



IVAN MRAZEK, JIRÍ SVOBODA

## LITHIC RAW MATERIALS OF THE LATE PALAEOLITHIC/NEOLITHIC INDUSTRIES IN JABAL NEFUSA, TRIPOLITANIA

**ABSTRACT** — *The mineralogic-petrographical character of the raw materials of the Late Palaeolithic/Neolithic stone industries, collected at several open air-sites in the area of Jabal Nefusa, have been studied and the origin of the raw materials have been recognized. Two types of Upper Cretaceous (Nalut Formation) cherts (the coloured and the striped ones), used for the manufacture of implements, have been distinguished. They may be considered either local or short-distance imported raw materials.*

**KEY WORDS:** *Raw Materials — Stone Industries — Jabal Nefusa — Libya.*

### INTRODUCTION

Jabal Nefusa is the principal morphological unit of north-western Libya (Tripolitania). In places it was given local names as Jabal Gharyán in the central sector (Yafrin-Gharyán stripe) and Jabal Tarhúnah and/or Jabal Msellata in the eastern sector (Tarhúnah — Msellata stripe). The imposing Jabal Nefusa Escarpment rises up south of the Jeffara Plain, and runs continuously from west (from Nalut) to east and then to north-east to reach the coast near the town of Al Khums (*Fig. 1*). Its altitude reaches up to 700 m and more making it 400 m higher than the Jeffara Plain. It is dissected by deep wádís and canyons which shape the scarp into highly developed promontories and embayments. To the south the escarpment merges into the Al Hamada al Hamra plateau. The climatic effect of the scarp is to attract a relatively greater rainfall than the surrounding territory, and so form a fertile zone and supply the source of water for past and present inhabitants.

The area of Jabal Nefusa was densely occupied in prehistory (McBurney, Hey 1955; Neuville 1956 a, b; Fabbri, Winorath—Scott 1965; del Fabbro

1968; Jelínek 1982a, b). Most of the studied industries may be attributed to the Late Palaeolithic Capsian and to the Neolithic of Capsian tradition but sometimes it is difficult to distinguish the both complexes during the surface survey. The only stratified evidence comes from the site of Bir Miji (Neuville 1956 a, b).

For the present study we have selected the sites of Nalut in the western sector, Jandúbah in the central sector of Jabal Nefusa and the rock art sites of Bir Miji and Tarhúnah-Sharshara in the eastern part of Jabal Nefusa (*Fig. 1*).

### NALUT SITE

This site is located 6.5 km north-west of Nalut, 750 m east of the Nalut — Wazén — Ghadames cross-road (*Fig. 2*).

There is a small shallow depression on the rocky plateau near the escarpment of Jabal Nefusa. In this territory the plateau reaches the altitude of about 600 m a.s.l. and is dissected by very deep canyon-like wádís. The site, placed in the centre of the depression, covers an area of 50 × 50 m. There

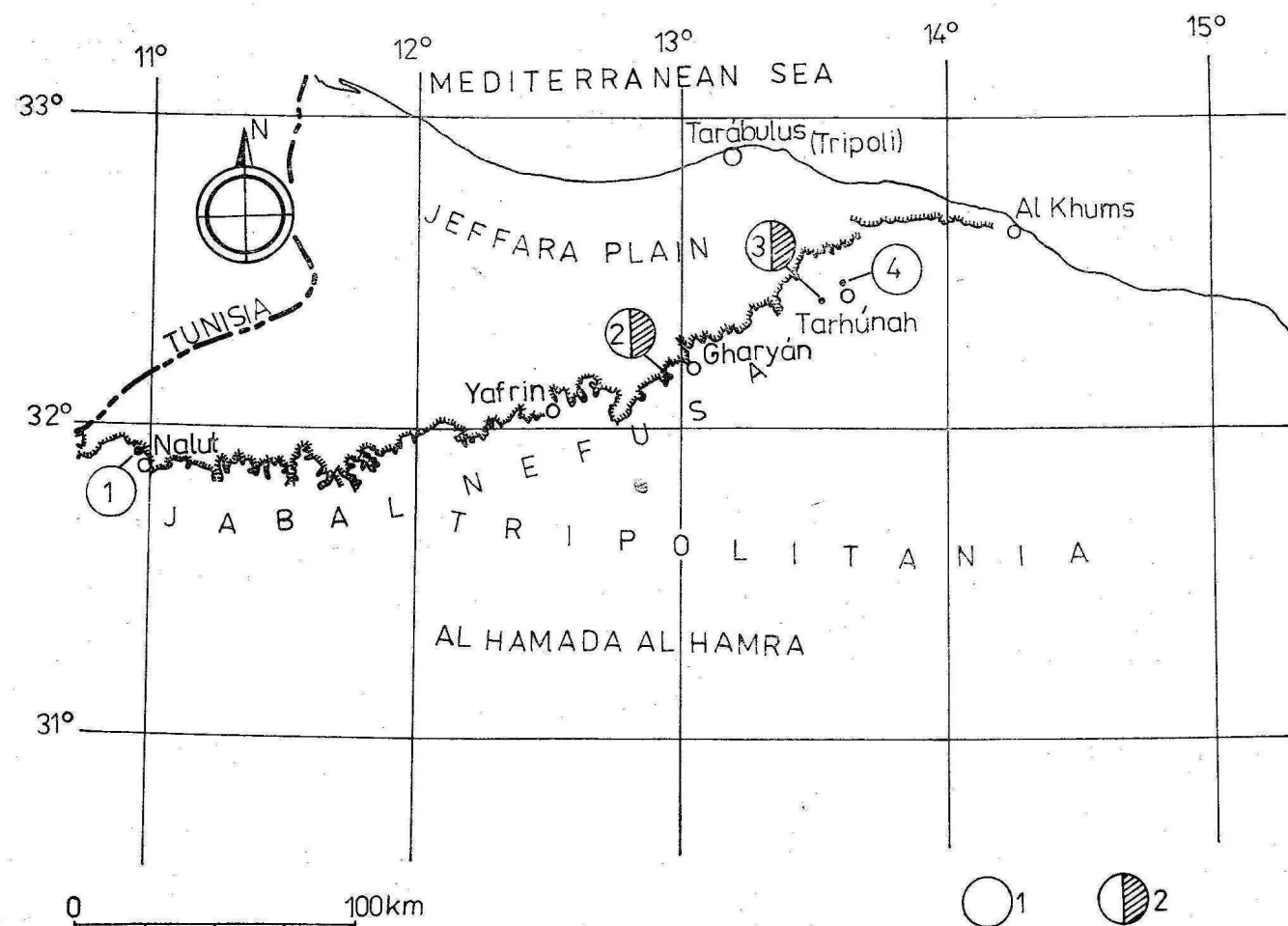


FIGURE 1. Map of Jabal Nefusa showing the distribution of studied sites of Nalut (1), Jandubah (2), Bir Miji (3), and Tarhuna-Sharshara (4). Legend: 1=sites with local raw material used, 2=sites with local and imported raw materials used.

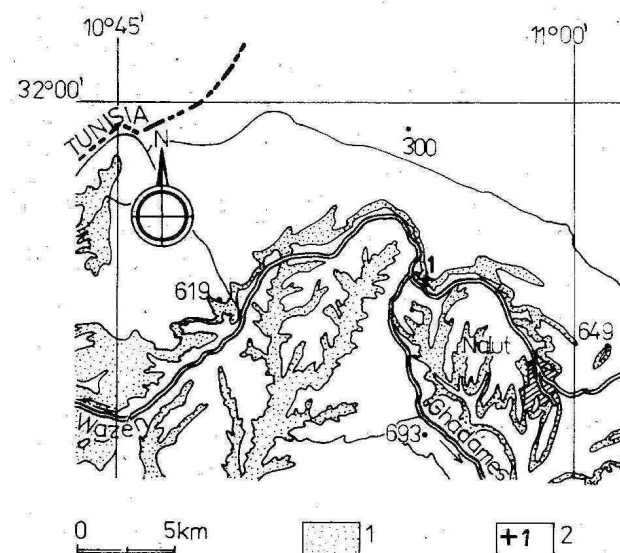


FIGURE 2. Location map of Nalut area showing the position of the Nalut site. Legend: 1 = Nalut Formation limestones with nodular cherts, 2 = situation of the Nalut site.

is stone industry scattered at the bottom of the depression along with fragments of the used raw material.

The studied sample includes the following typological groups:

1. Backed implements (2 microlithic points — Fig. 3:1,2, 2 blade points — Fig. 3:5,6, 1 microblade, 3 truncated microblades — Fig. 3:3,4).

2. Other tools (1 endscraper on retouched blade — Fig. 3:8, 2 atypical endscrapers; 1 borer — Fig. 3:7, 1 laterally retouched blade, 1 truncated blade).

The debitage is composed of 2 atypical cores, 1 core residual, 4 flakes, 1 chip, 21 blades and microblades. The technological process was oriented to blade production.

Dominance of the backed implements and lack of the bifacial technique (absence of arrowheads) demonstrates that the industry belongs to the Capsian, rather of Late Palaeolithic than Neolithic age.

The raw material, used for the manufacture of the stone industry, was collected in the immediate vicinity of the site where plenty of nodular cherts, weathered out of the host rock, cover the ground-surface (residual cherts). That is why the raw material can be considered a local one. The prehistoric man was probably attracted to this place by the abundance of suitable raw material for the manufacture of stone tools.

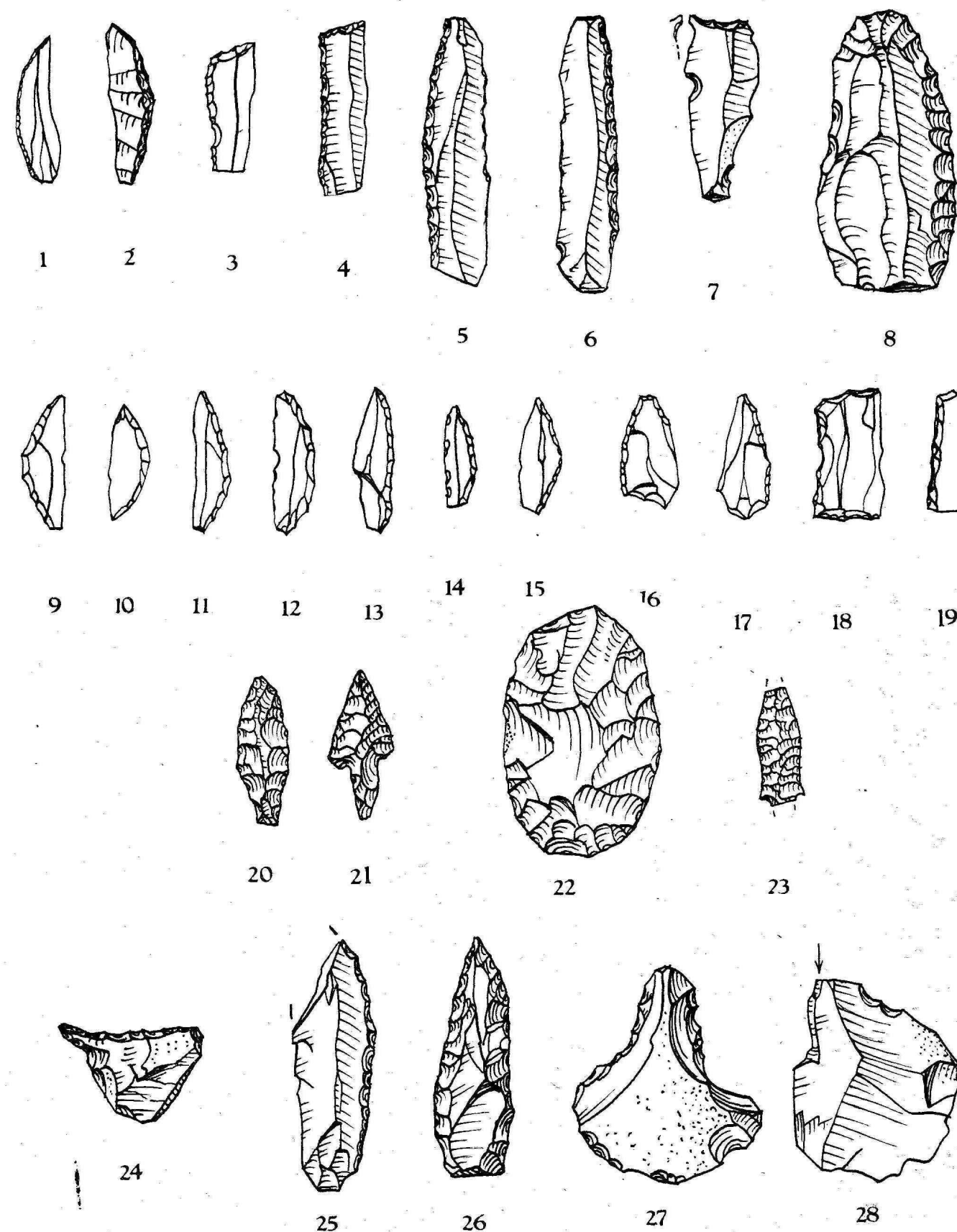


FIGURE 3. The lithic industry. 1-8: Nalut site; 9-28: Jandubah site. All artifacts (except No. 28) are made of the coloured cherts of the Nalut Formation.



In the surrounding area the cherts are cropping out in the rock faces and the plateau surface, too. According to the geological map by Novovic (1977) the cherts are confined to the limestones of the uppermost part of the Nalut Formation (Turonian). The limestones are thin-bedded, light-cream in colour, crystalline and hard. The chert nodules are small (mostly up to 5 cm in size), irregular and often flattened. The surface of the nodules is smooth. The contact between the host rock and the nodules is sharp. The nodules display a very thin (1 mm on an average) outer rind, white or ochreous in colour.

The cherts are hard, compact, translucent on the sharply broken edges, with waxy lustre and conchoidal or even fracture. Their colour is brown, grey-brown to almost black, pink-violet to red-violet. They are prevalently structurless (homogeneous structure), sporadically occur cherts with an irregularly striped structure (alternation of brown and white stripes).

Some of the chert fragments and implements display a very thin, discontinuous (islet-like), white patina. The others are either completely coated with this patina or they are without patina.

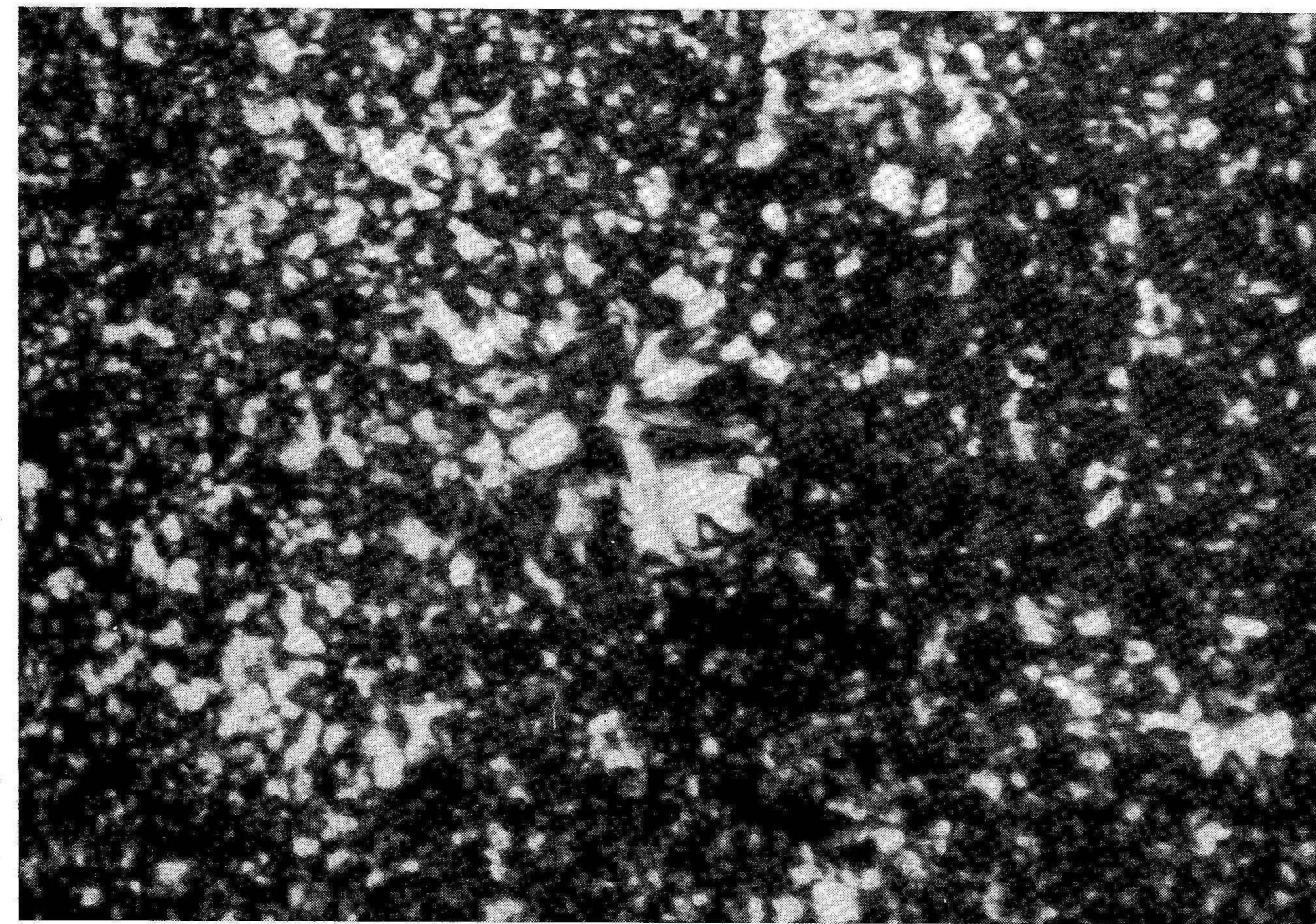


FIGURE 4. Chert, Bir al Thulth. Crossed nicols,  $\times 400$ . Microcrystalline mosaic of quartz with a radiating-fibrous aggregate of chalcedony (in the centre). Microphotograph by P. Müller.

Cherts of similar type as described above occur at many places in the Nalut area weathered out of the Nalut Formation rocks. Cherts, collected at Bir al Thulth locality south of Wazén, exhibit under the microscope microcrystalline mosaic of quartz with irregular clusters and streaks of granular quartz. Some of the clusters and streaks are darkened by very fine black pigment. Some of the granular areas (those after fossils?) display a regular (circular or oval) outline. Rare radiating-fibrous aggregates of clear chalcedony are also present in microcrystalline quartz (Fig. 4). The outer rind of cherts is enriched in impurities (black and limonitic pigment etc.).

#### JANDÚBAH SITE

This site is located some 13 km south-west of Gharyán, in the Jandúbah area (Fig. 5). To come to this site we can use a branch-road which turns to the right from the main road Gharyán — Nalut (the distance to the branch is 8.5 km from the Mizdah junction).

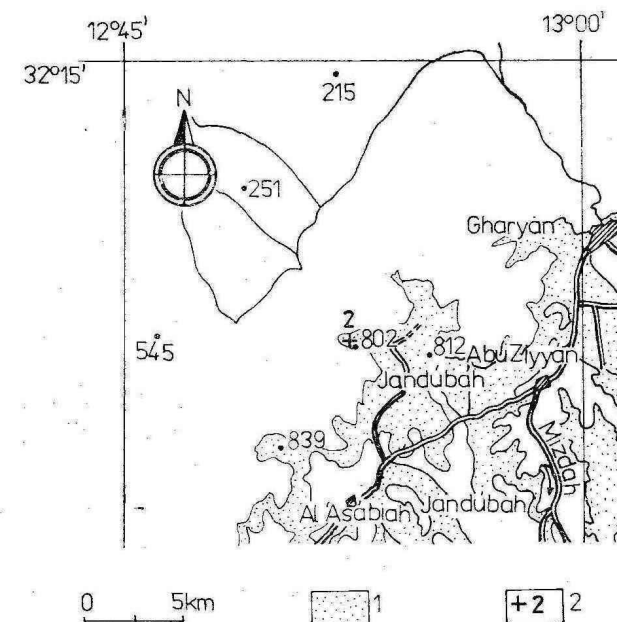


FIGURE 5. Location map of Gharyán area showing the position of the Jandúbah site. Legend: 1 = Nalut Formation dolomitic limestones with chert nodules and bands, 2 = situation of the Jandúbah site.

There is a larger rocky platform with plentiful chipped industry (main site) just on the upper edge of the escarpment of Jabal Nefusa (marginal part of the plateau). In this area the plateau reaches the altitude of about 800 m a.s.l. Other small sites in the vicinity are scattered on the upper edge of the escarpment toward east to north-east but none of them is so large and rich in industry as the main site. Another very small site is placed on a rocky platform just under the main site. At this place the utilized raw material was probably extracted from the outcrop (big chert nodules, variously broken, are cropping out there in a rocky face). Otherwise the residual cherts (weathered out of the host rock) covering the ground surface were collected and used for tool making.

The implements are made of cherts of two types:

#### a) striped cherts

These cherts have been studied by Mrázek and Doughri (1983). They are confined to the limestones of the Nalut Formation (Cenomanian — Turonian). According to the geological map by Hinnawy and Cheshitey (1975) in the Jandúbah area and everywhere along the scarp between Gharyán and westward up to the Tunisian border the formation makes the upper reaches of this scarp as well as the plateau surface (Fig. 5). The host rock is a hard, microcrystalline, light-greyish-beige dolomitic limestone. Nodular to lenticular cherts are distributed in some limestone beds just below the sites. Locally very thin bands of chert occur, too. The nodules are big (decimetric in size) and very irregular. The

chert bodies exhibit a gradual contact with their host rock. The cherts contain unfrequent irregular enclosures of the host rock. The cherts' very conspicuous, mostly fine, irregularly striped structure (or parallelly striped structure in bands) is given by alternation either of brownish, brown, and white stripes or of dark-grey, greyish, and white stripes (Fig. 6). Occasionally stripes bluish or pinkish in colour occur, too. The cherts are prevalently dull, opaque, and with an uneven fracture. There occur also hard, compact cherts, translucent in splinters, with waxy lustre and conchoidal fracture.

The thin-section study has revealed that the striped cherts consists of thin bands (stripes) which show a sharp outer boundary and a gradual inner one. In places both boundaries are gradual with decreasing amount of impurities (represented by clay and euhedral carbonate grains). The cherts contain some silicified foraminiferal tests, ostracod shells (Fig. 7), gastropod shells (Fig. 8) and echinoid remnants. The course of bands is perpendicular to the arrangement of elongated bioclasts (Fig. 7, 8). The cherts consist of microcrystalline quartz with very fine-grained streaks and granular areas of quartz (those after fossils).

As the striped cherts have been found in the immediate vicinity of the sites it is possible to consider them a local raw material.

#### b) coloured cherts

They are nodular cherts. The small nodules (centimetric in size) are irregular. The surface of the nodules is smooth reflecting a sharp contact between the nodules and the host rock. The nodules display a very thin (mostly up to 1 mm) outer rind. The outer rind is light-ochreous in colour. The cherts are hard, compact, translucent to subtranslucent in splinters, with waxy lustre and a well developed conchoidal fracture. Their colour is yellowish, greyish, black, but prevalently brown and pink-violet. Some of the cherts display a spotted structure or they are darker in the marginal part of the nodules than in the central part. Occasionally irregular enclosures of the light-coloured host rock are present in the cherts. The chert fragments and implements display a very thin, mostly discontinuous (islet-like), whitish patina.

Coloured cherts, as described above, have not been found in the immediate vicinity of the sites (the only exception are big nodules of coloured cherts occurring along with the striped cherts in some limestone layers). Therefore it is necessary to suppose that at least a part of this raw material has been imported from the surrounding area built of the Nalut Formation rocks (short-distance transported raw material).

In the archaeological sample the coloured cherts are represented by 58 artifacts and the striped cherts by 19 artifacts. The coloured cherts were preferred and more intensively transformed into the retouched tools ( $\frac{1}{2}$  of this material) than the striped cherts (about  $\frac{1}{3}$  of this material). The reason for it are the better physico-mechanical properties (esp.



fracture) of the coloured cherts which enable the manufacture of developed products.

Typologically, the tool-kit may be divided into the following groups:

1. Backed implements (9 microlithic points including the "lunate" forms — *Fig. 3:9–17*, 1 blade point — *Fig. 3:19*, 1 truncated blade — *Fig. 3:18*). All of them are made of the coloured cherts.

2. Bifacial implements (4 tanged arrowheads — *Fig. 3:20, 21, 23*, 1 leaf-shaped specimen — *Fig. 3:22*, 1 unfinished leaf-shaped specimen, 1 knife). With one exception all of them are made of the coloured cherts.

3. Other tools (1 unifacial tanged arrowhead, 2 steeply retouched points — *Fig. 3:26*, 2 side-scrapers, 2 micro-side-scrapers, 1 borer — *Fig. 3:24*,

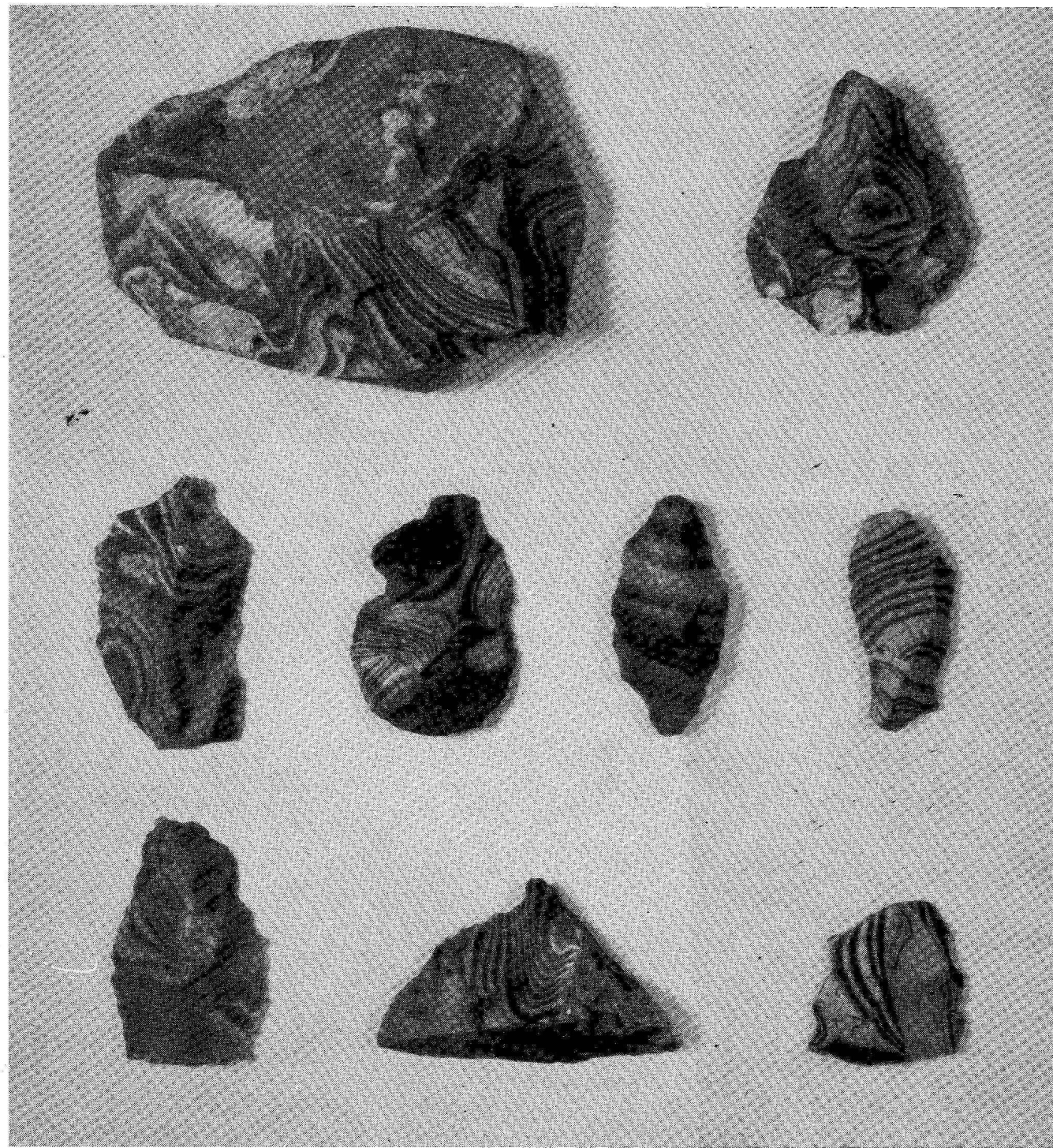


FIGURE 6. Artifacts made of the striped cherts displaying a conspicuous irregularly striped structure. Jandúbah site. Photograph by L. Pičková.

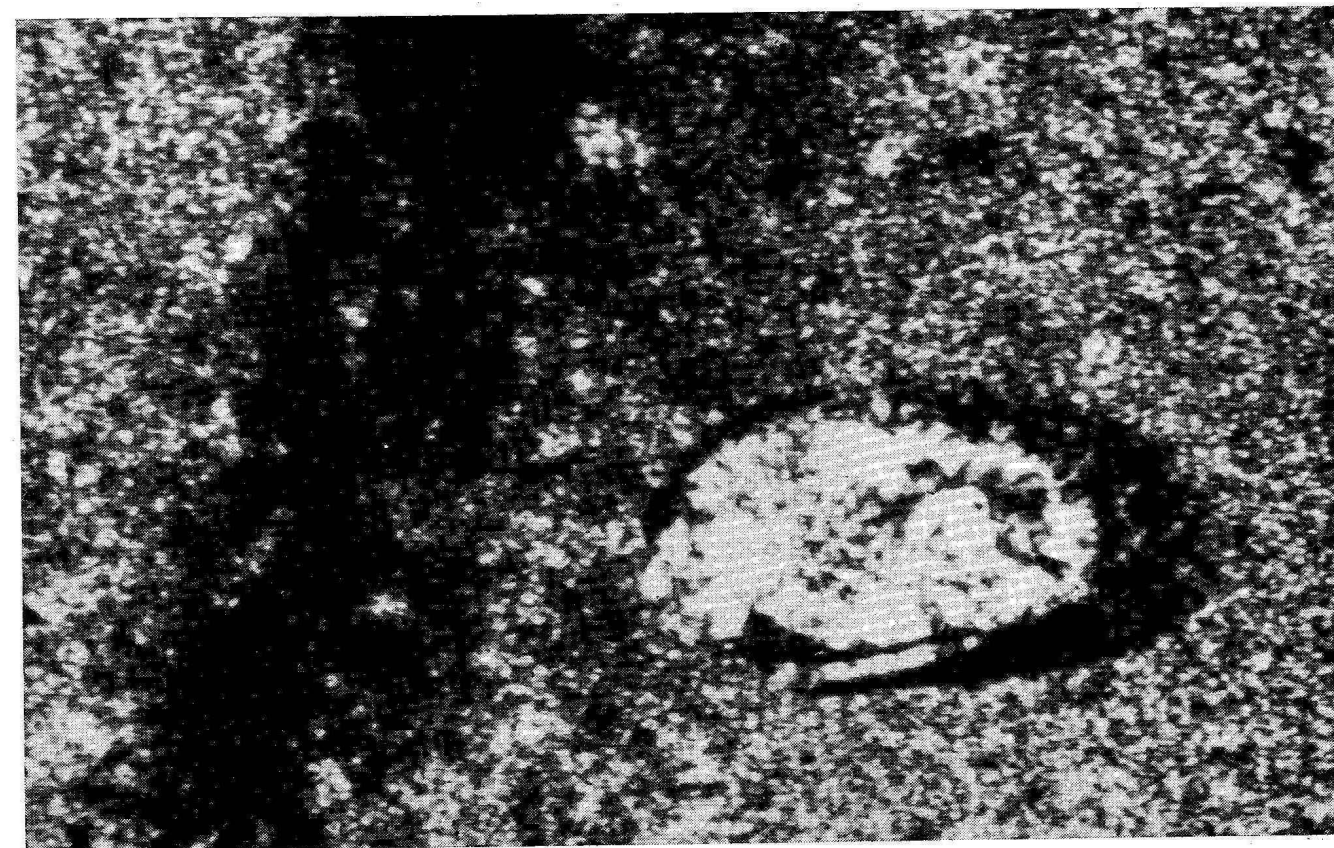
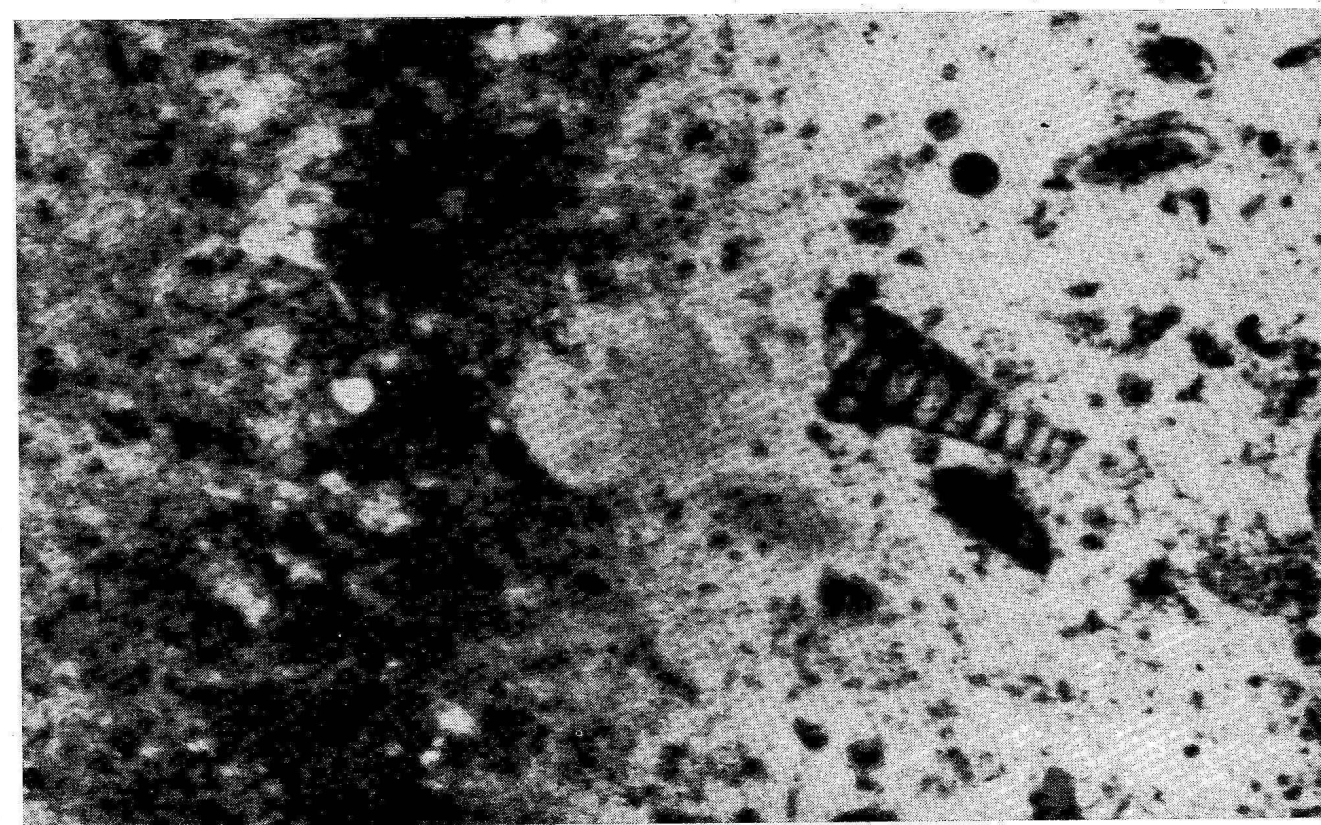


FIGURE 7. Striped chert, Jandúbah site. Crossed nicols,  $\times 100$ . A chert consisting of microcrystalline mosaic of quartz and containing silicified ostracod shell. The shell is arranged perpendicularly to the course of the dark band. Microphotograph by P. Müller.

FIGURE 8. Striped chert, Jandúbah site. Ordinary light,  $\times 100$ . The chert contains silicified shell debris and a gastropod shell. The dark band consists of impurities (clay and carbonate). Microphotograph by P. Müller.





1 bec — Fig. 3:27, 1 burin — Fig. 3:28, 6 notched artifacts). They are made of the both materials.

The debitage includes one initially worked core (striped chert), 25 blades, 12 flakes and 4 chips. The blades are more frequently made of the coloured cherts.

The assemblage may be considered a typical representative of the Tripolitanian Neolithic of Capsian tradition (McBurney, Hey 1955, 262–269). It corresponds to the phases II and III distinguished by Neuville (1956a, b) at Bir Miji.

#### BIR MIJI SITE

The Bir Miji (Amhayyah) rock art site (Neuville 1956a, b; Jelínek 1982a) is situated in a small rocky wādī 7.5 km south-west of Tarhúnah, close to the road to Tarhúnah and opposite to a small petrol station (Fig. 9).

Several shelters (abris) and a smaller cave are placed in the wādī face. Even today we can see a water well in the wādī and there is no doubt that there existed a spring and a temporary stream was draining the valley in prehistoric times.

The site (abris A II and B) has been excavated by Neuville (1956a, b), who, basing himself on stratigraphic observations in the both abris, distinguished several layers and three occupation phases.

The phasis I is characterized by numerous bone industry and poor ("Mousterian"-like) lithic industry, made of the local brown chert (the same type of chert was observed by Neuville in the abris-face). During the phasis II, an increased import of foreign raw materials (chert of grey, yellow and sandy colours, quartz and others) has been recognized.

The retouches are becoming more varied and the bifacial leaf-points appear. In the phasis III the tanged arrowheads appear. This last industry is comparable to the Neolithic of Capsian tradition.

All the three complexes were directly related to the rock engravings on the abri walls.

The stone industry and the accompanying irregular fragments of cherty raw material are scattered on the slope under the upper group of engravings as well, at the bottom of the wādī along the stream bed and sporadically also on the ground surface of the plateau overlying the engravings.

In relation to the rock art studies, carried out by Jelínek (1982a), a further collection of 305 artifacts was collected.

The technology is directed towards the flake production from uni-, rarely bidirectional cores. The resulting pieces are mainly flakes, rarely blades (lam = 11.18). Exploitation of prepared cores is witnessed by 3 flakes from the core edges.

There are 21 cores (2 pieces of raw material in the initial stage of working, 6 unidirectional cores — Fig. 10: 22, 23, 3 flat unidirectional cores, 2 bidirectional cores, 1 globular core, 4 atypical cores, 3 core fragments, 3 hammerstones, 143 flakes, 18 blades, 49 fragments, 10 retouched flakes, 9 retouched fragments, and 52 tools.

From the typological point of view, the presence of backed implements is important. The points are rare: they are backed, convergent and bifacial.

The side-scrappers are of archaic, some of them almost Mousterian character and they are accompanied by the micro-side-scrappers. Their retouche is mainly scalariforme (6 pieces), marginal (2 pieces), thick (2 pieces), steep (2 pieces) and flat (2 pieces).

Apart from end-scrappers typical for the Late Palaeolithic and Neolithic occur some nosed and high types, too. Finally, the burins, notches and denticulated tools are present.

1. Backed implements (3 backed blades — Fig. 10:7, 1 backed point — Fig. 10:2, 1 backed micro-lith — Fig. 10:1).

2. Bifacial implements (1 bifacial point — Fig. 10:4).

3. Points (2 convergent points — Fig. 10:3, 5).

4. Side-scrappers (2 convexe — Fig. 10:21, 2 direct — Fig. 10:15, 16, 4 angular — Fig. 10:18–20, 2 fragments).

5. Micro-side-scrappers (2 convexe, 1 direct, 1 concave).

6. End-scrappers (3 pieces on blade — Fig. 10:8, 9, 13, 4 pieces on flake, 1 nosed scraper, 1 thick scraper — Fig. 10:12, 3 micro-end-scrappers — Fig. 10:10, 11).

7. Other tools (4 burins, 3 borers, 9 notches, 6 denticulated tools — Fig. 10:14, 17).

In summary, the groups of side-scrappers and end-scrappers are dominant (50 per cent). The backed implements are not frequent (7.7 per cent) but they document the Capsian tradition of this complex. Absence of the geometric types is to be noted. The bifacial point together with some other types (bu-

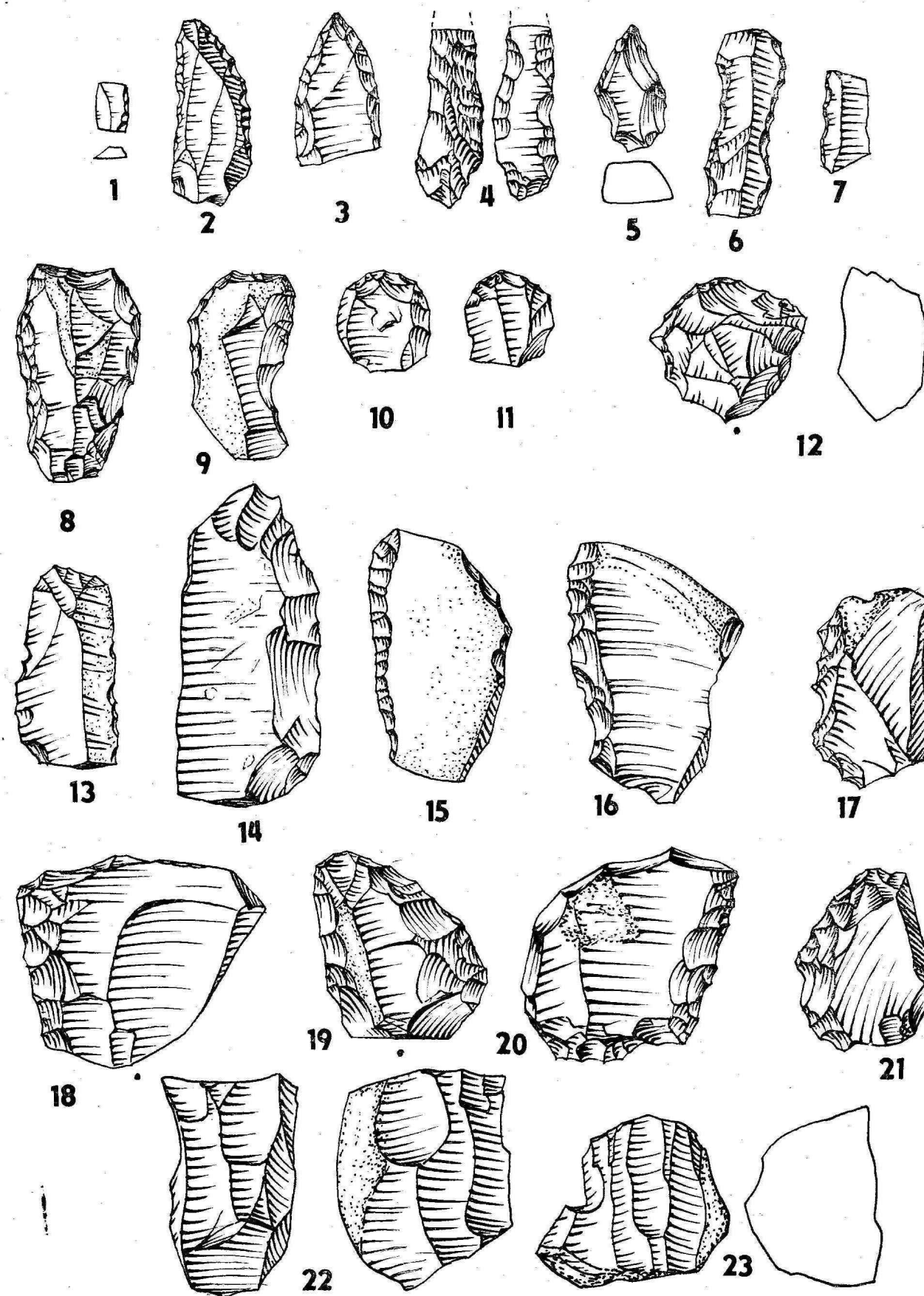


FIGURE 10. The lithic industry, Bir Miji site. The artifacts are made of the coloured cherts of the Nalut Formation.

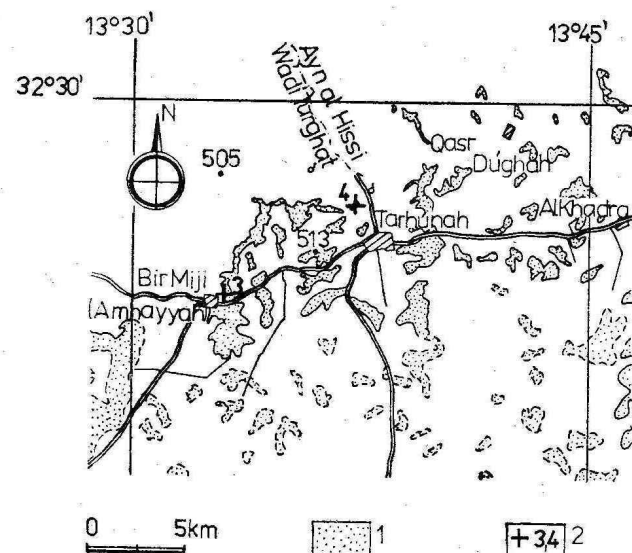


FIGURE 9. Location map of Tarhúnah area showing the position of the Bir Miji and Tarhúnah-Sharshara rock art sites. Legend: 1 = Nalut Formation dolomitic limestones and dolomites with nodular cherts, 2 = situation of the Bir Miji (3) and Tarhúnah-Sharshara (4) rock art sites.



rins, borers) complete the typological spectrum of the Tripolitanian Neolithic (cf. McBurney, Hey 1955, 262–269, Tab. V).

The industry of Bir Miji can be attributed to an Early Neolithic stage. It is important to note that no pottery sherds were found together with the artifacts. Similar situation was detected by the Neuville's excavations (phase III, Neuville 1956b) and by other Neolithic open-air sites in Tripolitania (Fabbri, Winorath-Scott 1965), where the pottery sherds are very rare.

The raw material, used for the manufacture of the above mentioned sample, is represented by nodular cherts. The surface of nodules is smooth. The cherts, displaying a very thin (up to 1 mm), whitish outer rind, are very hard, compact, opaque to translucent in splinters, with waxy luster and a conchoidal fracture. Their colour is mostly light- to dark-grey and brownish to brown but also yellow-brown, pinkish to violet and milky white. The cherts are prevalently structurless (homogeneous structure), sporadically occur cherts with an inconspicuous irregularly striped structure (alternation of coarse to fine whitish and greyish or brownish to brown bands). One piece have been found having a concentrically striped structure, another one showing a dendritic structure (a milky-white chert). The chert implements and fragments display a very thin, whitish, continuous to discontinuous (islet-like) patina (the violet cherts have a whitish patina with a pinkish tinge). Few of the artifacts were burnt in fire. Small pieces of the host rock (light-coloured, hard, crystalline limestone) are preserved on the surface of some chert fragments. The cherty raw material from Bir Miji is very similar to that one from the Tarhúnah—Sharshara site. A few number of tools are made of light-cream-coloured, fine-crystalline, hard, silicified(?) carbonate rock. Such tools are usually bigger in size (because of the low quality raw material).

The cherts, as described above, have not been found in the immediate vicinity of the Bir Miji site. Thus, it is necessary to suppose that this raw material has been imported from the surrounding area built — in accordance with the geological map by Mann (1975) — of the Nalut Formation (Cenomanian — Turonian) rocks (short-distance transported raw material). This conclusion corresponds with the Neuville's observation that the raw material of the lithic industry of the younger occupation phases II and III is imported. It is possible to admit that a minority of the raw material (the brown cherts of the oldest phase I) may be of local origin.

#### TARHÚNAH-SHARSHARA SITE

This site is located 2 km north-west of Tarhúnah, 750 m west of the Tarhúnah-Sharshara road (Fig. 9).

There is a small rocky plateau on a not-too-high range, running in the east-west direction, and reaching the altitude of 500 m a.s.l. On this plateau there is the rock art site studied by Jelínek (1982b). The

engravings were created on the more or less horizontal, upper bedding-planes of the rocks. In the vicinity of the engravings, namely on the northern side of the plateau as well as on the north-facing slope of the range, we can find numerous stone tools accompanied by a large number of flakes and cores scattered on the ground surface. The distribution of the artifacts is not regular, they are more concentrated in some places (workshops).

The raw material, used for the manufacture of the stone industry, was collected just in the immediate vicinity of the workshops where nodular cherts, weathered out of the host rock, cover the ground surface (residual cherts). Therefore, the raw material can be considered a local one. This fact indicates that the prehistoric man was attracted to this locality by the abundance of suitable raw material for the manufacture of stone tools.

In the surrounding area there are extensive outcrops of carbonate rocks with chert nodules exposed by erosion. According to the geological map by Mann (1975) the cherts are confined to the lower part of the Nalut Formation (Cenomanian-Turonian) preserved as erosion relics of small thickness on hill-tops in the Tarhúnah area (Fig. 9). Yellowish, greyish and light-cream, hard, crystalline dolomitic limestones and dolomites containing abundant cherts are dominant in this part of the formation. The chert nodules are small (up to 10 cm in size) and very irregular. The nodules exhibit a very thin (up to 1 mm) outer rind, whitish to yellowish in colour. The surface of nodules is smooth.

The cherts are very hard, compact, opaque to translucent in splinters, with waxy luster and a good conchoidal fracture. Their colour is mostly greyish and brownish to brown but yellow-brown, yellow, pinkish-violet, bluish-grey and dark-grey cherts are present as well. The cherts display prevalently a homogeneous structure (structurless cherts). Cherts with an inconspicuous or conspicuous irregularly striped structure (alternation of fine to very fine, whitish and greyish to grey or greyish-brownish bands) occur, too.

The chert implements and fragments are made mainly of the coloured cherts. Their surface is coated with a very thin, mostly continuous, whitish patina. An ochreous-yellowish-coloured, continuous patina occurs as well. For some of the implements the light-cream-coloured, crystalline, silicified(?) carbonate rock was used. Such artifacts are bigger than those ones of cherts (because of low-quality raw material) and their percentual participation in the assemblage is smaller.

The stone industry (Svoboda 1982) falls within the frame of the Tripolitanian Neolithic with the elements of Capsian tradition (few backed implements, end-scrapers, side-scrapers, borers).

In the surroundings of the rock art site there are permanent water springs (Ayn al Hissi) and in the area of Sharshara (Wádí Turghat) there is a permanent creek with a small waterfall even today (Fig. 9). It can be presumed that there existed prehistoric settlements near the springs or on the banks of the creek (Jelínek 1982b).

#### CONCLUSION

Two types of Upper Cretaceous (Nalut Formation) cherts (the coloured and the striped ones) have been used for the manufacture of implements in the area of Jabal Nefusa. The coloured cherts have been manufactured at the Nalut, Jandúbah, Bir Miji and Tarhúnah-Sharshara sites and they were intensively transformed into retouched tools. The striped cherts appear at the Jandúbah and Tarhúnah-Sharshara sites, but rather in the group of non-retouched artifacts. The raw materials used at the Nalut and Tarhúnah-Sharshara sites can be considered local ones. The raw materials used at the Jandúbah and Bir Miji sites are partly imported (short-distance transported) and partly of local origin.

#### REFERENCES

- DEL FABBRO A., 1968: Stazione litica all'aperto nei pressi dell'Uadi Ar Ribat (Tripolitania), *Libya Antiqua*, V: 93–97.  
FABBRI M., WINORATH-SCOTT A., 1965: Stazione litica

- all'aperto nei pressi di Garian, Libya Antiqua, II, 83–90.  
HINNAWY M. EL., CHESHTEV G., 1975: *Geological Map of Libya 1:250,000*, Sheet Tarābulus (NI 33–13), Explanatory Booklet, 66 pp. Ind. Res. Centre, Tripoli.  
JELÍNEK J., 1982a: Bir Miji — the Northernmost Tripolitanian Rock Art Site. *Anthropologie*, XX, 2:133–150.  
JELÍNEK J., 1982b: The Tarhuna Rock Art Site in Tripolitania. *Anthropologie*, XX, 3:265–278.  
MANN K., 1975: *Geological Map of Libya 1:250,000*, Sheet Al Khums (NI 33–14), Explanatory Booklet, 88 pp. Ind. Res. Centre, Tripoli.  
McBURNAY C. B. M., HEY R. W., 1955: *Prehistory and Pleistocene Geology in Cyrenaican Libya*. Occasional Publications of the Cambridge Univ., Mus. of Archaeol. and Ethnol., 4, 316 pp.  
MRÁZEK I., DOUGHRI A. K., 1983: *The Gem-Varieties of Cherts of the Upper Cretaceous-Tertiary Formations of Libya*. Dep. of Geol. Res. and Min. Bull. Ind. Res. Centre, Tripoli (in print).  
NEUVILLE P., 1956a: Abiar Miggi (Tripolitaine). *Bull. de la Soc. Préhist. Franc.*, LIII: 24–25.  
NEUVILLE P., 1956b: Stratigraphie néolithique et gravures rupestres en Tripolitaine septentrionale: Abiar Miggi I. *Stratigraphie néolithique. Libya*, IV: 61–123.  
NOVOVIC T., 1977: *Geological Map of Libya 1:250,000*, Sheet Nalut (NH 32–4), Explanatory Booklet, 68 pp. Ind. Res. Centre, Tripoli.  
SVOBODA J., 1982: Archaeological Finds, in: JELÍNEK J., 1982b, 266–267.

Dr. Ivan Mrázek  
Geoindustria  
Komárovská 14  
617 00 Brno  
Czechoslovakia

Dr. Jiří Svoboda, CSc.  
Archaeological Institute  
of the Czechoslovak  
Academy of Sciences  
Sady osvobození 17/19  
662 03 Brno  
Czechoslovakia