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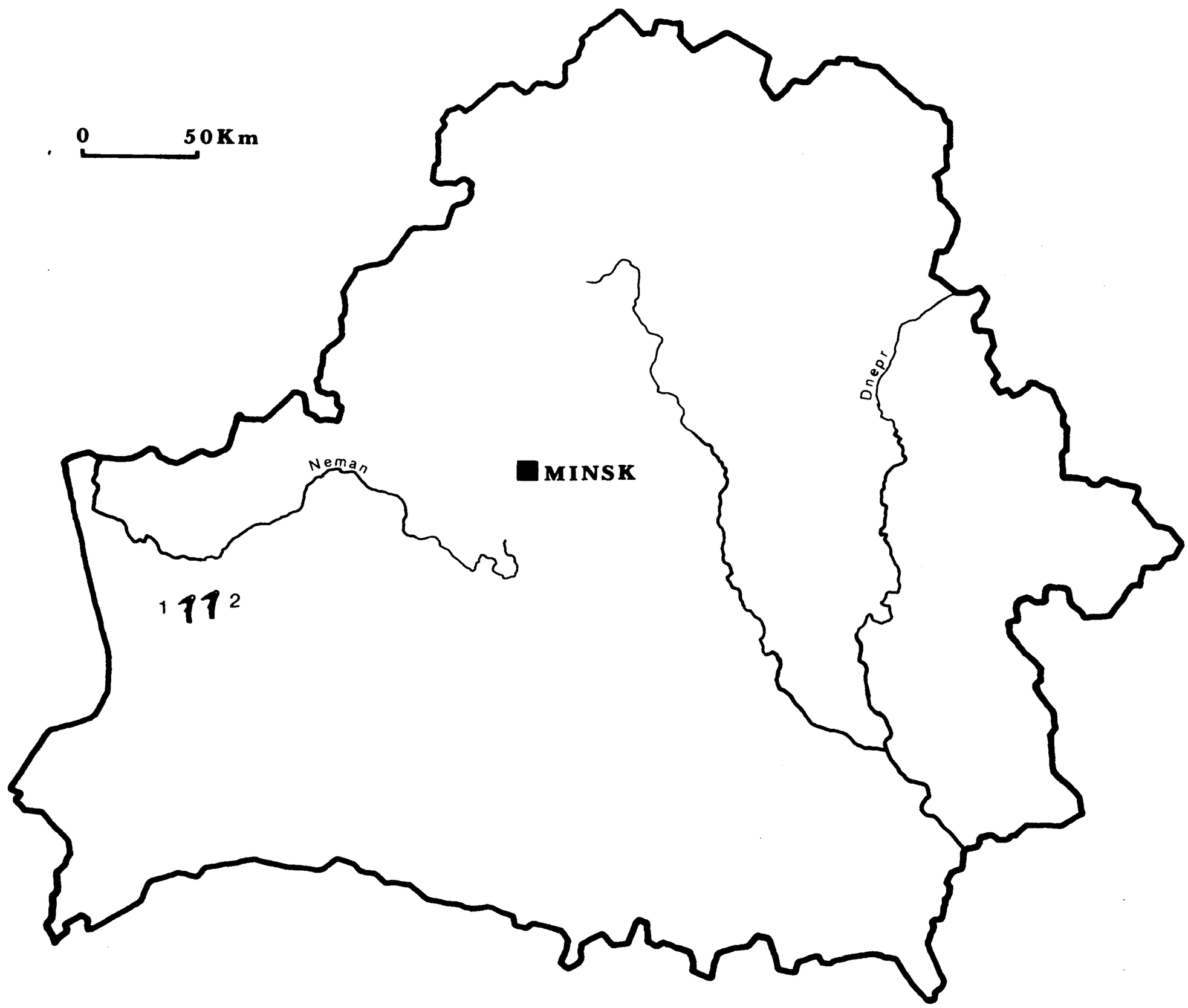

BY Belarus

BY 1 Krasnaselsky
BY 2 Karpautsy

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Ancient flint mines in Belarus

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The Krasnaselsky flint mines are unique in the prehistory of Belarus. They are situated in the middle flow of the Ros River near the villages of Krasnaselsky and Karpautsy (Vaukavysk district, Grodna Province).

The mines near the village of Krasnaye Selo (as Krasnaselsky settlement was then called) were first opened in the beginning of the 1920s in the process of works in the chalk quarry. Preliminary excavations were conducted by Z. Szmit. Then, some other Polish archaeologists visited the site (Pobol 1979:40). In the post-war years N. Gurina (1976) became the main investigator of the mines on the Ros River near Krasnaselsky

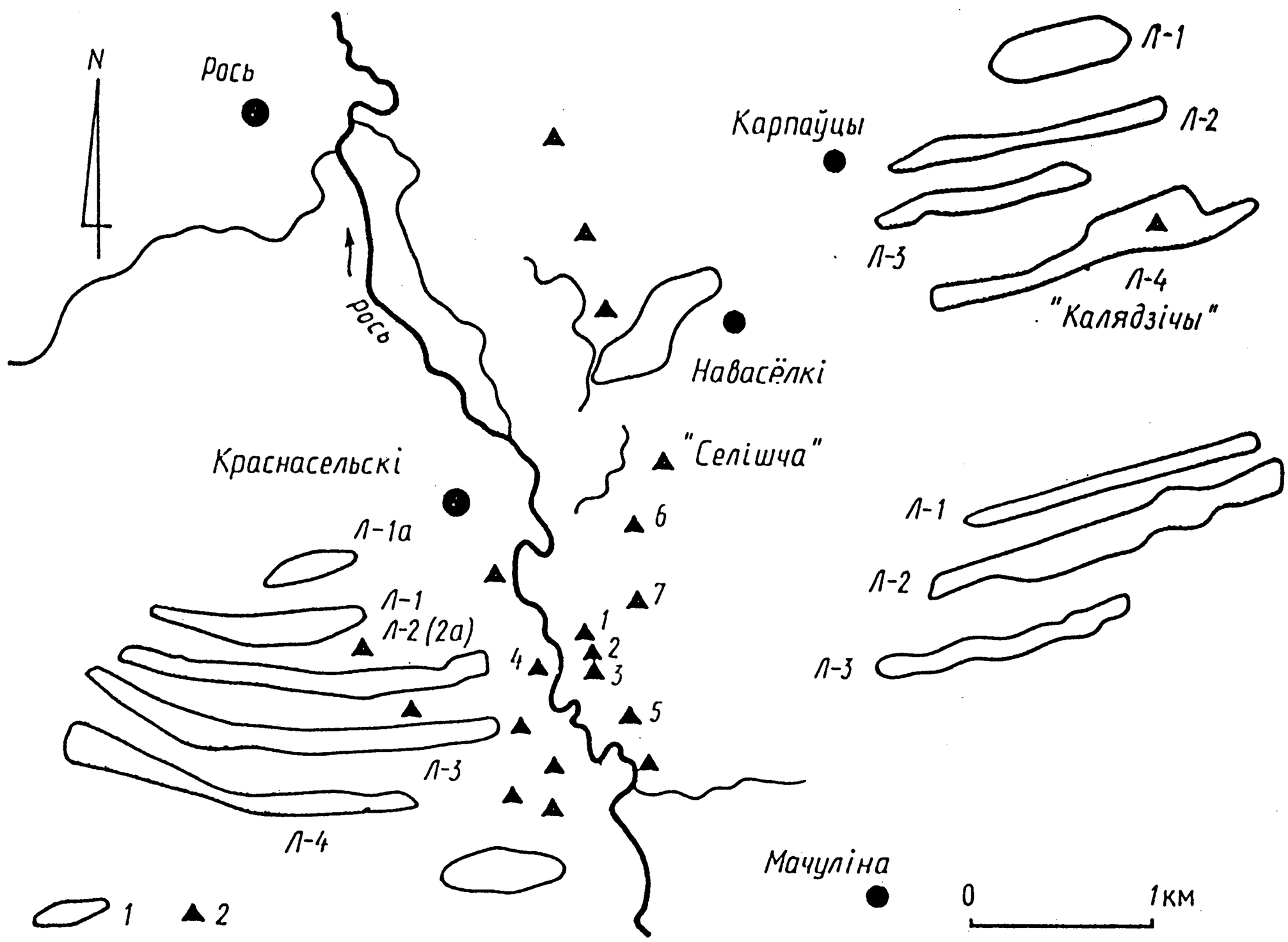

Fig. 1. BY 1 Krasnaselsky. Location of archaeological sites: 1 — chalk blocks; 2 — settlements and flint workshops.

and also of the mines near Karpautsy village. As a result of the work of many years nearly 200 mines have been excavated and a number of connected flint workshops and seasonal settlements of the miners from the Late Stone Age and Bronze Age have been studied. Beside Gurina's mines, workshops and settlements have also been explored by M. Charniausky, M. Veratila, V. Chameza, L. Lipnitskaya and V. Kudrashov in the middle flow of the Ros River during the last 10 years (Fig. 1).

On the banks of the Ros big chalk blocks are deposited not deep below the soil surface. They include flint in layers, chains or scattered at various depths. This kind of raw material had already been exploited by underground mining by the the end of the Neolithic (Figs 2–3).

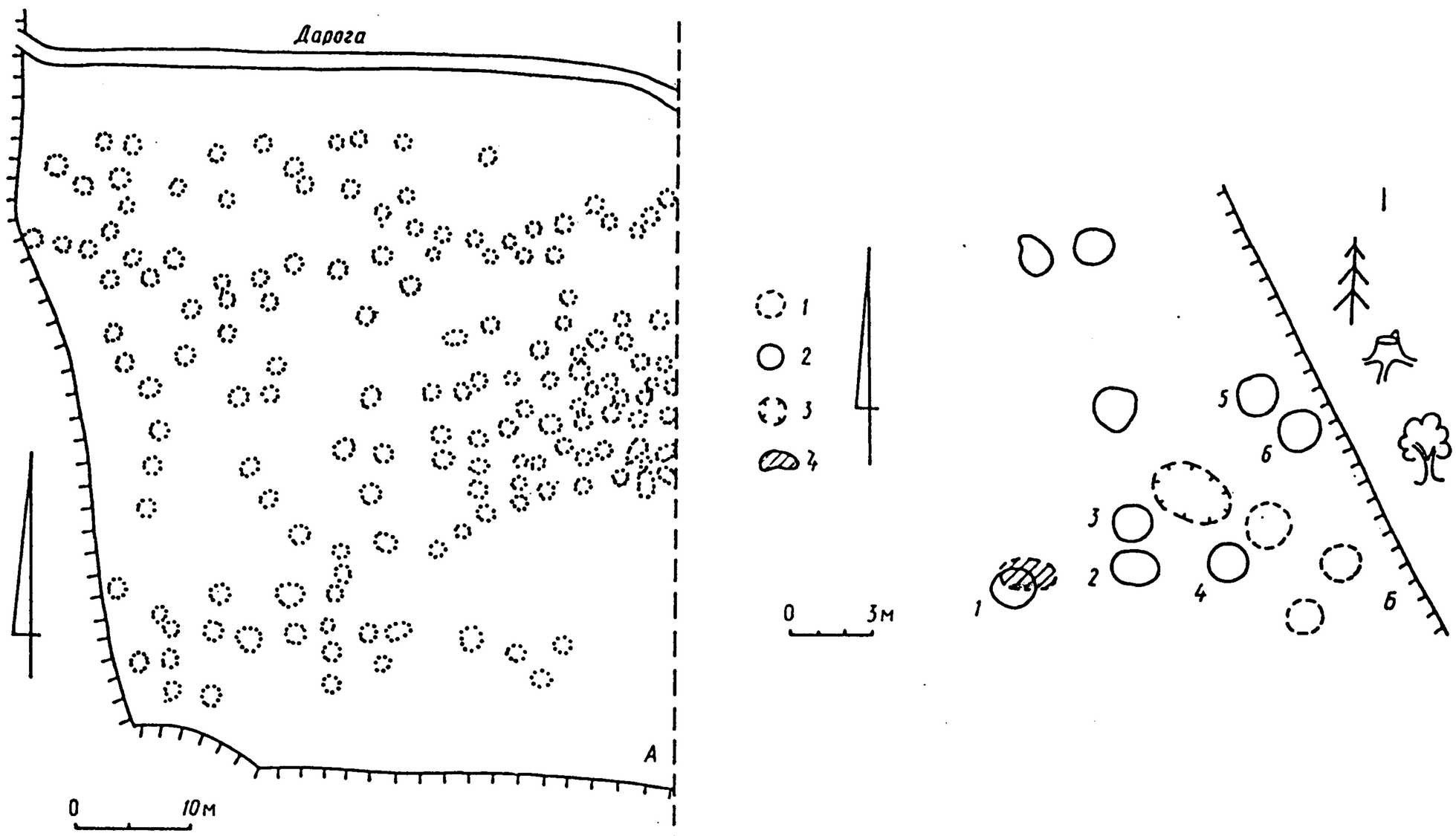

Fig. 2. BY 2 Karpautsy. Mine area: 1 — located shafts; 2 — excavated shafts; 3 — pit; 4 — layer of flint flakes.

A typical flint mine presented a vertical shaft, circular in plan with average diameter of *ca.* 1.5 m, and a depth of 2–4 m. At some places separate shafts were deepened to 8–9 m. At the places with flint nodules the shaft was widened with chambers. Neighbouring shafts were sometimes connected with a gallery. Depending on the arrangement of the raw material, shafts could have had two levels. For the sake of safety, ancient miners arched the ceiling of the side workings and also left projections or pillars of rock between them. In cases when the flint beds were not horizontal, the chambers and galleries followed their slope. Sometimes mining was carried out in trenches. In places where flint was scattered, shafts took the form of bell-shaped pits. Chalk blocks rich in flint were totally extracted. At those places, shafts are especially closely situated. At places poor in raw material, only narrow trial pits were found.

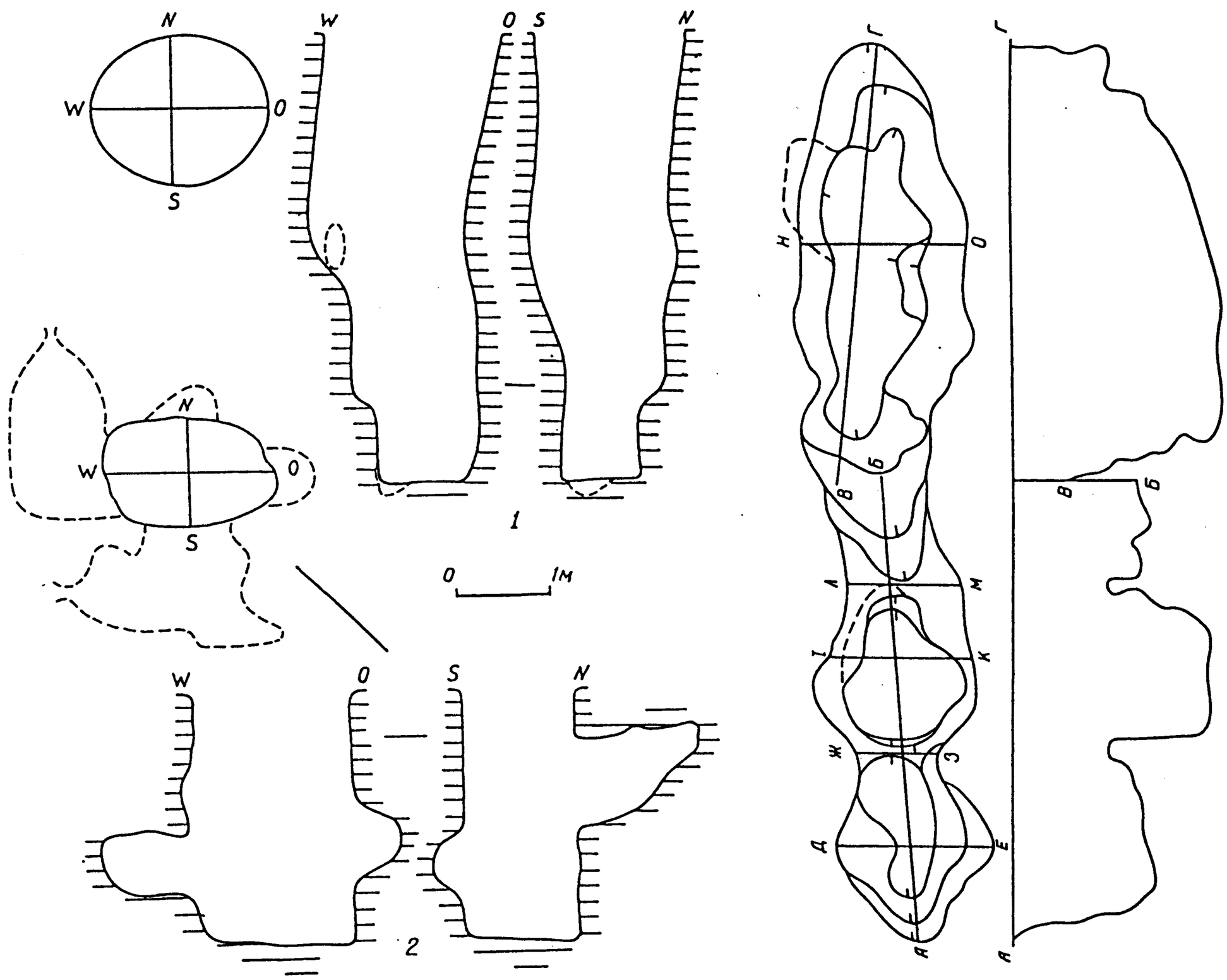

Fig. 3. BY 1 Krasnaselsky. Types of shafts.

All the mines in the walls of chalk quarries and especially the ones excavated by archaeologists were filled with chalk rubble. Only some areas of galleries were free of them. They also contained numerous pieces of flint and damaged mining tools. It is evident that the discarded rock was poured directly into the neighbouring shafts in order not to block the surrounding territory still suitable for mining. Due to this reason, mines have been excellently preserved to our time, since they were already conserved in ancient times. The walls, especially of the lower parts, are entirely covered with traces of different mining tools. At some places, especially in longer chambers and galleries, the walls are sooty and show the traces of wooden torches used for lighting the darker areas. Narrow streaks were smoothed by the miners' clothes, the bottom of the side workings was trampled by their feet.

While clearing the shafts and the chambers, holes from slender poles were observed in the chalk slabs. They could be the traces of devices for entering a mine. In some places, sticks may have been driven into the wall to serve as stairs (Gurina 1976:89). Miners devised a variety of mining tools made mostly of red deer antlers (Figs 4–5). There were L-shaped picks to work in more spacious places, dagger-like

picks of antler tines and flaked antler blades. With their help, mining was done in narrow chambers and galleries. Hammers and punches were manufactured from antlers and flint nodules, chalk rubble was drawn out by shoulder-blades of big animals or fragments of the spade of elk antler. Antler adzes with bored holes for hafts were most elaborate. However, they were rarely met during the excavations. It was mostly the damaged, discarded tools that were found in the shafts and galleries.

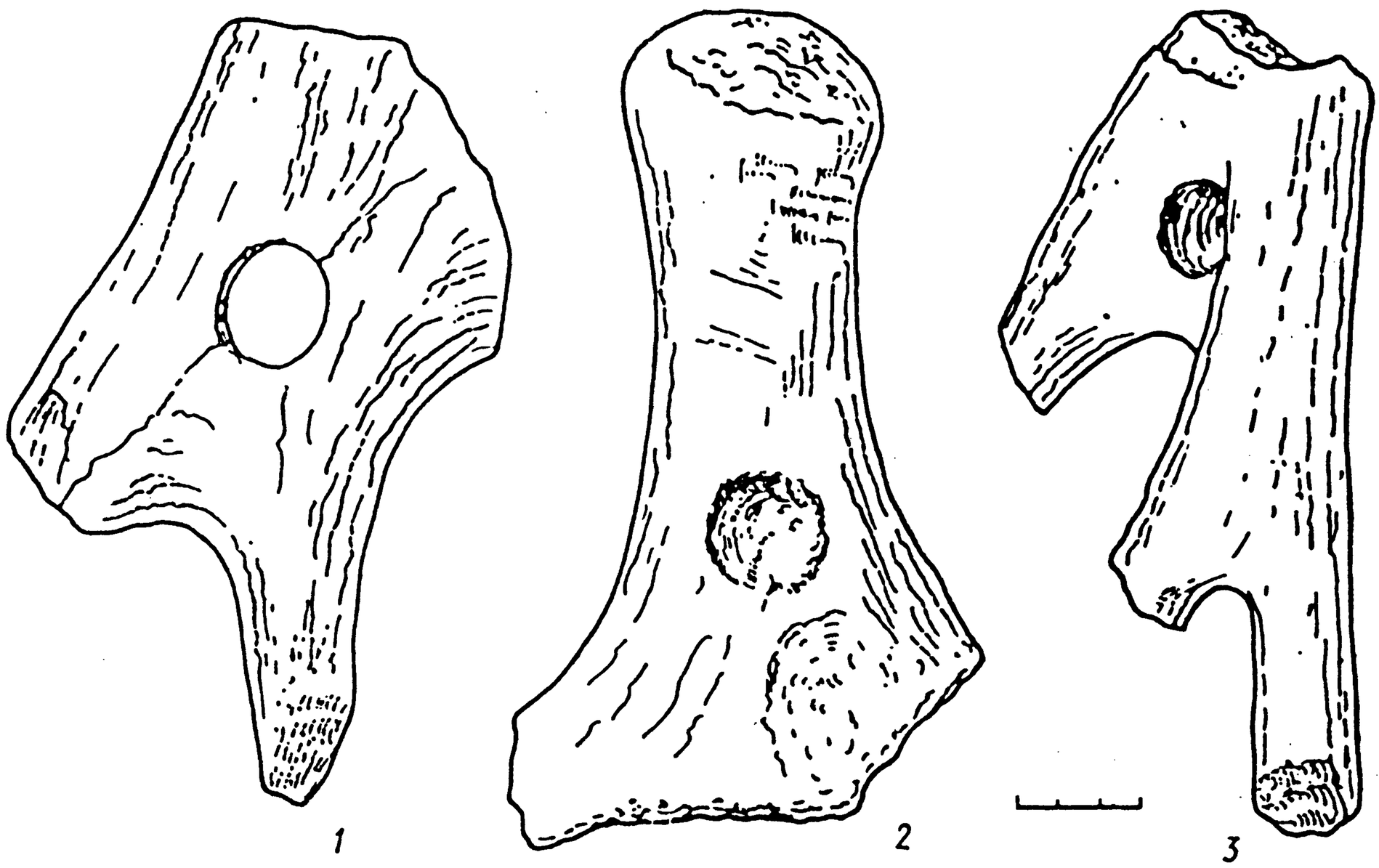

Fig. 4. Antler tools with holes.

The waste and the exploited flint were taken to the surface. Different utensils made of bark, twigs and leather could serve for this purpose. Evidently, large bone needles, sometimes met in the shafts, were used to repair the leather containers.

The size of the shafts show that one miner would work in them, as a rule. However, he had to have a helper who remained outside and took out rubble and the exploited raw material. If necessary, he could replace those who worked underground.

Primary processing of the raw material was conducted in the shaft itself. At some places, especially in chambers, piles of broken flint, flakes and chips and also nodules were left. Further processing of the flint was done in nearby half-filled shafts or on the surface, in the workshops. In the workshops traces of hearths are met, layers of flakes and flint waste, roughouts and sometimes finished products are found (Fig. 6).

Workshops connected with the Krasnaselsky flint mine specialized mostly in manufacturing roughouts of axes. Judging from the material, the majority were of lens-shaped section or, rarely, almost tetragonal. There is an opinion that pre-cores were also made. Excavations of the Stone and Bronze Age settlements along the Ros

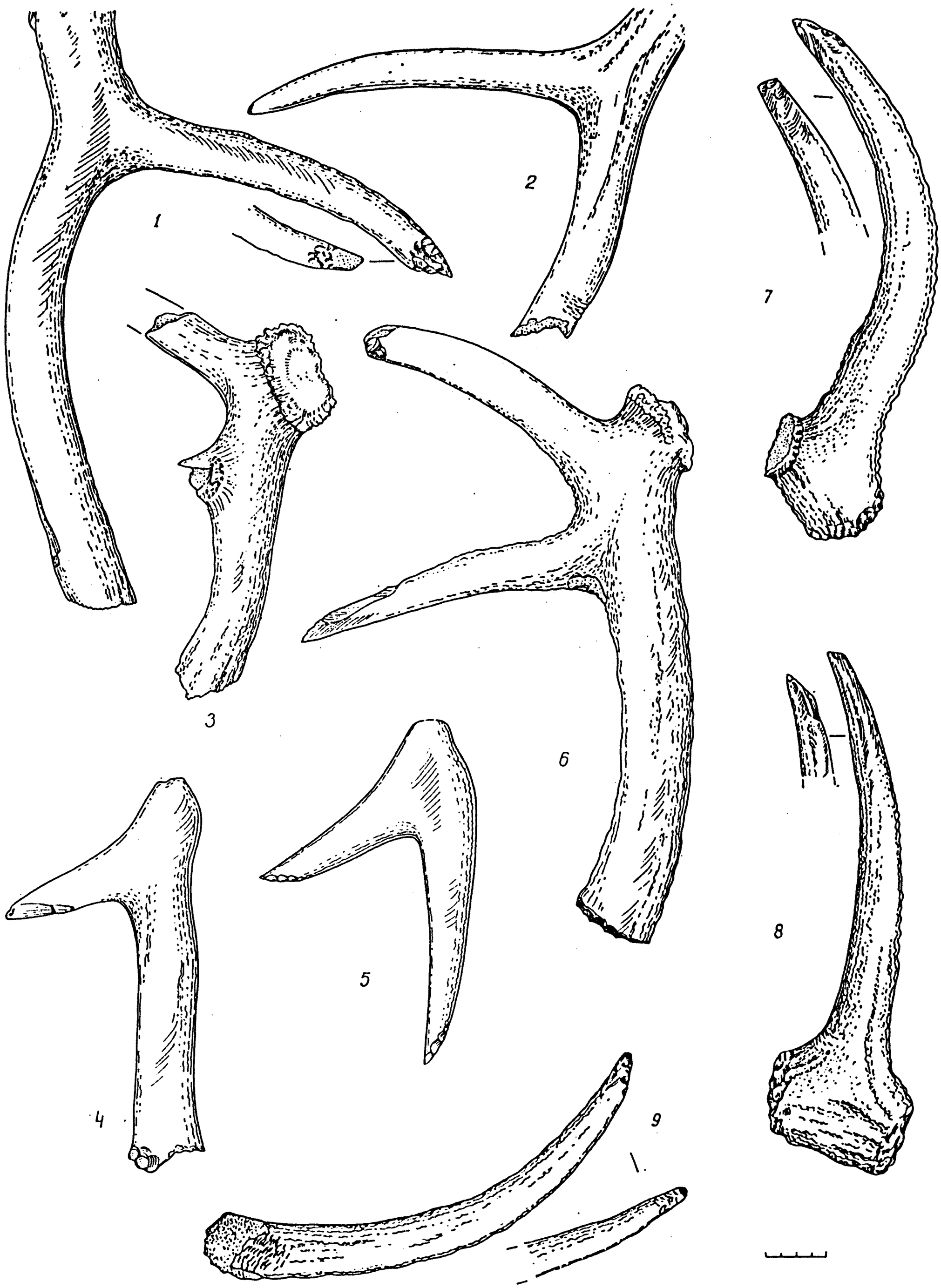

Fig. 5. Types of mining tools.

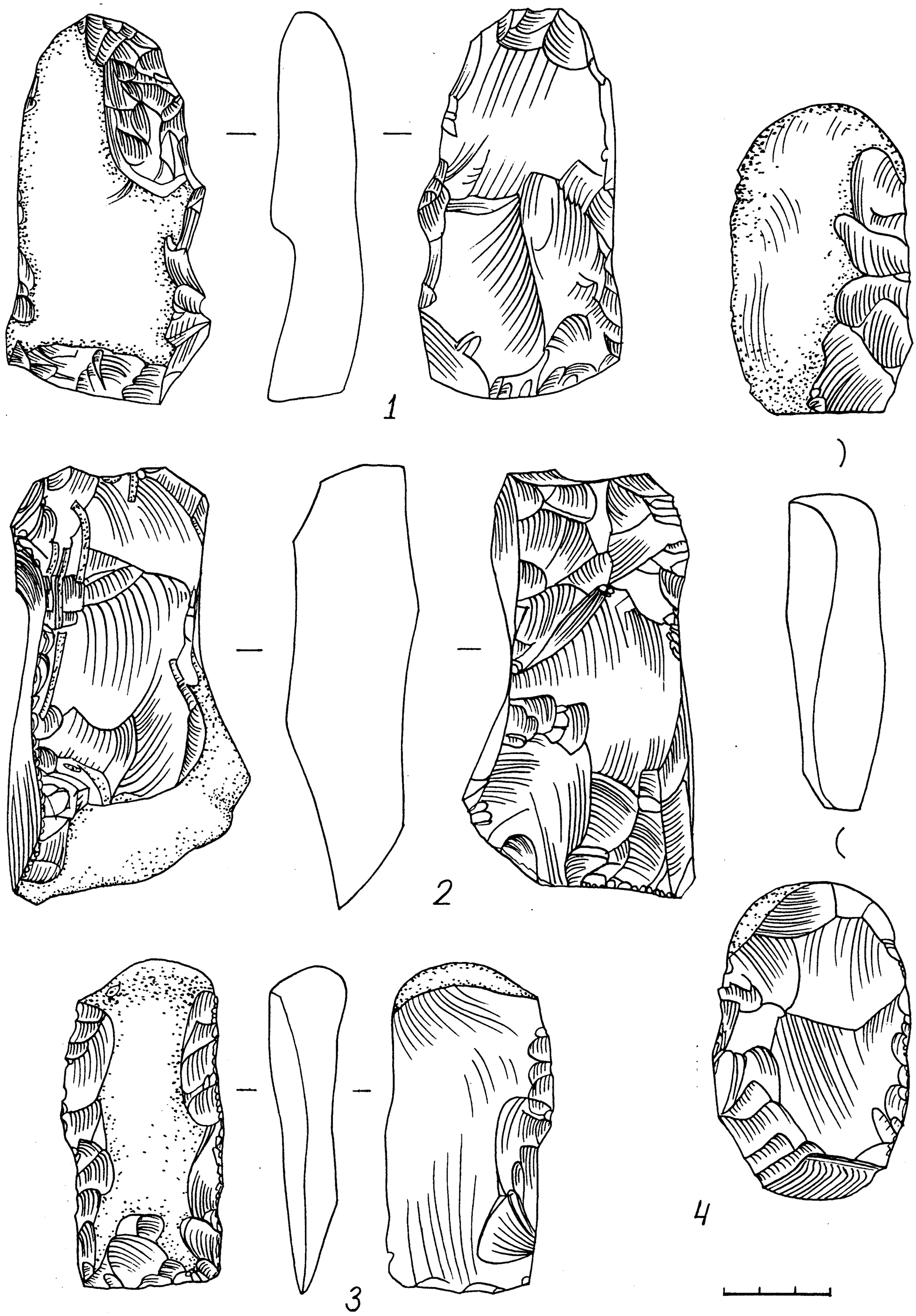

Fig. 6. Axe roughouts from the shafts.

River confirmed that flint processing was also carried out in the settlements. Specialization of local workshops in axe production can be explained by the increase of demand for these tools in the Late Neolithic and in the Bronze Age, which is connected with an intensive spread of agriculture in the forest zone.

Most of the ^{14}C dates obtained from the mines near Krasnaselsky and Karpautsy investigated by Gurina can be related to the Bronze Age, but there are some dates pointing to the Late Neolithic too (Gurina 1976:127). This is also confirmed by archaeological material. At the end of the chalk outcrops with the mines near Krasnaselsky, there was a cemetery of the Globular Amphora Culture (Cherniausky 1992). Traces of presence of bearers of this culture on the Ros can be detected in the local settlements as well. Most evidently, these Late Neolithic immigrants were those who became the first flint miners in the territory of West Belarus. Krasnaselsky mine itself, in general, is similar to those in Poland. The difference is related to the rock where flint was deposited: chalk — in Belarus, limestone — in Poland.

In one of the shafts near Krasnaselsky a miner's burial was found. The skeleton was accompanied with a large bone needle for sewing leather and a flat-bottomed pot with imprinted ornament. The character of the burial custom and the type of the vessel point to the Corded Ware Culture (Charniausky 1964). Most of the roughouts of flint axes in the local workshops are characteristic of the same culture. Thus, the Krasnaselsky mining centre was in operation at the very end of the 3rd and in the first centuries of the 2nd millennium BC. In the settlements adjacent to the mine, there are materials of the Middle Bronze Age which are characteristic of the Trzciniec Culture and also pottery with strokes which was generally used in the Late Bronze Age. Thus, the mining industry on the Ros began in the Late Neolithic with the immigration of the bearers of the Globular Amphora Culture which developed throughout the Bronze Age. Its decline was connected with the spread of iron among the local inhabitants at the beginning of the Iron Age.

The economical way of building the mines, the completion of the mining technique, care about site safety, the perfection of the shapes of mining tools, the high standard of flint processing and the mass production demonstrate the high specialization of work of the local miners and flint-workers, and their professional skill. The fruit of their labours spread to the neighbouring territories by means of exchange. In 1964 the government of the Republic of Belarus proclaimed the part of chalk deposit at the end of Krasnaselsky with more than 50 shafts to be a state archaeological reservation area.

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