

THE ABRI SCHMIDT, AN IMPORTANT UPPER PALAEO-LITHIC SITE IN BAVARIA

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INTRODUCTION

The excavations reported upon in this paper were undertaken during the summer of 1959 as part of a joint project of the Cleveland Museum of Natural History and the Prehistoric Institute of Erlangen University, with the principal aim of carrying out an extensive survey of prehistoric remains in the lower Altmühl Valley, Bavaria, near the confluence of that river and the Danube (Prufer, 1959). In the process of the survey, excavations were carried out at several prehistoric sites. The most important of these, a rock shelter which yielded remains of an Upper Palaeolithic encampment, forms the subject matter of this report.

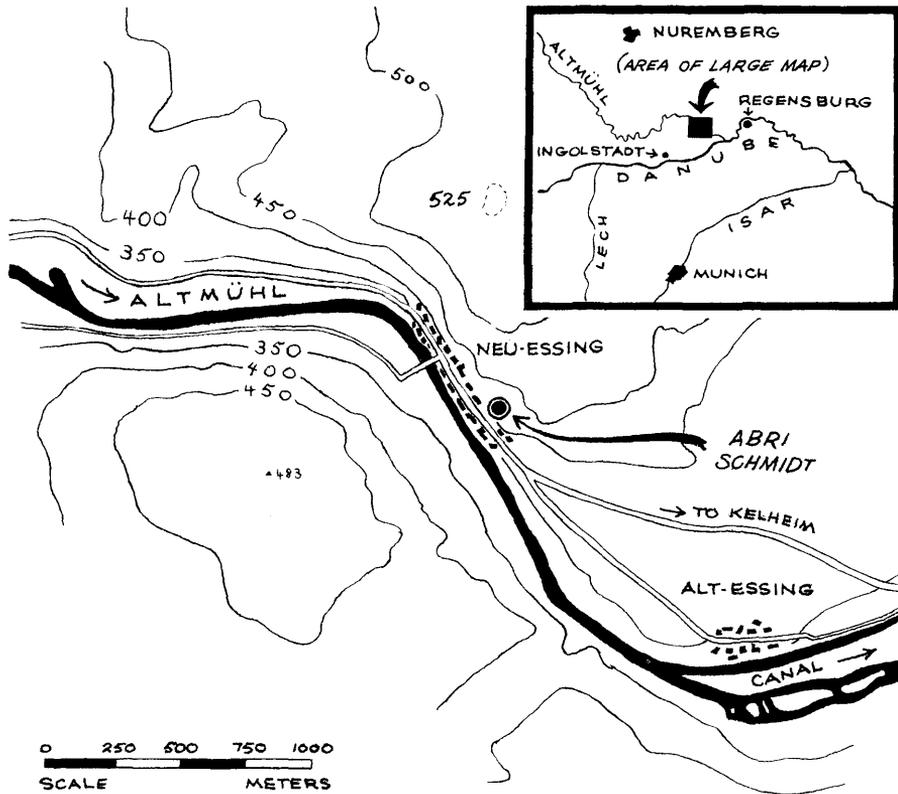


FIGURE 1. Map of the lower Altmühl Valley, Bavaria.

I wish to thank the following for their collaboration: Drs. Lothar F. Zotz and Gisela Freund of Erlangen University; Mr. Frank Davis, formerly of the University of California; and the staff of the Cleveland Museum of Natural History.

HISTORY OF PREVIOUS RESEARCH

The lower Altmühl Valley, especially the region of Neu-Essing, is well-known for its prehistoric remains. During the early decades of this century, a number of caves located in this area were systematically excavated (Birkner, 1916; Obermaier and Wernert, 1914). The results of these investigations gave clear and ample proof of the Altmühl Valley's importance for the study of the earliest prehistory of Central Europe. Thus, the Klausen caves at Neu-Essing not only yielded an entirely new early Stone Age assemblage, the so-called Lower Palaeolithic industry with leaf-shaped points (Obermaier and Wernert, 1929), which opened new avenues of research, but these caves also yielded remains of palaeolithic man's artistic endeavours which are notoriously rare east of the Rhine (Obermaier and Fraunholz, 1926, 1927).

During the period between the end of World War I and the present day, little systematic work has been carried out in the Altmühl Valley. Certainly, as of the end of World War II, the excavations reported upon here are the first serious attempt at unraveling the Stone Age history of the area.

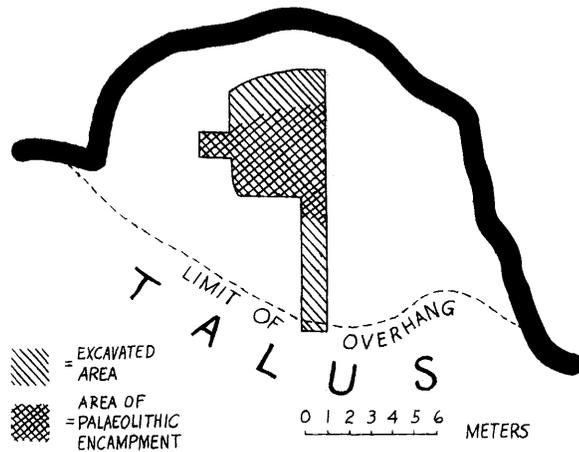


FIGURE 2. Plan of *Abri Schmidt* and excavations.

THE SITE

The site of the excavations, a rock shelter, has been named after its owner, the *Abri Schmidt*. It is located in the steep and picturesque limestone cliffs on the left bank of the Altmühl River, within the confines of the Village of Neu-Essing. The entrance to the shelter is situated about 30 feet above the level of the river.

Though many other caves and rock shelters in the immediate vicinity would have been suitable for excavation, the *Abri Schmidt* was chosen because its owner, digging an air raid trench at the shelter entrance during the war, had come upon evidence of a Stone Age encampment. Thus, the presence of a human occupation layer was assured, as well as the approximate depth at which the occupational level may be encountered.

Initially, a trial trench, measuring 1.25 x 12.00 meters was laid out at a right angle from the back wall of the shelter to the limit of the talus. Subsequently, after the main occupational level in situ had been encountered, the size of the trench was increased as indicated on the plan (fig. 2).

GEOLOGY

The following is an analysis and tentative interpretation of the stratigraphic record of the site.

It was found that toward the rear of the Abri all deposits lay horizontally from the surface down to bed rock. At the 3.5-meter mark from zero (fig. 3), layers D, C₁, and E₁ begin to dip at a steep angle toward the valley. At the 5-meter mark, this dip levels out to continue more or less horizontally as far as layer E₁, and slightly rising as far as layer C₁ is concerned. Interpolated between them was found layer F₃. At a distance of 11.00 meters from zero, the dip of these layers is resumed. The upper levels now also dip sharply toward the valley, the whole forming the talus slope.

The stratigraphic sequence may be summarized as follows:

- A Loosely packed angular limestone débris and black humus, associated with medieval pottery, glass, nails and other iron objects.
- B₁ Tightly packed, small angular limestone fragments mixed with considerable quantities of light gray-to-yellow sandy material.
- B₂ Tightly packed, small angular and subangular limestone fragments mixed with considerable quantities of brown, sandy material. Many limestone fragments are covered with sinter.
- B₃ Same as B₂.
- B₄ Same as B₂.

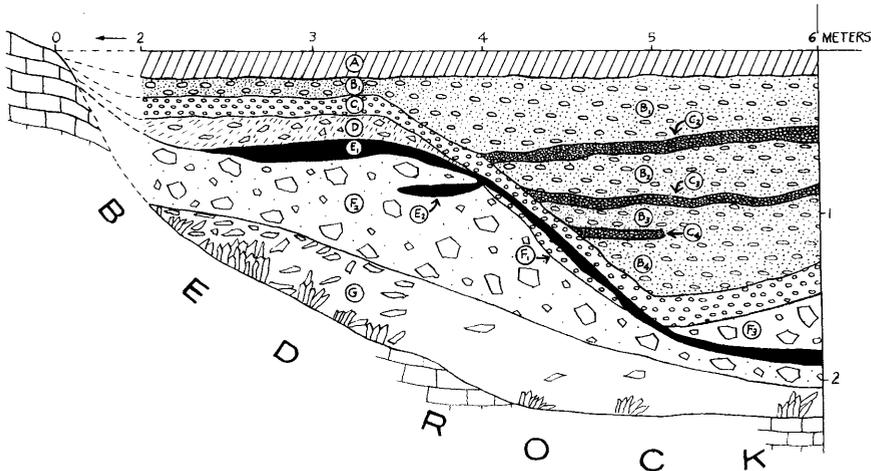


FIGURE 3. Stratigraphy of the deposits in the *Abri Schmidt*.

- C₁ Loosely packed, somewhat coarse, angular limestone fragments. No matrix material.
- C₂ Loosely packed, small angular or subangular limestone fragments mixed with very small amounts of grayish-brown sandy material. Some limestone fragments are sinter-covered.
- C₃ Same as C₂.
- C₄ Same as C₂.
- D Medium tightly packed, coarse subangular limestone fragments mixed with considerable amounts of yellow-brown sandy material.
- E₁ Culture layer. Sharply defined ochre-colored zone of angular limestone fragments mixed with ochre-colored sandy material, artifacts, bones, charcoal, etc.
- E₂ Same as E₁; apparently was interpolated in F₂ when the whole horizon began to slip down toward the valley.

- F₁ This layer is essentially similar in composition to C₁. At first it was thought to be part of that level, accidentally split apart by the interpolation of E₁. Such splitting, however, does not seem an adequate explanation, since E₁ shows no signs of disturbances, which alone could have explained why F₁ (had it been part of C₁) should have come to rest *beneath* E₁. Hence, it seems wiser to consider F₁ a separate unit, older than E₁.
- F₂ Loosely packed, large and medium-sized angular limestone fragments, partly covered with sinter. Very little matrix material.
- F₃ Very similar to D, but the limestone débris is larger.
- G Very large angular limestone fragments, often covered with sinter and mixed with some rather coarse matrix material. This level represents the zone of limestone disintegration above the floor of the rock shelter.

The geological interpretation of this section is not easy. Further excavations and a sedimentary analysis now in progress will, no doubt, clarify some of the problems raised by the profile published here.

One thing is immediately apparent. The profile can be divided into two major phases. The older one comprises levels C₁, D, E₁, E₂, F₁, F₂, and G – in short, all those horizons which are involved in the earlier dip toward the valley bottom. The younger phase comprises levels A, B₁, B₂, B₃, B₄, C₂, C₃, and C₄, i.e., the top levels and those beneath, which form the infill subsequent to the dip.

The section would be relatively simple, were it not for the lenticular deposit F₁, and layers D and F₃, the appearance of which appears to be connected with the slipping involved in the dip. The stone industry found in layers E₁ and E₂ permits two possible interpretations. On the one hand, it may represent an early phase of the Central European Magdalenian; on the other hand, the industry may be part of a late Aurignacian horizon. The absence of characteristic Magdalenian bone tools does not lend much support to the Magdalenian interpretation. There are, however, as will be shown below, a number of ties between the industry of the *Abri Schmidt* and the so-called late Eastern Aurignacian.

How does the archaeological picture fit the geological evidence?

Assuming for a moment that the stone industry belongs into the Magdalenian, it would be difficult to explain the well-differentiated sequence of the layers above E₁, especially those forming the infill of the dip.

If, however, the industry belongs into the late Aurignacian, the geological sequence above E₁ might be easier to explain. In the first place it may be assumed that at least some time must have elapsed between the dip and the accumulation of the infill. This is especially suggested by levels D and F₃ which appear to be only partially present; it is at least possible that erosion was responsible for the disappearance of the bulk of these levels at a time when they were exposed to weathering.

Admittedly this interpretation of the section is tentative, but the nature of the profile, and the supporting archaeological evidence render it at least possible, if not probable. If this reading of the geological record is correct, the deposition of E₁ must fall into some phase, probably a very late one, of the Würm II/III interstadial. The infill of the dip would thus represent the Würm III stadial.

THE STONE INDUSTRY

The stone artifacts from the *Abri Schmidt* are puzzling. They represent a single industry which was recovered from level E₁. The small pocket labeled E₂ yielded only a few flint chips, some fragmentary bones, traces of charcoal, and burnt earth.

The artifacts are made of two types of flint. More commonly tabular flint occurring in the local limestone deposits was used. To a certain extent, the tabular nature of this raw material influenced the shape of the tools. In addition, flint pebbles from the nearby Danube gravels were fashioned into tools.

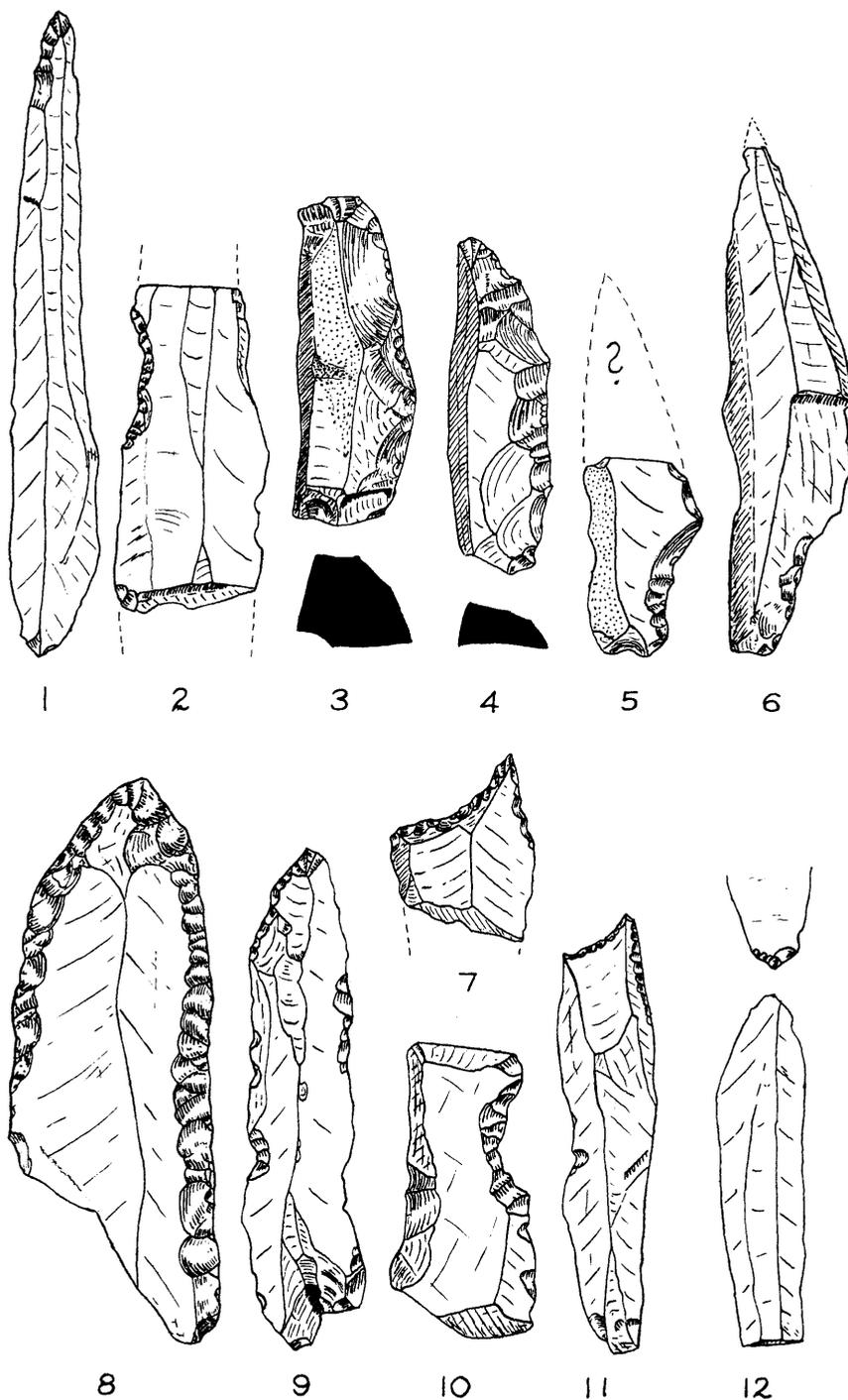


FIGURE 4. Artifacts from the Abri Schmidt.

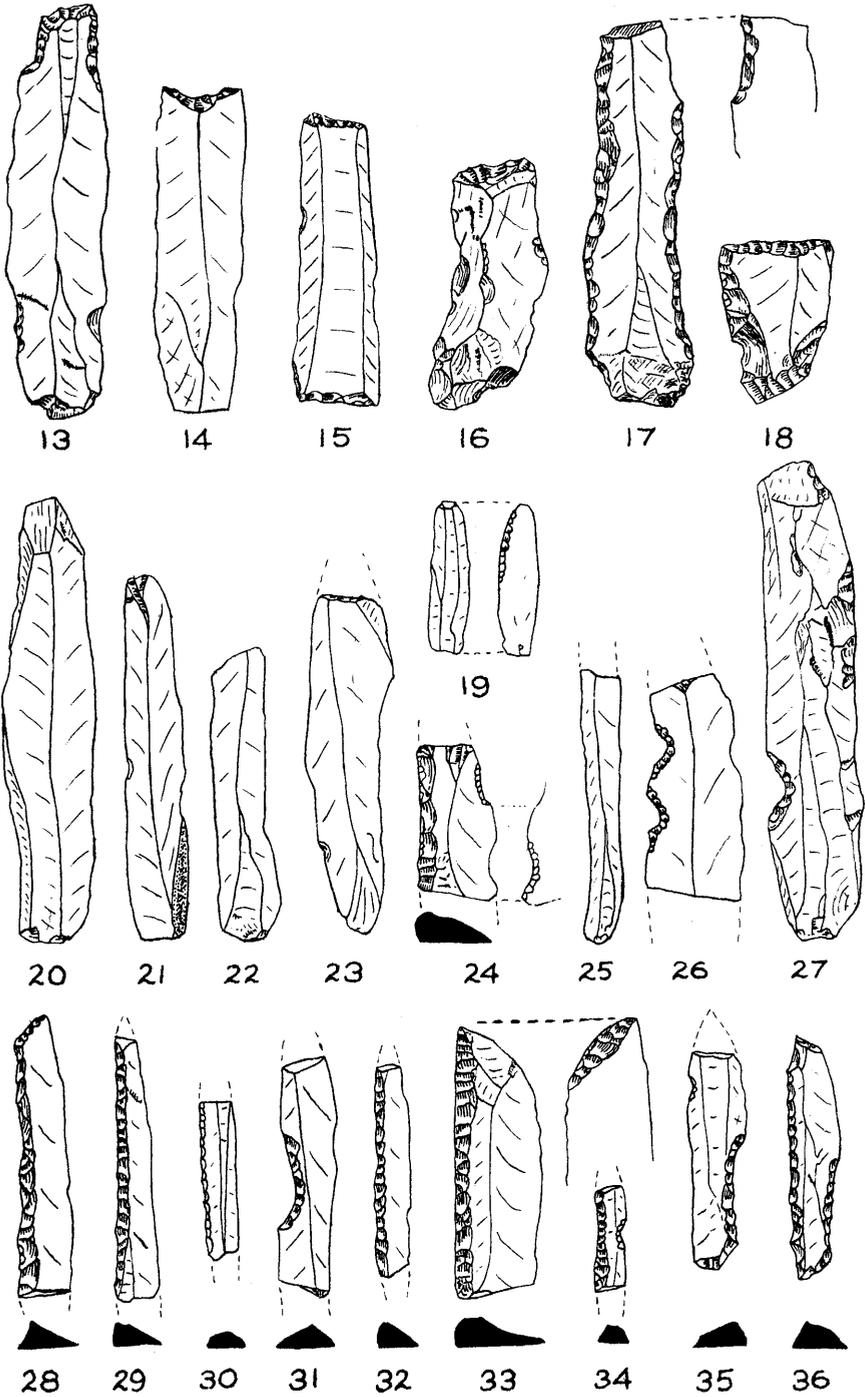


FIGURE 5. Artifacts from the Abri Schmidt.

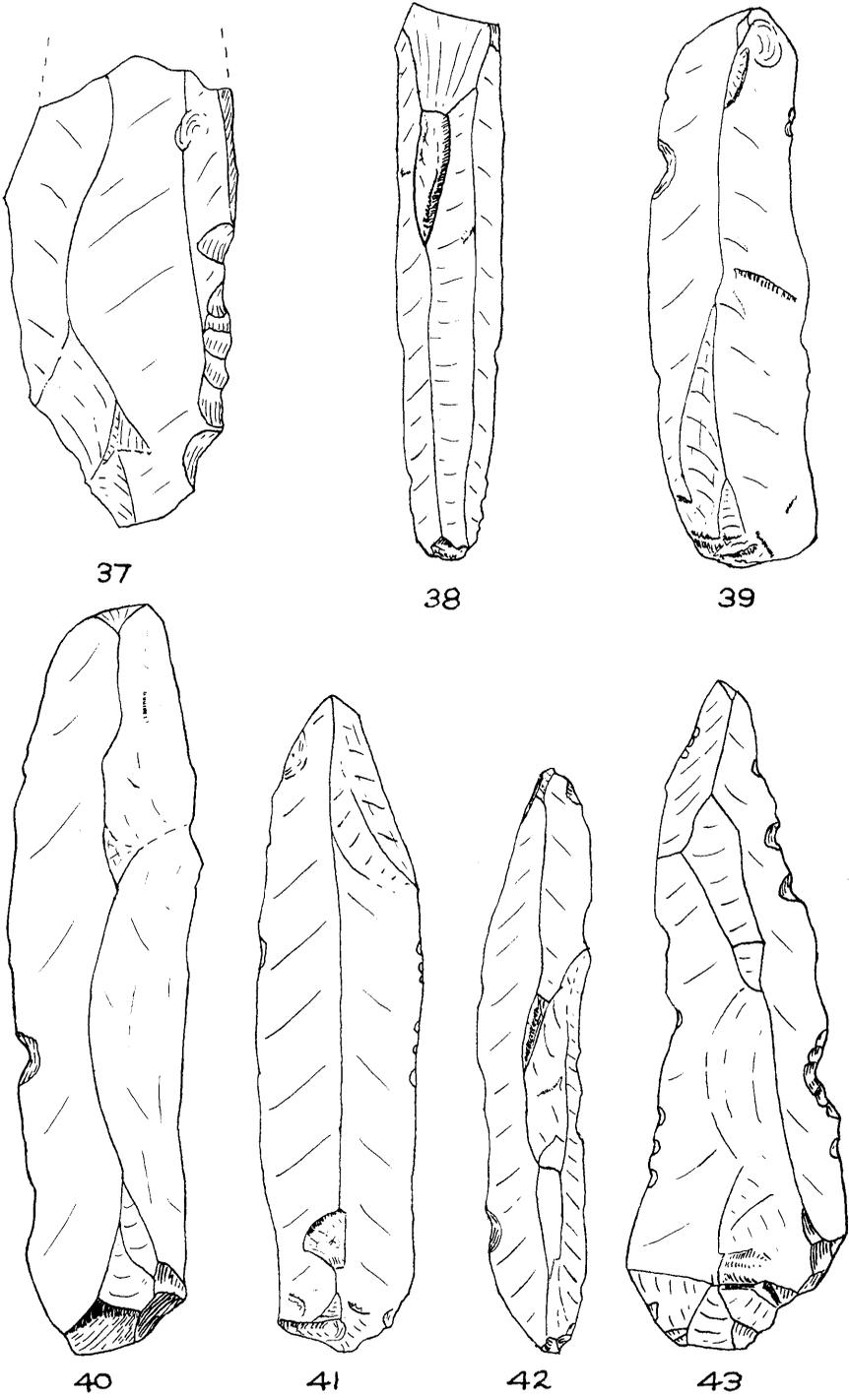


FIGURE 6. Artifacts from the *Abri Schmidt*.

The industry presents characteristics reminiscent of both the Magdalenian and late Aurignacian of Central Europe. Eastern influences are clearly discernable. The following is a typological analysis of the Industry:

1. *Plain blades*.—367 specimens. These are all typical Upper Palaeolithic blades. They are well-made and narrow, grading into micro-forms not exceeding 4 cm in length (fig. 5: 20–23, 25; fig. 6: 37–43).
2. *Retouched blades*.—19 specimens. With few exceptions, all of these blades are poorly retouched. Heavy marginal and nibbled retouch are represented. Consecutive retouch flaking is rare (fig. 4: 4). One specimen is retouched on the lower face (fig. 5: 19). Another is a finely worked blade, delicately retouched over the entire length of one side, and one-half of the other side on the upper face; this side continues to be retouched on the lower face (fig. 5: 17). Two specimens show continuous heavy marginal retouch terminating in a pointed end suggesting a characteristic Late Aurignacian type (fig. 4: 8).
3. *Pointed blades*.—9 specimens. These are long, slender blades with unilateral or bilateral retouch, forming sharply pointed working ends (fig. 4: 1, 9; fig. 9: 61).
4. *Notched blades*.—12 specimens. This series includes blades of all sizes. Several specimens show multiple small notches suggesting that they were used as saws (fig. 5: 26). Others have large notches. All except one are unilaterally notched (fig. 4: 2; fig. 5: 27, 31). The exception is a bilaterally notched blade reminiscent of a strangulated blade, albeit a poor one (fig. 4: 10).
5. *Backed blades*.—10 specimens. These tools are steeply backed in the Gravette tradition. They are delicately worked and rather small. Six specimens are worked from the lower face, four from both faces (fig. 5: 28–30, 32).
6. *Backed and notched blades*.—2 specimens. Both specimens are very small. One has a tiny notch (fig. 5: 34), the other has two notches, alternately flaked from the upper and lower faces (fig. 5: 24).
7. *Backed blade with oblique ventral "capping" retouch*.—1 specimen. This delicately worked type (fig. 5: 33) occurs characteristically in the Gravettian (Périgordian 5) of France.
8. *Blades with terminal shallow ventral retouch*.—5 specimens. This type has essentially an eastern distribution. It belongs into the late Aurignacian of the East (fig. 4: 12). It occurs profusely at Predmost in Czechoslovakia (Zotz and Freund, 1951: 29), and in Russia where it has been noted at Kostienki I, Malta, Kostienki IV, Berdis and other sites (Golomshtok, 1938).
9. *Blades with prepared striking platform*.—2 specimens. These are rather squat, flat blades with prepared striking platforms of Levalloisian type.
10. *Trimming blades*.—26 specimens. These tools are triangular in cross-section with one of the upper faces showing the characteristic flaking that is part of the preparation of the core (fig. 9: 60).
11. *Pseudo-endscrapers*.—12 specimens. One of the most surprising aspects of the *Abri Schmidt* assemblage is the absence of true endscrapers on blades. The specimens listed here qualify as endscrapers only in as much as their working edge is terminal to the blade. Most specimens are straight-ended with nibbled terminal retouch or, in two cases, exceedingly rudimentary rounded scraping ends (fig. 5: 15, 16, 18; fig. 9: 58). In one case the scraping end constitutes a terminally slightly notched edge (fig. 5: 14), in another the working end is narrowed through bilateral shouldering (fig. 5: 13).

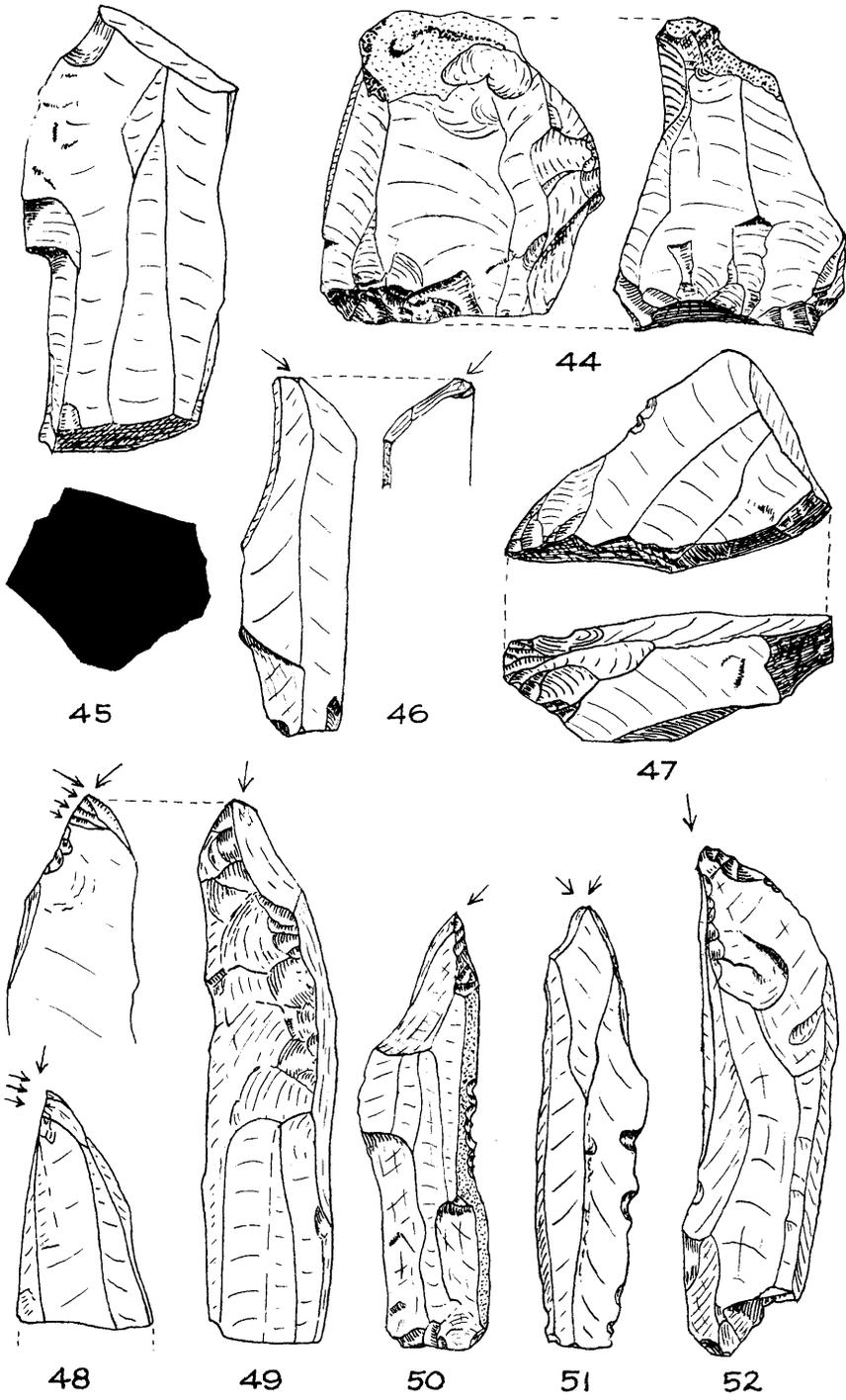
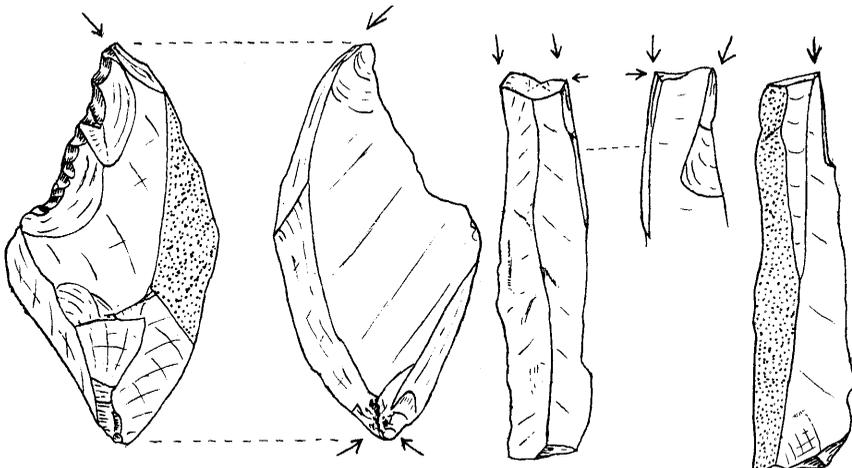


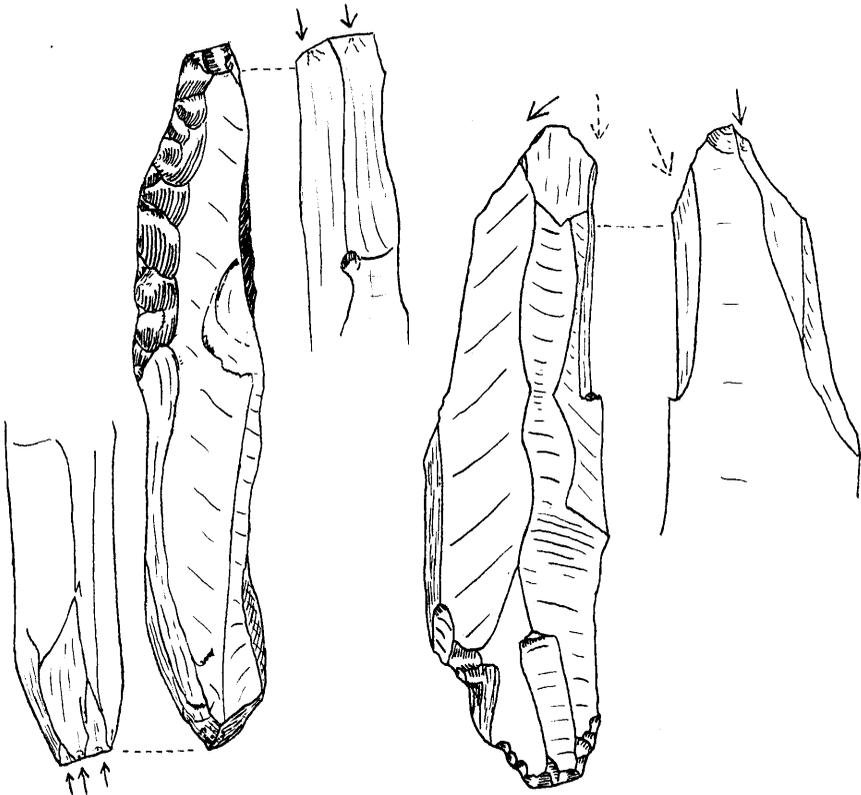
FIGURE 7. Artifacts from the *Abri Schmidt*.



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FIGURE 8. Artifacts from the Abri Schmidt.

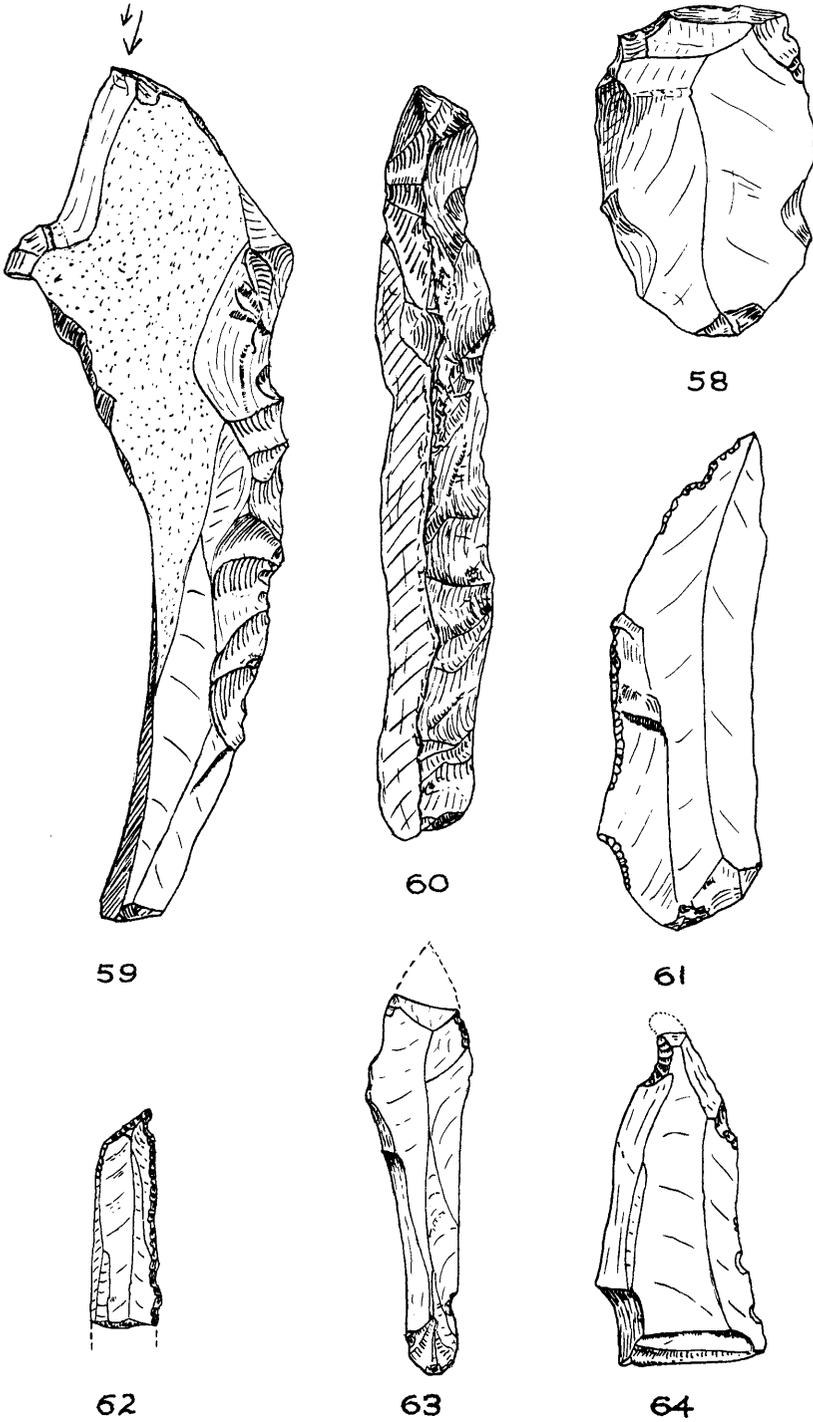


FIGURE 9. Artifacts from the *Abri Schmidt*.

12. *Zinkens*—2 specimens. Both specimens conform to the types defined for the late Palaeolithic industries such as the Hamburgian of northern Europe (fig. 9: 62, 64).
 13. *Borers*—2 specimens. These are blades which are terminally obliquely notched, one of the corners being worked into a borer point (fig. 4: 7, 11).
 14. *Atypical single-shouldered points*—6 specimens. This category includes two specimens with well-worked tangs in the backed-blade tradition (fig. 5: 35, 36). In all cases the tangs have been deliberately prepared by retouch flaking and "shouldering." In all determinable cases, except one, the functional end has been especially retouched (fig. 4: 5, 6; fig. 9: 63). These tools are well within the range of the shouldered points of the Russian late "Aurignacian," notably Kostienki (Golomsh-tok, 1938; Zotz, 1951). The two small points (fig. 5: 35, 36) have parallels in the Lower Austrian Loess Palaeolithic.
 15. *Burins*—46 specimens. The Burins, short of plain blades, are the most common types of tools in the entire assemblage. They can be analyzed as follows:
 - A. Burins on blades: 31 (fig. 7: 46, 48-52; fig. 8: 54, 55).
 - (1) Angle Burins: 6
 - (2) Burins on angles of blades: 22
 - (3) Becs de flute: 3
 - B. Burins on flakes: 2 (fig. 8: 53)
 - (1) Burins on angles of flakes: 2
 - C. Burins on cores: 13 (fig. 8: 56-57; fig. 9: 59).
 - (1) Angle burins: 2
 - (2) Burins on angles of cores or core fragments: 7
 - (3) Becs de flute: 4
 - (4) Double-ended burins: 2

Though usually core burins are rather shapeless, this does not hold true for the present series. Many of the tools are on long regular blade-like pieces of tabular flint. Thus, these usually massive artifacts reflect the nature of the raw material (fig. 8: 56, 57; fig. 9: 59).
 16. *Cores*—15 specimens. These are all Upper Palaeolithic blade cores. They include tabular, cylindrical, and pyramidal forms. Some of the pyramidal cores show signs of having been used as planers (fig. 7: 44-45).
 17. *Nose scrapers*—2 specimens. These tools are made on massive core fragments with the characteristic steep nose jutting out from the flat plane of the tool (fig. 7: 47).
 18. *Side scrapers on cores*—2 specimens. These elongated, steep tools show careful lateral flaking along one side, suggesting that they were used as side scrapers (fig. 4: 3).
 19. *Bifacial axe tool*—1 specimen. This fragmentary tabular implement, roughly rectangular in shape, is terminally flaked on both faces, so as to create a core-axe-like effect. The original length of the specimen may have been about 8 cm.
 20. *Plain débitage*—704 specimens. This series consists of flakes and flint fragments that are unretouched and, apparently, unutilized. They are the biproduct of tool-making. Many specimens are elongated and tabular slabs of flint reflecting the nature of the raw material.
 21. *Retouched or utilized débitage*—76 specimens. This series consists of plain flakes or rejects showing intentional retouch flaking or signs of having been utilized. The retouch flaking is always of the nibbled variety. Rarely is it extensive; often it is in the shape of notches.
 22. *Burin spalls*—19 specimens.
- Table 1 illustrates the size distribution of the *Abri Schmidt* industry.

THE BONE INDUSTRY

Only three bone tools were found at the *Abri Schmidt*. One of these is very significant. This artifact is a large spoon or spatula-shaped object of mammoth tusk ivory; in its fragmentary state it is about 40 cm long. Nearly identical objects were found at such eastern sites as Unterwisternitz, Pollau and Predmost (Zotz, 1951: 214). The other worked bone tools consist of a rather shapeless bone spatula, 18 cm in length, and of a fragment of cut ivory.

TABLE I
The size distribution of the Abri Schmidt industry

Dimensions in 2-cm groups	0-2	2-4	4-6	6-8	8-10	10-12	12-14	14-16	Totals
Artifacts	22	229	213	109	33	5	4	1	616
Débitage	278	316	110	16	3	—	—	—	723
Totals	300	545	323	125	36	5	4	1	1339

THE FAUNA

The analysis of the faunistic remains from the culture layer of the *Abri Schmidt* was carried out by D. C. Roberts, Associate Curator of Paleontology at the Cleveland Museum of Natural History. The report states that unfortunately “. . . the humans who inhabited the cave left for posterity a poor assemblage of teeth and fragmentary bones, which make positive identification as to species and even genus impossible in many cases.” The following is a list of identifiable material:

Lepus timidus, common hare (at least three individuals)

2 partial lower jaws

3 partial scapulae

1 distal end humerus

5 proximal ends radii

5 metacarpals

3 partial pelves

1 proximal end femur

1 proximal end tibia

2 partial ribs

1 metatarsal

cf. *Alopex* sp., Arctic Fox

Most of body of lower jaw with first and second molars.

cf. *Rangifer* sp., (tarandus ?) Reindeer

1 partial jaw of young adult with three molars

2 lower milk molars

2 unerupted lower molars

1 upper molar from young individual

1 upper molar from adult

1 lower premolar

1 incisor

Condyle and coronoid process of jaw (not necessarily from same individual). Artragalus and phalanx from deer family, presumably Reindeer.

cf. *Capra* sp., Ibex

Second upper molar

Equus sp., Horse

Half of an upper second premolar

cf. *Mammuthus* sp., Mammoth

Fragment of tusk

Bird, possibly small owl

1 proximal portion humerus

1 proximal portion tibiotarsus

This faunistic assemblage, though it contains characteristic "cold" forms, would by no means be out of place in an Interstadial fauna. Hence, it does not contribute much to the dating of the site.

DISCUSSION

What is the nature of the *Abri Schmidt* industry? Late eastern Aurignacian elements are represented in the form of several types such as atypical single-shouldered points, and blades with shallow terminal ventral retouch similar to Predmost, Kostienki, etc. Less well differentiated, geographically, but clearly Late Aurignacian in time, are the numerous burins and slender plain blades, the broad pointed blades with bilateral heavy marginal retouch, the nose-scrapers, the rough strangulated blade, and the backed blades. The last-named type occurs both in the tiny nibbled blade form that is known from the Magdalenian and, more commonly, in the classical "Gravette" style of eastern and western Europe alike. The backed blade with oblique terminal ventral retouch is a characteristic form of the French Gravettian (Perigordian 5). Finally, the occurrence of one of those large, typically eastern, spoon-shaped tools made on a mammoth tusk (see Zotz, 1951: 214) indicates Late Eastern Aurignacian connection.

Magdalenian elements are represented by zinkens, fine borers, certain trimming blades (though these also occur in other assemblages), and straight-ended "pseudo-endscrapers." The zinkens certainly point toward an eastern facies of the Magdalenian.

On the whole, the Late Aurignacian elements are much stronger than the Magdalenian ones at the *Abri Schmidt*. However, one should approach a decision as to the nature of the industry with caution because certain factors remain to be explained before a clear identification can be reached. The most puzzling enigma is the complete absence of true endscrapers on blades. This certainly is not an Aurignacian feature. On the other hand, neither is it characteristic of the Magdalenian. It must be remembered, however, that at least one Magdalenian station east of the Rhine, that of Linsenberg near Mainz, is characterized by an almost total absence of endscrapers (Zotz, 1951: 234).

In conclusion, the position of the *Abri Schmidt* industry can perhaps be defined as falling into the very end of the Late Eastern Aurignacian, possibly overlapping the beginning Magdalenian. The orientation of the industry, in most of its components, is clearly eastern. This is especially obvious as far as the Late Aurignacian components are concerned. They link Bavaria via the Czechoslovakian sites with Russia. Among the Magdalenian components the zinkens also point toward the East.

The chronological position of the *Abri Schmidt* may fall into a very early phase of the Würm III stadial or into the tail-end of the Würm II/III interstadial. A very late Aurignacian date would *prima facie* be more in agreement with a late interstadial identification of the stratigraphic record.

The fauna is somewhat nondescript and scanty, but it includes forms which, though "cold," are certainly not uncommon in the interstadial deposits.

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