complex at Rybniki-“Krzemianka” (Białystok Province) — present state of research and prospects

**Wojciech Borkowski, Witold Migal, Sławomir Sałaciński
and Marek Zalewski**

FIELD STUDIES

The flint mines near the Rybniki village at the edge of the “Krzemianka” natural reserve in the Knyszyn Forest were discovered in the summer of 1991 (Fig. 1). Already the first inspection of the indicated area suggested that this was indeed an

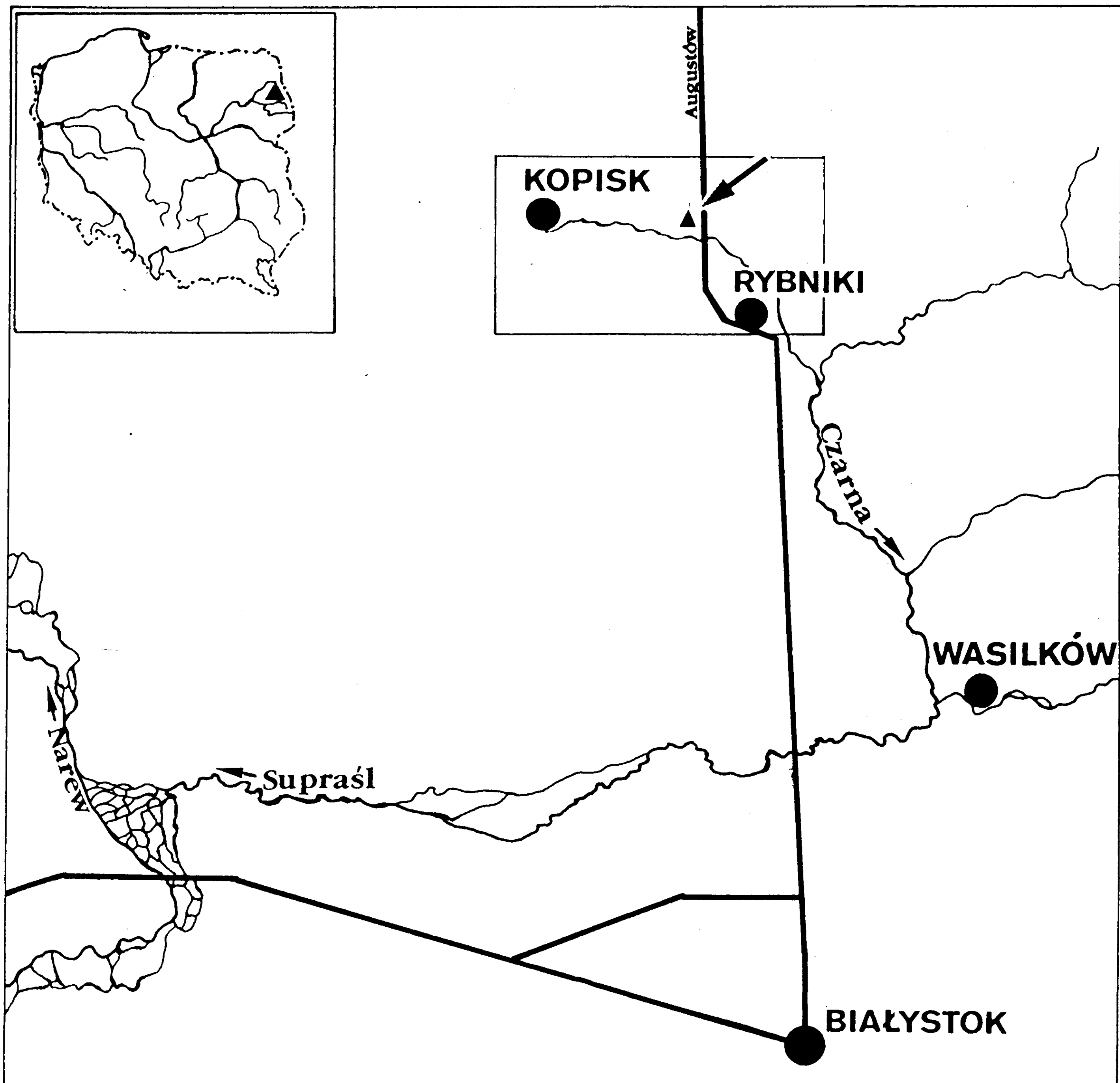


Fig. 1. PL 20 Rybniki-Krzemianka. Location of the site.

archaeological site, but dense undergrowth covering it prevented not only the collection of an adequate body of flint materials but even observation of any kind of the site surface. This was thoroughly examined only in the winter of 1992 when the range of occurrence of artifacts was determined. Also observed was distinct undulation of the ground slope indicating that the original mine surface relief survived to our times. In the spring of 1992 an expedition of the State Archaeological Museum in Warsaw began work to verify in detail the observed facts.

The local terrain relief was shaped during the Warta deglaciation. The hill containing the archaeological site lies about five kilometres north of the Mława stadial terminal moraine line. It is made up of mixed lithic material (pebbles, crystalline rock

fragments, flint concretions and strongly weathered fragments of carbonate-limestone rocks), gravels and boulder clay.

The mines are situated on the long north-facing slope of the hill, going down to a wide depression of the valley of the Krzemianka, a small river (Fig. 2).

The incline slope was deforested, a 10 x 10 m grid laid out, and a systematic surface survey launched with the aim of selecting flint materials which could indicate the character of flint working on the site. Precise measurements performed in the course of these studies served to plot a geodetic map of the site. The collected materials are suggestive of processing intended to produce bifacial forms; this would place the site in the Bronze Age. The geodetic map indicates three zones of flint exploitation. The largest of these was an area of very distinct and densely grouped undulations, covering almost the entire southern slope of the elevation. The smaller concentrations of undulations on the northern slope are similar in character. Close to the elevation summit, on its western side, there is a zone of four or five large but shallow depressions. This zone is clearly different than the others. On the eastern side of the elevation, starting from the summit, there is a series of three terraces going down the slope which is very steep here.

The three different kinds of zones probably reflect three modes of flint exploitation by the prehistoric people of the region. In the first zone, flint was extracted from shallow, closely-spaced mine shafts (Fig. 3). In the second zone, the considerable distances between the shafts suggest that the mines there were perhaps deeper. At Krzemionki (Kielce Province) there is a clear correlation between distances separating mine shafts and shaft depths. Only excavations in our zone here may show whether this is also true of the Rybniki mines. The different geological situation in the two archaeological sites (Krzemionki and Rybniki) may preclude such analogies.

The terrace structures in the third zone seem to indicate that flint there was exploited by means of quarries eating into the slope incline.

In order to verify the above suppositions, a mine in the first zone, at the western fringe of the site, was explored in 1992 and 1993. The studies revealed the mining methods that were used. The mine was elliptical, measuring some 6 by 9 m, and was 4.5 m deep. It cut into the slope incline, forming a kind of inclined drift. One of the mine walls cut deeply into the slope (this is where the depth of 4.5 m was reached) while opposite it was an easy exit to the surface (Fig. 4).

The mines in the other zones also need to be similarly verified.

The issue of exploitation is inseparable from that of settlement, and so surveys of the area around the site were undertaken alongside mine exploration. In addition to classical surface surveys, several series of geological drillings were carried out in spots which seemed most likely to contain traces of human activity but inaccessible to field survey. These explorations led to discoveries of flint materials near the so-called

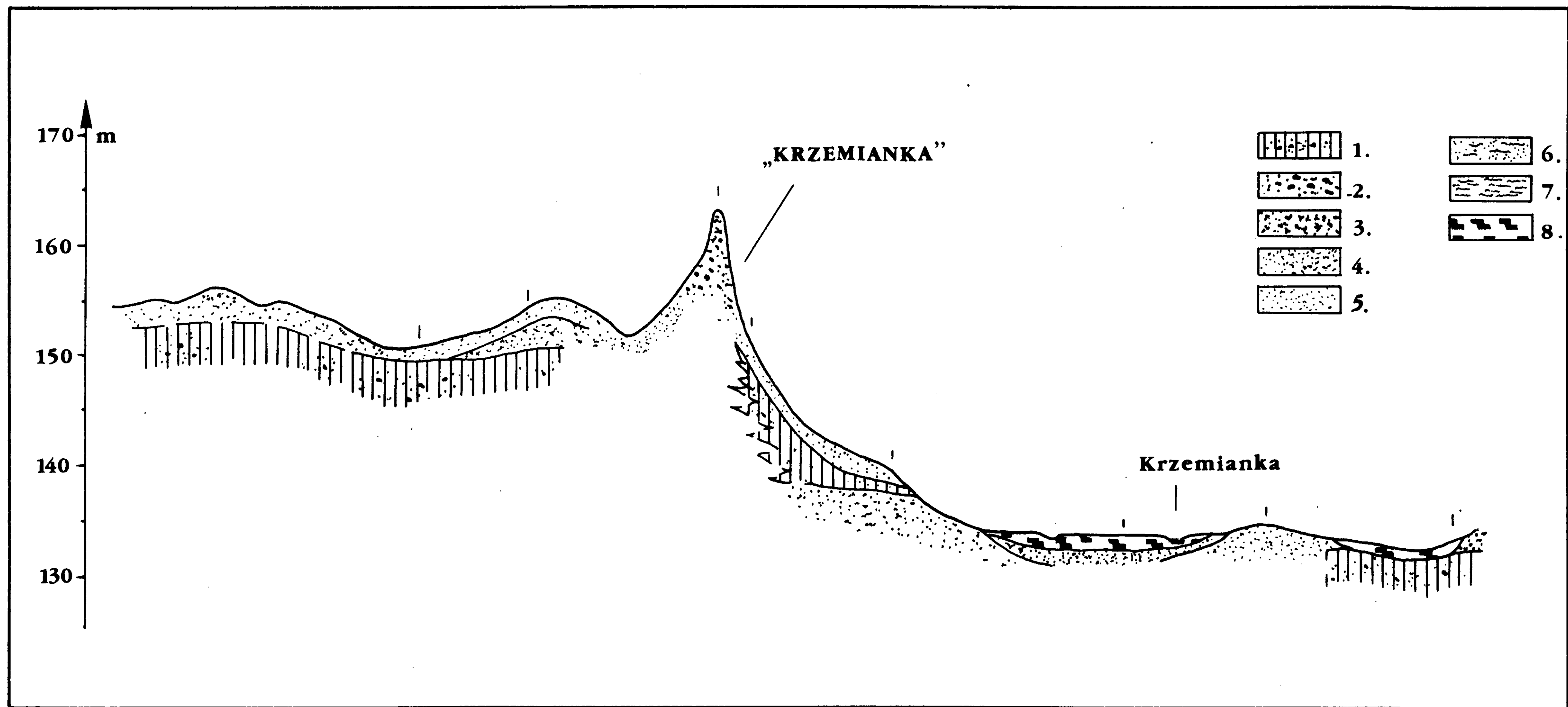


Fig. 2. PL 20 Rybniki-Krzemianka. Geological cross-section of the Krzemianka River valley: 1 — boulder clay; 2 — pebbles and gravels; 3 — gravels and sands; 4-6.— different kinds of sands; 7 — loams; 8 — peats.



Fig. 3. PL 20 Rybniki-Krzemianka. View of the surface of the exploitation field “Rybniki-Krzemianka”.

Stara Górka feature and the water springs. Excavations in that area, carried out in 1994, make possible only a tentative identification of the site’s nature. The excavation yielded not only workshop materials (clearly related to those from the mining area) but also finds of domestic character.

The flint materials recovered from mine workshops and those from workshops near the springs are fairly uniform. In both there is a high percentage of exploited flake cores and flakes from core preparation, and no traces of the blade technique whatsoever. Also present are halfproducts of bifacial forms, appearing in much greater numbers in the mine workshops. It seems however that the most important category of products were flat flakes, subsequently fashioned into arrow and spear points, or used as cutting tools after prior retouch of the edges.

The process of flint tool production in evidence in the mining and processing complex may be divided into several stages:

1. Raw material extraction: flint nodules, in secondary deposits in the moraine, were extracted by mining.
2. Concretions up to 25–30 cm in length which did not disintegrate from the first blow were subjected to further processing intended to produce halfproducts of bifacial forms or flakes. This processing was done using hard lithic hammerstones.

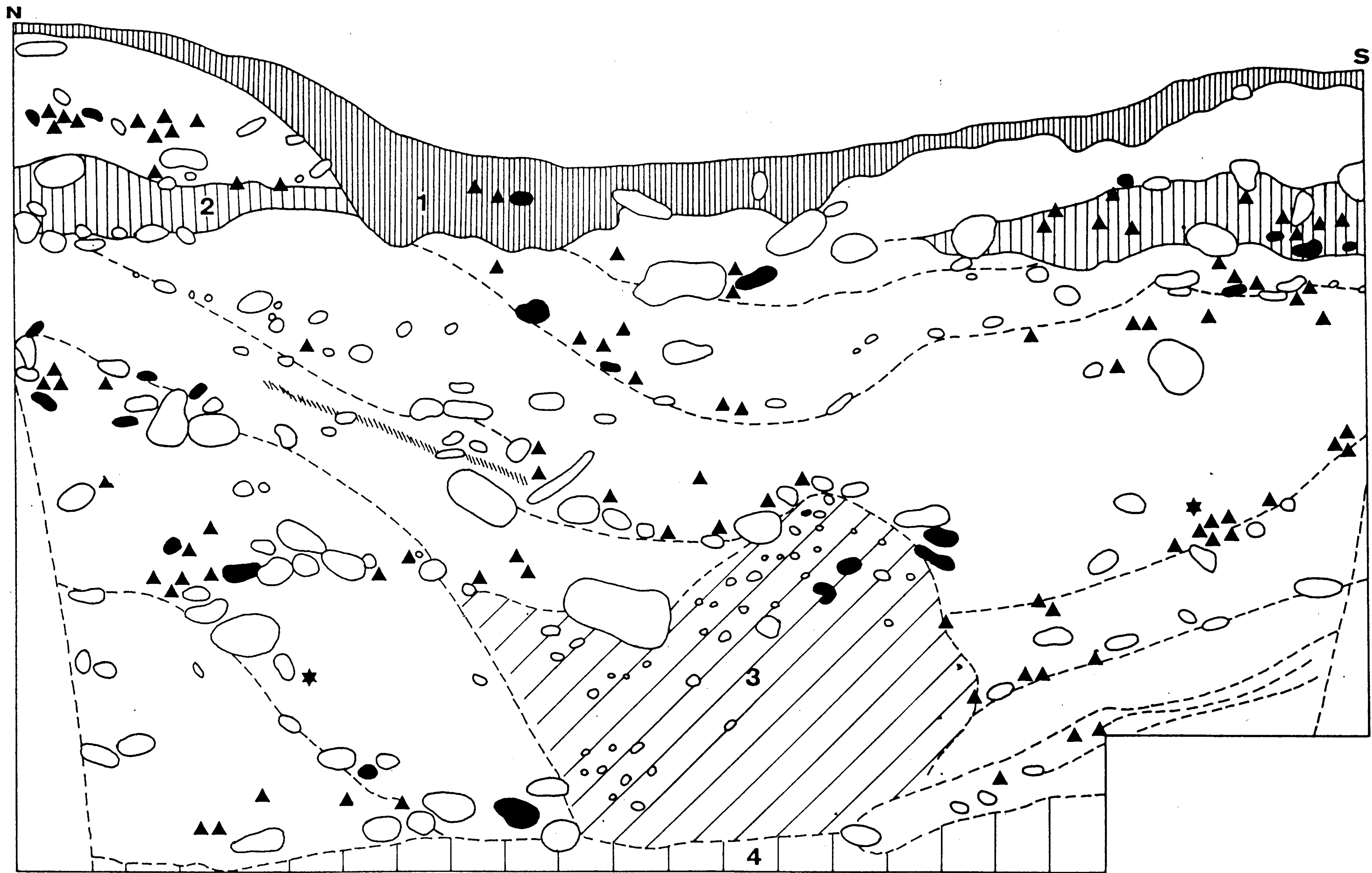


Fig. 4. PL 20 Rybniki-Krzemianka. Section of the exploitation unit no 1.

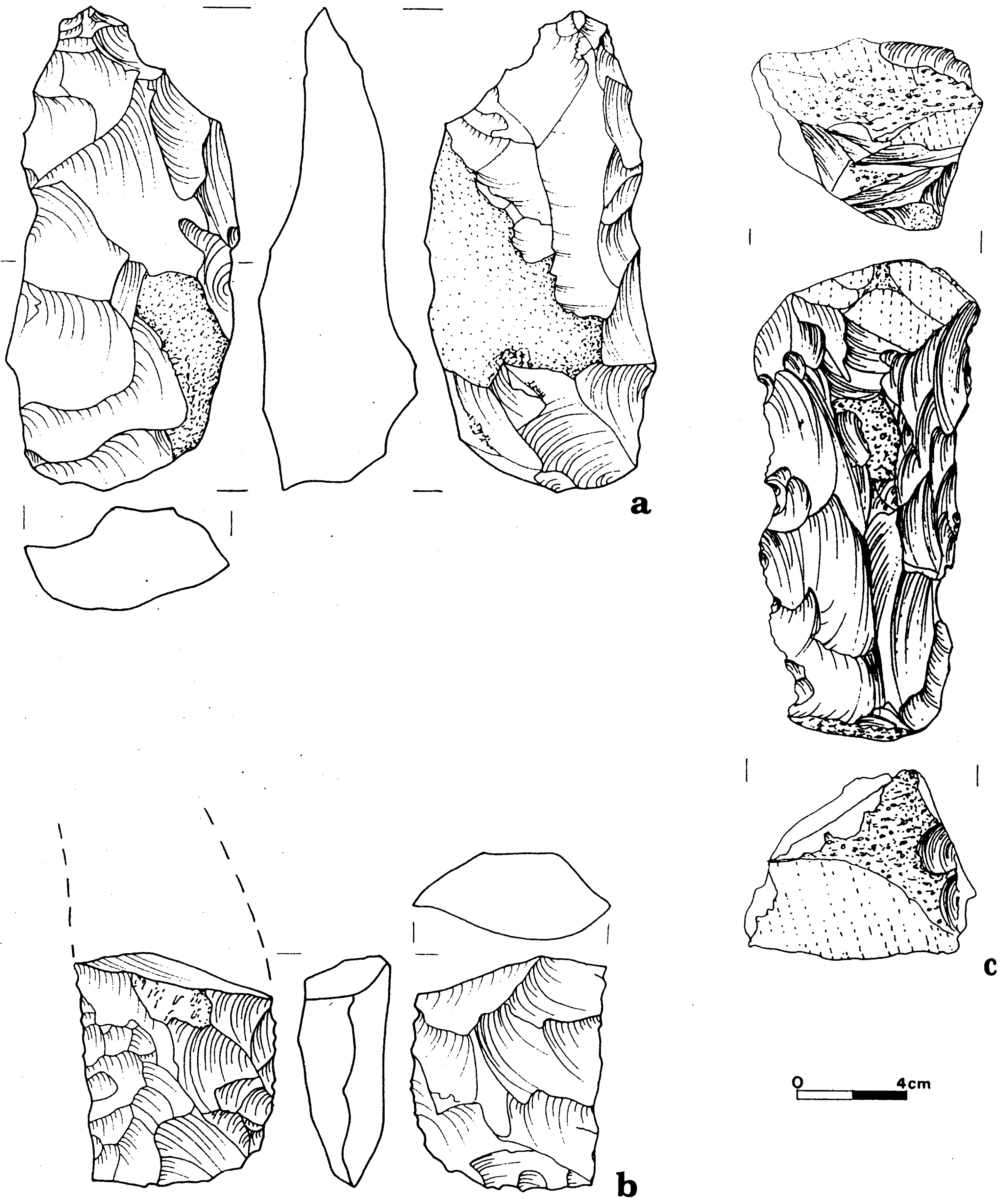


Fig. 5. PL 20 Rybniki-Krzemianka. Exploitation field: a-b — half products of bifacial tools; c — mining tool.

3. Halfproducts of bifacial forms were not given their final shape near the mines, this being evidenced by the absence of flakes from the final stages of shaping of these forms, and the absence of damaged specimens. What is more, in the mine workshops there are probably no traces of more refined flint-working techniques (soft hammer, pressure). The halfproducts of bifacial forms thus give no clues as to the final form intended for them (Fig. 5).

CHRONOLOGY

The above are only preliminary results of explorations of the Rybniki-Krzemianka site. The most important task at this point is the determination of its chronology. Analyses of the available artifacts suggest that this complex should be dated to the Bronze Age *sensu largo*.

The investigations failed to yield ceramic fragments which could help date the site. We are thus left only with data provided by flint materials. Dating a site with just this information is difficult but not impossible. In our case an apparently significant fact is that we found no traces of regular blade production using Neolithic techniques (antler retouchers, pressure, soft wooden or antler hammers); we should thus rule out the possibility that there was activity here by Neolithic groups. On the other hand, similar cores for flakes (Søren Andersen 1978:77–98) are known from Denmark (early Ertebølle stage) where they presumably served to produce flakes later processed into large trapezes.

The first cultural groups which could have been responsible for the Rybniki workshops were the post-Corded Ware groups included in the Rzucewo tradition. A nearby multicultural site explored by Warsaw archaeologists yielded materials in which bifacial flint projectile points made from flat flakes were found alongside small bifacial axes and cord-ornamented pottery (Kempisty and Więckowska 1983:121).

Translated by Andrzej Lewandowski

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