

## The Upper Palaeolithic Cultures of the Lower Austrian Loess Region

A Critical Interpretation

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(For Oswald Menghin, the mentor of Austrian Prehistory)

### I n t r o d u c t i o n

The purpose of this paper is twofold. It aims at establishing whether or not the palaeolithic phenomena of the Lower Austrian loess stations can validly be termed Aurignacian and Gravettian. Its second purpose is to examine the validity of Pittioni's (1954) typo-chronological scheme.

The method applied to achieve this purpose is that of subjecting the existing publications on the Lower Austrian loess stations to a rigid analysis. The theoretical assumptions on which this analysis is based are these: cultural tool assemblages such as the Aurignacian or the Gravettian are based on tools encountered in a given region, at a certain time period, and occurring in a relatively stable ratio. Without going into the subdivisions of the French Aurignacian sequence, this phase will here be used as an example to illustrate the point. The Aurignacian in France is broadly characterized by the following traits:

1. Cleft base bone points
2. Steep and keeled scrapers<sup>1</sup>
3. Strangulated blades
4. Busked burins
5. Heavy marginal retouch

These features occur within the assemblages in relatively large or small quantities, depending on the Aurignacian stage concerned. If one therefore wishes to identify a given lithic complex with the Aurignacian, such an assemblage must conform to the standards set up on the basis of the typological sequence in that region, in which it had first been defined. If the assemblage to be identified does not, for the most part, conform to these standards, it cannot be labeled Aurignacian. Depending on the degree to which Aurignacian features occur in the assemblage one may, if one so wishes, attempt to define how closely, if at all, it is related to the Aurignacian. One may not, however, use an isolated feature, or a very few tools that conform to the specifications,

<sup>1</sup> It remains to be established whether or not there are sound reasons for separating steep scrapers from keeled scrapers. The two types certainly intergrade. It also remains to be seen whether the conical scrapers are anything more than a variation of the steep/keeled scraper group.

but which occur only in very negligible quantities in an assemblage of hundreds or thousands of artifacts, in order to postulate an Aurignacian.

Thus, to repeat, an Aurignacian is an Aurignacian only if it conforms typologically and quantitatively to the standard Aurignacian as defined in Western Europe. Moreover, it has to fit geochronologically into the established sequence.

Another methodological rule observed here is that no sites within the region under investigation can be linked on the basis of one or two tool types alone. Also, the evidence of tools of little, or no, diagnostic value has not been admitted here for the purpose of correlating sites. One such tool type, often used to connect sites, is the end-scrapers on a blade. This tool occurs throughout the Upper Palaeolithic without undergoing major typological changes. As evidence for chronological equations, it is therefore of little value.

Typology is always in danger of becoming an end in itself. All typological classifications must ultimately be based on functional considerations. What was such and such a tool used for? Only by keeping this question constantly in the foreground, will it be possible to avoid meaningless classifications and sub-classifications that only tend to blur the picture of an assemblage.

Equally as dangerous as 'over'-typology is unwarranted speculation. This often occurs in the guise of learned and redundant discussions. In the literature used for the present study, a recurrent theme of speculation is that of deriving the hunters of the Lower Austrian loess stations, by means of migrations, from the East. Though there exists some evidence for eastern connections here, it has always to be kept in mind, that conclusions can only be drawn from the data at hand, after these have been carefully examined and evaluated on their own terms. The case of Kamegg (Brandtner, 1954—55) is a good — or bad — example of how far speculation can go. A single tool type, represented by two specimens, and which moreover is not what it has been claimed to be, is used to relate, culturally and chronologically, the site of Kamegg with Northern Germany on the one hand, and Russia on the other<sup>2</sup>.

### G e o l o g y

The Upper Palaeolithic assemblages of Lower Austria discussed here have all been recovered from the loess of that region. Bayer was the first to draw attention to the geochronological value of the Göttweig loam in the younger loess which can be used for the relative dating of the palaeolithic stations. He equated (1927) this loam with the Third Interglacial period, thus, to use his own terms, placing it between the 'Moustier advance' (Riss) and the 'Solutré advance' (Würm). Bayer's geochronological and palaeolithic equations are, of course, out of date today. Götzinger (1935, 1936, 1938) subsequently established that this Göttweig loam, which Bayer had also called the 'Aurignac oscillation', occurs in almost all the loess exposures of Lower Austria. Lo-

<sup>2</sup> The writer is much indebted to Dr. F. Brandtner of Yale University, Dr. Hallam L. Moivius, jr. of Harvard University and to Dr. John d'Arcy Waechter of London University for their most valuable advice and help in the preparation of this paper.

cally this phenomenon may find somewhat varying geological expressions. Thus, at Oberfellabrunn near Hollabrunn it is represented by a humus horizon known as the Hollabrunn humus, which should be equated with the Göttweig loam. Often these zones are stratified and contain lenses of small gravel or sand.

The Göttweig loam represents only the remainder of a more massive fossil soil formation. It was originally overlain by a horizon of black earth which is only preserved in small traces. At places, the loam is overlain by a gray fluviatile loess, occasionally containing thin, lenticular-shaped bands of humus which were evidently washed into the deposit. Göttinger has also shown that the loess overlying the Göttweig loam is frequently covered by another zone of humus, or loam, which is considerably weaker morphologically than that of the Göttweig loam ('Aurignac oscillation'). This deposit has been called the Paudorf loam, after the type site, and was interpreted by Göttinger as representing the Würm I/II Interstadial. Brandtner (1950:104) states, however, that this deposit nowhere constitutes a genuine loam; it is always a rather weak humus. This seems to indicate that climatological conditions during the Paudorf phase were considerably different from those during the 'Aurignac oscillation', i. e. Göttweig phase. This conclusion is strongly supported by the results of pollen analysis:

- G ö t t w e i g :**    Trees:    birch, pine, willow, hazel, elm, oak, linden, alder.  
                  Grasses:  Pollen of herbs and grasses during the Göttweig phase are percentage-wise highly represented. The tree pollen occur in a recurring specific ratio to each other.
- P a u d o r f :**    Trees:    The pollen ratio here is quite different; cold forms predominate. Hazel, elm, and oak occur only sporadically; linden is absent.  
                  Grasses:  Pollen of herbs and grasses are represented in an extremely high proportion, which indicates sparse forest growth.

At Weinstein, where a classic geological section was drawn, Göttinger, Fink (1954) and others observed below the Moustier (Riss) loess an older zone with a humus cover. According to Göttinger's (1935) interpretation, this horizon should date from the Second Interglacial period. On the basis of a thin, loamy layer in the 'Moustier loess' (Riss) which Göttinger considers to be evidence of an interstadial, this loess is subdivided into a Riss I and a Riss II loess. Bayer, who already in 1927 was aware of this thin layer (1927 : 346), considers it possible that this is not a genuine loam, but a fluviatile loamy deposit that had flowed over the loess surface when the latter was still in the process of formation. Brandtner (1950 : 104) on the basis of his own observations supports Bayer's view. On the basis of structure and pigmentation, this alleged Mindel/Riss loam is clearly different from the Göttweig loam. The overlying humus zone, too, is quite different from the Göttweig black earth; it appears to be a 'terra bruna'. The thick so-called 'Red Loam Zone' noted in the loess of the Laerberg was

formerly considered to be contemporary with the Weinstein loam of Riss/Würm date (Kümmel, 1936). Though this was not universally accepted, Brandtner (1950 : 105—106) opines that the Laerberg deposits, with their red pigmentation characteristic of tropical soils, suggest much more stable climatic conditions than the Weinstein loam. He therefore believes that this horizon really dates from the Mindel/Riss Interglacial.

Götzinger's and Bayer's chronologies for the Lower Austrian loess region are clearly incorrect, since, *inter alia*, they are not supported by archaeological evidence. Brandtner (1950 : 106) rightly shows that these geochronological schemes, if viewed in a broader geographical setting, would imply that the Mousterian is an industry of Third Glacial age, and the earlier so-called Pre-Mousterian of Weimar-Ehringsdorf, which is an interglacial manifestation, a complex from the Second Interglacial period. Therefore, too, Götzinger (1936) considers the Aurignacian of Lower Austria to date from the early part of the Würm advance, *i. e.* Würm I, since Göttweig was considered to represent the Riss/Würm Interglacial.

It is not necessary here to go into the older attempts at classifying the Austrian loess sequence. Suffice it to say that Bayer's equation of 1927, where he talks of a 'Moustier loess' and an 'Aurignac oscillation', is sound since the so-called Aurignacian — which alone concerns us here — is at least partly contained in the Göttweig loam. The Willendorf stratigraphy clearly illustrates this point: Bayer's 'Aurignac oscillation' (Göttweig) should be viewed as representing the Würm I/II Interstadial. The underlying loess, therefore, is of Würm I date. Petrographic analysis has shown that its composition is similar to that of the loess above the Göttweig zone and must have been deposited during the same Ice Age. Both loesses are genetically quite different from the true Riss loess.

To summarize the evidence the following analysis shows the geological sequence as redefined by Brandtner (1950). In Lower Austria a Riss II loess, petrographically quite different from the succeeding loess, is overlain by a zone of brown loam assigned to the Riss/Würm Interglacial. This is overlain by the Würm I loess, which is separated from the Würm II loess by the black earth loam of the Würm I/II Interstadial (Bayer's 'Aurignac oscillation'). The Würm II loess is covered by the Paudorf humus, representing the Würm II/III Interstadial, and this in turn is overlain by the Würm III loess.

Brandtner (1950) assigns the sites of Kamegg and Aggsbach to the Würm III loess. However, he subsequently states (Brandtner, 1954-55 : 80) with reference to Kamegg that "geochronologically the assemblage of Kamegg must be assigned to a time horizon which can be equated with a late dry phase in the second half of the Würm II Stadial". Felgenhauer (1951) gives a similar date for Aggsbach. On the basis of the geological evidence from these two sites, the present writer agrees with the Würm dating. However, recent C-14 dates render the Aggsbach dating somewhat dubious.

In the course of the last few years a number of C-14 dates have been obtained which appear to indicate that the Göttweig Interstadial has lasted from about 42,000

years until about 30,000 years ago (de Vries, 1958; samples GRO 1245 and GRO 1501). The Paudorf phase seems to have lasted for a much shorter period of time as indicated by the C-14 dates (de Vries, 1958; samples GRO 931, GRO 1286 and GRO 1327). The time period involved may not have exceeded 2000 years, since the dates appear to range from between 25,000 ± 170 to 26,000 ± 300 years B. P.

Dates for some of the sites discussed in this paper indicate that Senftenberg (sample GRO 1217) was occupied 48,000 ± 2000 years B. P. and Willendorf II/4 about 31,000 ± 250 years B. P. (sample GRO 1273). This places both occupations squarely into the Göttweig Interstadial. Aggsbach has yielded a date of 25,600 ± 100 years B. P. (sample GRO 1327) which places it into the Paudorf zone, whilst Willendorf I has yielded a date of 30,310 ± 250 years B. P. (sample GRO 1287). The level from which this sample was taken is said to equate with layer 6 of Willendorf II (Movius, dittoed M. S. 1958 : 11); if the general scheme is correct, Willendorf I would appear to date from the very end of the Göttweig Interstadial or from the beginning of the Würm II Stadial. The above C-14 dates will be further discussed in the course of this paper.

The Sites

The following is an alphabetic list of the sites studied for this paper. A sketch map of their distribution can be found in Pittioni's book (1954); some of the more important site reports also contain detailed maps and site plans. Space does not permit them to be reproduced here. In the discussion of the sites which follows this list, the alphabetical order is not used. The material is organized in order of importance and completeness of available information.

Geochronologische Abfolge	Stratigraphie Willendorf II		Die n.-ö. Lößstationen in ihrem gegenseitigen zeitlichen Verhältnis														
	VII	Rezente Bodenbildung															
Würm II- Stadial	VI	Löß II	Langmannersdorf Kamegg Spitz-Mießlingtal + Singerriedl Willendorf II/9 Krems-Wachtberg, Weissenkirchen Willendorf II/8 Aggsbach, Gobels- burg, 7 Großweikersdorf, 6 Gruebgraben, Langenlois Willendorf II/5 Getzersdorf, Stoll- hofen, Senftenberg, Krems-Hunds- steig														
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Chronological Table for the Lower Austrian Palaeolithic Loess Stations proposed by R. Pittioni (1954).

1	Aggsbach	17	Roggendorf
2	Bruderndorf	18	Ronthal
3	Getzersdorf	19	Rothengrub-Unterloiben
4	Gobelsburg	20	Senftenberg
5	Gösing	21	Spitz-Miesslingtal
6	Großweikersdorf	22	Spitz-Singerriedl
7	Gruebgraben	23	Steinaweg-Göttweiger Berg
8	Horn	24	Stillfried
9	Kamegg	25	Stollhofen
10	Kotzendorf	26	Stratzing-Galgenberg
11	Krems-Hundssteig	27	Tautendorf
12	Krems-Wachtberg	28	Weissenkirchen
13	Langenlois	29	Willendorf I
14	Langmannersdorf	30	Willendorf II
15	Limberg	31	Wösendorf
16	Plank	32	Zeiselberg

#### Willendorf II

Pittioni (1954) has attempted to equate in summary form the nine levels of Willendorf II with other Lower Austrian sites. He concludes (on perfectly acceptable geological grounds) that Willendorf II/1—4 fall into the Würm I/II Interstadial and have no parallel assemblages in Lower Austria. Among these, layers 2—4, containing actual artifacts, are considered to be genetically related and are claimed to culminate in what has been called a Middle Aurignacian. This identification is based on the occurrence of conical and keeled scrapers. With layer 5 we enter the Würm II Stadial. The industry here is equated with those of Getzersdorf, Stollhofen, Senftenberg, and Krems-Hundssteig. These sites are paralleled on the basis of the scrapers.

Willendorf II/6—8 are equated with Gobelsburg, Gruebgraben and Langenlois for layers 6—7, and with Aggsbach for layer 8. Layer 9 is paralleled with Krems-Wachtberg and Weissenkirchen. Grossweikersdorf may either parallel layer 7 or layer 9. In the overall picture layer 9 is considered to represent a "younger phase in the formation of the Gravettian" (Pittioni, 1954 : 95).

The following discussion aims at examining the above equations.

Willendorf II can, at least on geological grounds be subdivided into two phases, the lower one encompassing layers 1—4, and the upper one layers 5—9. Layer 1 is non-descript and cannot be used typologically. Layers 2 and 3 are typologically too poor to permit a tie-in with another assemblage. Only two things can be stated about them: they do not represent an Aurignacian, but they clearly contain blade industries. Layer 4, which Pittioni (1954 : 94) leaves unparalleled in Lower Austria would appear to be closely connected with Krems-Hundssteig. At any rate the conical scrapers

which do not occur any longer in Willendorf II/5, with which Krems-Hundssteig has been equated by Pittioni, would suggest this relationship. Other elements at Krems-Hundssteig, such as the 'Gravette' points, would, of course, tie in better with Willendorf II/5. The trouble with Krems-Hundssteig is, that one cannot be certain whether the industry there represents an homogenous whole or whether the excavators had overlooked a cultural stratification.

One thing is clear, however; the only possible Aurignacian elements at Willendorf II/4 are the scrapers. There is nothing else to suggest Aurignacian elements. In the whole sequence of layers 2—4 no burin was found.

Layer 5 has been equated with Krems-Hundssteig. This has already been discussed above and it need only be added here that in addition to the connecting link provided by the backed 'Gravette' blades, there are numerous elements at Krems-Hundssteig that do not occur at Willendorf II/5, nor for that matter in any of the other Willendorf II levels. Among these the mousteroid forms, the Krems points, and the strangulated blades should be mentioned. Also Getzersdorf has been paralleled with Willendorf II/5. However, among the illustrated artifacts from this site there is little to suggest a connection. There are no backed blades at Getzersdorf, whilst the steep scraper element, well represented at that site, is virtually absent at Willendorf II/5. What remains are endscrapers on blades, and possibly one pointed blade which might suggest a correlation here. To the present writer this appears to be an insecure basis.

Again, Senftenberg has been paralleled with Willendorf II/5. At least partly this equation is based on an alleged atypical single-shouldered point from Senftenberg, which certainly, judging by the illustration, is nothing of the kind. Otherwise there is nothing at Senftenberg which suggests a tie-in with Willendorf II/5. The site of Stollhofen has also been equated with Willendorf II/5. The material from that site, illustrated by Bayer (1909), suggests no such connection. There are neither 'Gravette' points (or blades), nor any other elements suggesting a connection. Stollhofen yielded a keeled scraper, whilst no such artifact has been reported from Willendorf II/5 by Pittioni. Szombathy (1910) on the other hand, does mention keeled scrapers.

Willendorf II/6—8 will here be broken down for comparative purposes on the basis of Pittioni's (1954) division. Layers 6 and 7 are thus equated with Gobelsburg, Gruebgraben, and Langenlois. The Gruebgraben equation will be examined first. It should be pointed out that no 'Gravette' points (or blades), which are characteristic of Willendorf II/6, 7 (and 8) were found at Gruebgraben, nor are there any single-shouldered points. Thus the similarities between the two sites rest on the blades and scrapers. Szombathy (1910) by implication mentions keeled scrapers from Willendorf II/6—8, but Pittioni (1954) does not refer to this type. At Gruebgraben it does, however, occur; so do steep scrapers which have not been reported from Willendorf II/6—8 at all. Thus the only scraper similarity rests on the somewhat non-descript end-scrapers on blades. Among the blades some pointed types which have their parallels at Willendorf II/6—8 have been noted. On the whole therefore, the

Gruebgraben/Willendorf II/6—7 (and 8) parallels boil down to end-scrapers on blades and roughly pointed and retouched blades.

Next the Gobelsburg/Willendorf II/6—7 (and 8) connections will be examined. Gobelsburg, layer 1, need not be considered, since it contained no clearly definable artifacts. The Gobelsburg, layer 2 similarities with Willendorf II/6—7 (and 8) rest on small backed blades, at least one of which may qualify as a 'Gravette' point. There are, however, no single-shouldered points at Gobelsburg, layer 2. On the other hand, there are obliquely truncated and retouched blades which have parallels at Willendorf II/6—7 (and 8). By contrast, the Gobelsburg, layer 2, steep scrapers are not paralleled at Willendorf II. Gobelsburg, layer 3, has small atypical backed blades and points which link it with Willendorf II/6—7 (and 8). Moreover, there are roughly pointed and retouched blades which provide a possible connection. On the negative side, there are, again, steep scrapers at Gobelsburg, layer 3. It need hardly be mentioned that the end-scrapers on blades at both sites resemble each other.

The Langenlois/Willendorf II/6—7 (and 8) connections are based on pointed and retouched blades and end-scrapers on blades. However, only eight artifacts have been illustrated in the literature; this is insufficient evidence to base comparisons upon.

Willendorf II/8 has been equated by Pittioni (1954) with Aggsbach. Let it be said again that none of the alleged 'Gravette' points from Aggsbach are even remotely connected with this type. Hence, any parallelization on the grounds of so-called 'Gravette' forms has to be rejected. Both sites, however, have yielded atypical backed bladelets which might provide a link. The same applies to atypical single-shouldered points, though the illustrated specimens from Aggsbach are atypical indeed. Among the types illustrated in the Aggsbach publication (Felgenhauer, 1951) there are no steep or keeled scrapers which, according to Szombathy (1910) would not fit the Willendorf II/8 evidence. Moreover, the extremely high proportion of micro-forms at Aggsbach is in direct contradiction to what has been said about Willendorf II/8. Szombathy (1910) mentions Solutrean forms from Willendorf II/8 which, however, on the basis of his description of the flaking technique, should be rejected as such. At Aggsbach, significance has been attached, apparently also in terms of Solutrean similarities, to some specimens with very poor bifacial retouch. This alleged Solutrean trait should also be rejected. Any attempt at correlating Aggsbach and Willendorf II/8 on the basis of possible Solutrean or proto-Solutrean connections should, therefore, be discouraged. The possible connections between the two sites that remain to be discussed, are pointed and retouched blades occurring at both sites, and end-scrapers on blades. The latter, however, are not similar since the Aggsbach specimens appear to be of infinitely higher workmanship than those from Willendorf II/8.

Willendorf II/9 has been equated with Krems-Wachtberg and Weissenkirchen. The Weissenkirchen assemblage cannot be discussed here since the materials from that site are unpublished. Pittioni (1954 : 93) illustrates nine artifacts from Weissenkirchen, none of which suggests any similarity with Willendorf II/9.

The Krems-Wachtberg/Willendorf II/9 equation is based on the combined occu-



rence of large blades and end-scrapers on blades at both sites, together with atypical single-shouldered points and small backed blades. A foreign element here is the denticulate micro-blade. It may be wise to quote Pittioni here: "To compare Krems-Wachtberg with any of the younger layers of Willendorf II is virtually impossible. The Wachtberg material in its totality is much simpler" than that of the upper levels of Willendorf II (1954 : 69).

There remains the site of Grossweikersdorf which Pittioni considers to equate with either Willendorf II/7 or II/9. This site presents a serious problem since it has been published inadequately. The present writer, with Pittioni (1954), is inclined to reject the alleged Solutrean elements here. What remains in the assemblage are some plain and retouched blades, a pointed blade and some end-scrapers on blades, none of which, in this writer's opinion, can confidently be equated with the upper Willendorf II stages.

The above rigid analysis of the alleged site equations of Lower Austria with Willendorf II shows on what slender evidence these parallelizations are based. Invariably, some vital elements characteristic of one site are not present at the other and, more often than not, the equation is based on atypical elements. The best parallelization seems to be that between Gobelsburg and Willendorf II/6—7. But even here the picture is not perfect.

In view of the fact that the Willendorf II materials are as yet essentially unpublished, and in view of what the above analysis has shown, it would appear to be prudent to refrain at this point from any parallelizations between the Willendorf II stages and the other sites of Lower Austria.

Finally, it may be pointed out that the antler sleeves occurring in several layers of Willendorf II are a very interesting element indeed. In view of similar types at Kulatof I and Mezin in Russia, this may perhaps indicate eastern connections of the Willendorf industries. To compare these sleeves with Lyngby parallels does not seem to be warranted on chronological grounds. The C-14 date for Willendorf II/4 is in accord with the evidence from the geological position of that deposit which clearly indicates a Göttweig date.

A few words remain to be said regarding the famed Venus figurine found at Willendorf II/9. This is not the place to launch a discussion as to the origins and affiliations of the Venus figurines of the Upper Palaeolithic. We clearly are dealing here with a religious manifestation. At this stage of our knowledge we know little about the mechanics of the diffusion of technological traits. Much less is known of the diffusion of ideas and their material manifestations. Certainly, material and non-material traits need not diffuse together. A lithic industry is largely based on ecological factors; religious ideas and their manifestations, such as the Venus figurines, can well exist and spread regardless of the environmental variations that are responsible for various tool assemblages characterizing our so-called culture phases. Therefore, to make a series of loosely connected, but geographically widespread tool assem-

blages into an overall Gravettian on the basis (*inter alia*) of the occurrence of so-called Venus figurines, is clearly a *non-sequitur*.

#### K r e m s - H u n d s s t e i g

The overall picture of Krems-Hundssteig is that of a typical Upper Palaeolithic blade industry. Obermaier (1909) notes the absence of Late Aurignacian types. He believes the Krems-Hundssteig industry to be a Lower Aurignacian. He suggests that the mammoth hunters of this station were part of a movement of peoples toward southern Russia. Ultimately, he derives the Aurignacian hunters from the Near East and North Africa whence they moved to Europe and Russia. He supports this argument by the occurrence at Krems of Mediterranean shells. Pittioni (1954) equates the Krems-Hundssteig assemblage on typological grounds with the Aurignacian III—IV, and relates it on similar grounds to Willendorf II/4. This connection is based essentially on the conical scrapers of Krems. He notes however, that Krems-Hundssteig and Willendorf II/4 are not by any means identical, and that they represent local variations of roughly contemporary and related paleolithic phenomena (1954 : 67). Elsewhere Pittioni (1954) denies this parallelization because the Willendorf II/4 conical scrapers are too coarse.

In view of the strong mousteroid elements, the present writer thinks Pittioni's (1954) suggestion that there appear to be at Krems-Hundssteig at least two, possibly three, different cultural layers, is worth looking into. He cannot agree, however, with the placement of the Krems main assemblage with the Aurignacian III—IV. Neither on purely typological nor on geochronological grounds does this seem warranted. For the latter, there is no evidence whatsoever. Assuming for a moment that typological and terminological arguments are valid in an attempt at a comparative correlation between Western Europe and Austria, and providing the Peyrony scheme of the French Périgordian/Aurignacian is valid (Peyrony 1933, 1936, 1948), at least as far as the upper levels are concerned, there are still very serious objections to Pittioni's equation. Admittedly the steep scrapers, strangulated blades, and other elements of Krems-Hundssteig, all support Pittioni's view, but the Krems points, being identical, to all intents and purposes, with the Font Yves points, should be put at the very end of the Aurignacian/Périgordian sequence. The Mousterian elements at Krems would not contradict a Lower or Middle Aurignacian date, since mousteroid elements quite commonly occur in the French Aurignacian. The chronological difficulties arise out of the Krems points and the micro-blade industry of Krems-Hundssteig. It should be noted however, that the assemblage from Font Yves (Bouyssonie, 1913) exhibits exactly the same mixed features as the site discussed here. At Font Yves too, we have in an allegedly homogenous assemblage, steep scrapers, strangulated blades and the small spiky points of Krems type. Peyrony (1948:312), basing himself largely on the bladelets with alternate retouch, equates Krems-Hundssteig with the Périgordian II (and Surene I), which to this writer seems untenable, particularly since de Sonne-

ville-Bordes (1955 : 187—203) has recently shown that the Périgordian II is not a valid stage of the Périgordian/Aurignacian sequence.

The mousteroid artifacts can not *a priori*, and against the very categorical statements of Strobl and Obermaier (1909), be separated from the main assemblage of Krems-Hundssteig. Assuming that these types are actually part of the main, homogenous, assemblage and that the Western European evolutionary sequence is roughly valid for Lower Austria too, then the mousteroid elements would argue in favour of a relatively early date. At present, however, the problem cannot be solved. This discussion merely attempts to point out some of the difficulties inherent in the site of Krems-Hundssteig.

Within the Lower Austrian loess stations, Krems, on the basis of the characteristic conical scrapers should equate with Willendorf II/4, and not with Willendorf II/5. Pittioni (1954) is somewhat ambiguous on this point. In his chronological chart (reproduced in this paper) he cross-dates Krems-Hundssteig with Willendorf II/5; earlier (1954 : 67), he equates it, admittedly with reservations, with Willendorf II/4. In point of fact, neither Willendorf II/4 nor II/5 provide very satisfactory parallels to Krems-Hundssteig.

At this point it may be noted, that the alleged conical scraper from Langmannersdorf, which was interpreted by Angeli (1952—53) as an Aurignacian survival, cannot be accepted as a representative of the type. Again, the site of Getzersdorf could, on the basis of conical scrapers, possibly be linked with Krems. None of the other types of Krems have been noted at this site, however. On what basis Pittioni (1954 : 94 ff.) correlates Senftenberg with Krems-Hundssteig is not clear; Stollhofen is placed into this chronological assemblage, apparently on the basis of the (clearly) atypical conical scraper illustrated by Bayer (1908). In the present writer's opinion both Stollhofen and Senftenberg can, on typological grounds, be detached from the Krems-Hundssteig, Getzersdorf and Willendorf II/5 typological equation. Even so, as has been pointed out, the latter two sites do not compare very favourably with Krems.

What other evidence is there to tie these three sites together? The Krems point occurs at Krems alone; true and unequivocal 'Gravette' points have only been noted at Willendorf II/5; but the scraper/blade elements are broadly common to all three sites. Atypical single-shouldered points occur at Willendorf II/5 and possibly at Krems-Hundssteig. Burins are rare at all three stations, but Krems yielded a true *burin busqué* (Obermaier, 1908), the only one of its kind from Lower Austria. Microforms occur at Willendorf II/5 and Krems-Hundssteig, but not at Getzersdorf. Lastly, the conical scrapers have been noted at Krems and Getzersdorf, but not at Willendorf II/5; at Willendorf II/4 they clearly occur, but that level shows none of the other characteristics that might tie in with any of the other stations.

Thus the typo-chronology of these three sites, which according to Pittioni (1954) are chronologically of the same date, is held together only by an overall similarity of the blades and blade-scrapers, and by the relative scarcity of burins, noted at all three stations.

In this connection it is interesting to note that the site of Kamegg, which Pittioni (1954) equates with Langmannersdorf at the very end of his chronological sequence, yielded a series of atypical single-shouldered points, tying it in with Willendorf II/5. A strong element of backed blades at Kamegg would tie in with Willendorf II/5 as well. On the other hand the wealth of burins at Kamegg discourages a comparison between the two sites.

The site of Aggsbach dubiously equated by Pittioni (1954) with Willendorf II/8, has two elements that might link it with Krems-Hundssteig, namely the high proportion of micro-blades and points, which appear to be Krems points. Unfortunately the micro-blades are poorly illustrated by Felgenhauer (1951). Since the alleged 'Gravette' points from this site are clearly not what they are supposed to be, their absence might also be quoted very cautiously as a (negative) link with Krems-Hundssteig. On the other hand, however, the scrapers of Aggsbach bear no resemblance to Krems-Hundssteig at all. Furthermore, there are no mousteroid elements at Aggsbach, and the C-14 date, which equates this site with the Paudorf Interstadial, also argues against an equation with Krems-Hundssteig.

In conclusion then, it can be said, that Krems-Hundssteig represents the nearest parallel to the Aurignacian, as defined in France. Whether or not there were originally several, culturally different, levels at this site, cannot be established. There is evidence, both in favour and against this possibility. A close analysis of and comparison with other Austrian loess sites, particularly of those that Pittioni (1954) chronologically equates with Krems, show that none of the comparisons made are convincing.

On the whole Krems-Hundssteig stands isolated among the Lower Austrian loess stations.

#### Getzersdorf

According to Felgenhauer (1954—55) Getzersdorf is a site of the classic Aurignacian (III—IV), with an admixture of strong archaic elements. These are characterized by alleged (unillustrated) Chatelperron forms. Typologically late elements are supposed to be small scrapers, small end-scrapers on blades and burins. No 'Gravettian' types have been found at Getzersdorf. The small blade with inverse retouch from layer 2 has been interpreted thus, but this specimen is clearly not *in situ*. According to Felgenhauer (1954—55 : 119) it may be indicative of a 'Gravettian' site nearby.

Typologically, Felgenhauer believes Getzersdorf to be related to Senftenberg. In this writer's opinion there are not at present enough published materials from that site to justify such a comparison.

Geochronologically Getzersdorf falls clearly into the terminal phase of Würm II, but it should be noted that due to solifluxion the cultural assemblage is not *in situ*. Felgenhauer (1954—55 : 123) believes that the site represents a hunting camp of Aurignacian hunters, who had been pushed into the alpine foothills by the arrival of the 'Gravettians'.

In the section dealing with Krems-Hundssteig some of the aspects of Getzersdorf have already been discussed. The reader is referred to that section for some of the data. What should be added here is, that no steep scrapers or strangulated blades were found at Getzersdorf. Furthermore, as Felgenhauer has rightly pointed out, there are no 'Gravette'-like elements at this site either. The latter factor has been used to make Getzersdorf out to be an early manifestation. Pittioni (1954) equates it with Krems-Hundssteig and Willendorf II/5. To this writer the evidence for such a correlation is not conclusive. The only Aurignacian elements at Getzersdorf are the retouch technique and the keeled scrapers (including one conical scraper apparently not identified as such by Felgenhauer). The unillustrated Chatelperron point should be kept out of the discussion until it has been published. Whilst in terms of end-scrapers on blades the similarities between Willendorf II/5, Krems-Hundssteig, and, for that matter, numerous other stations as well, on the one hand, and Getzersdorf on the other hand are obvious, this argument cannot be used to tie the sites together chronologically. These tools are not sufficiently characteristic to warrant any but the broadest generalizations. The keeled scrapers are a better index fossil to interrelate the sites. On the other hand, however, these scrapers are the only significant tools that do link the sites in question. Particularly the total absence of 'Gravette' forms at Getzersdorf seems fatal to a comparison, because both at Krems-Hundssteig and at Willendorf II/5 these types are quite common. It is not possible to make Getzersdorf older than Willendorf II/5, simply because the geochronological data argue against this.

The conclusions, therefore, are that Getzersdorf on typological grounds does not tie in satisfactorily with any of the major Austrian loess stations with which it has been equated. It would appear to be somewhat more archaic in character. On the other hand it can not, on geochronological grounds, be older than Willendorf II/5. Hence one is left to deduce that though the comparative sites quoted above may be contemporary, they do not seem to be typologically related to Getzersdorf.

#### A g g s b a c h

On the basis of typological considerations Felgenhauer (1951 : 235) concludes that "the artifactual complex of Aggsbach corresponds to the Upper Aurignacian . . . to stage 5 of the French or West European Aurignacian". These conclusions are based on a series of eight traits which Felgenhauer considers to be of diagnostic value. They are:

1. 'Gravette' points;
2. Atypical single-shouldered points;
3. Ventrally retouched blades;
4. Truncated blades with terminal retouch;
5. Small scrapers;
6. Discoidal 'flakes';
7. Pronounced heavy marginal retouch on blades;
8. Small borers.

The analysis of the site, however, shows that only one feature, namely the heavy marginal retouch, can possibly be used as an index fossil. Contrary to Felgenhauer's findings there do not seem to be 'Gravette' points at the site. The specimens he mentions and illustrates are atypical indeed. His discoidal flake really is a core and has certainly no Solutrean affiliations, as has been suggested. The atypical single-shouldered point from locality B is very inconclusive; so is the one illustrated specimen from

among the series of 'microliths'. This writer is at a loss to see the typo-chronological significance of the ventrally retouched blades, the small borers, small scrapers, and the one and only truncated blade with terminal retouch. Whilst the heavy marginal retouch flaking does fit well with the characteristics of the West European Aurignacian, it should be noted that at Aggsbach it commonly occurs on types that do not seem to fit into the West European Aurignacian, i. e. the remarkable pointed blades. Also, Aggsbach has yielded neither strangulated, nor keeled and steep scrapers. Definitely un-Aurignacian are the extremely numerous micro-forms noted, among the tools; indeed they numerically exceed the macro-forms. They include tiny points of Krems type. Hence, the present writer feels inclined to disclaim any very significant Aurignacian affiliations of this site.

Within the Lower Austrian sequence, Pittioni (1954) equates Aggsbach with Willendorf II/8. Admittedly some of the pointed blades from the latter station resemble Aggsbach; but nothing else does. In a broad sense Pittioni also equates Aggsbach with Gobelsburg, Gruebgraben, and Langenlois. Whilst Langenlois does not have a large enough series to permit any kind of equation, the sites of Gobelsburg and Gruebgraben do not show any significant similarities with Aggsbach. In fact, at both these stations steep scrapers which are completely absent at Aggsbach, are very well developed. Gobelsburg, moreover, is rich in burins which Aggsbach is not, and Gruebgraben has yielded numerous keeled scrapers which have also not been noted at Aggsbach. But the most outstanding trait which vetoes all comparisons are the micro-forms from the latter station.

All that can be said about Aggsbach is, that it has yielded a well developed blade industry, with such characteristic traits as heavy marginal retouch and a dominant series of micro-tools. The latter have, however, hardly been illustrated at all in the site report. There are no 'Gravette' elements whatsoever. The C-14 date from Aggsbach places it squarely into the Paudorf Interstadial which argues against Pittioni's equation with Willendorf II/8, since that occupation level lies in the Würm II loess and should thus be older than Aggsbach.

#### Langmannersdorf

The various excavations of the mammoth hunter encampment of Langmannersdorf have yielded a homogenous stone industry. The raw material for the manufacture of artifacts is of local origin. The site was thickly strewn with ochre and dentalium shells. At encampment B, in the great cooking area as well as in the pit dwelling found here, two layers could be discerned, though these occupations must, on the whole, have been roughly contemporary. The pit dwelling somewhat resembles similar such types in Eastern Europe and Russia. It is closely paralleled by the types which were associated with the long houses of Kostenki I (Hančar, 1942). Angeli (1952—53) considers the Langmannersdorf pit-dwelling to be evidence for the high level of hunting civilization of palaeolithic Austria. The post holes found, could be be rem-

nants of tent poles, roasting spit supports or "traces of a roof construction" (Angeli, 1952—53 : 52; Hančar, 1950).

Among the artifacts an alleged conical scraper is considered to be an older survival. Angeli (1952—53 : 53) himself admits that the majority of the so-called steep scrapers are dubious. The end-scrapers on blades are characterized by convex functional ends with steep retouch; long slender forms are rare. On the whole, end-scrapers range from oval to round. It is not possible to clearly subdivide the blades into plain and retouched types, since it is rarely clear whether the retouch, when it occurs, is intentional. On the whole the blades are amorphous. Even though the industry is remarkable for the small size of its tools, actual micro-forms have not been noted. No bone industry was found.

On the basis of his burin typology Angeli (1952—53) places this assemblage into the Late Aurignacian. Bayer (1921) equates Langmannersdorf with Willendorf II/5. Angeli doubts this, because none of the characteristic Willendorf II/5 types are present here. In fact, Langmannersdorf bears no resemblance whatsoever to any of the Willendorf levels.

In an attempt to explain Langmannersdorf, Angeli (1952—53) suggests two possibilities that might account for the peculiar character of the tool assemblage of this site. Either the industry here is a purely local one, or it was influenced by extra-Austrian developments. A suggestion is made that Langmannersdorf resembles Unterwisternitz, since both stations are clearly camps of mammoth hunters, and because of the predominance of burins at both sites. On the other hand, Unterwisternitz is typologically very much richer. Zotz (1939a, 1939b) has found at Moravany, in Czechoslovakia, a type of triangular leaf-shaped point, that has been noted at Langmannersdorf too; unfortunately this tool has not been illustrated. In passing it may be mentioned here that Bayer (1922) has recorded alleged Solutrean-like forms from Grossweikersdorf. A triangular-shaped, bifacial point has also been reported from Bruderndorf (Abel, 1922) This type has been derived — rightly or wrongly — from Hungary. In that country the loess station of Sagvar (Csalogovits et. al., 1931) has yielded a stone industry which is somewhat similar to that of Langmannersdorf, but which has been assigned to the Magdalenian. Sagvar, moreover, was a camp of reindeer and horse hunters. Comparing, geologically and typologically, Moravany and Unterwisternitz with Langmannersdorf, the last-named site is placed at the end of Würm II. Langmannersdorf can obviously not be derived from a 'Gravettian'. On the other hand, Angeli believes, he can derive his industry from the classic Aurignacian. The basis of his claim is the alleged Aurignacian IV survivals, which he does not specify, and the supposed busked burins, which Angeli derives from the keeled scraper.

In conclusion the present writer quotes Angeli (1952—53 : 60): "We date the three encampments [of Langmannersdorf] on the basis of typological considerations from the end of Würm II", and further below: "... since no parallels are known to the present material, we suggest that Langmannersdorf should be classified as a type of



Late Upper Palaeolithic industry". Pittioni (1954 : 86) agrees with this view: Together with Kamegg, Langmannersdorf is placed terminally into the sequence of the Lower Austrian loess stations. Pittioni states in this connection (1954 : 95) that Langmannersdorf should be viewed "as a representative of a retarded, and Kamegg as a representative of a progressive modification . . ." of the Aurignacian-Gravettian sequence of Lower Austria.

Actually, the site of Langmannersdorf cannot with any degree of satisfaction be dated geologically. This is admitted by Angeli, more or less explicitly in his discussion of the geology of the site, and implicitly in his statement that the site is dated on the basis of typological considerations. The stone industry cannot, in this writer's opinion, be derived by any stretch of the imagination from a classic Aurignacian, or for that matter, as Angeli rightly says, from a Gravettian. Typologically, the only Aurignacian elements in the present assemblage are a few poor steep scrapers. The alleged keeled scrapers do not appear to be keeled scrapers at all. There is not a single blade tool in the series which even remotely suggests the Aurignacian retouch technique. In fact the blade element is extremely poor, the dominant tool being the burin. Angeli's (1952—53 : 38) equation of the German 'Bogenstichel' with the *burin busqué* is, as the illustrations clearly show, erroneous. To use these hypothetical busked burins as Aurignacian elements is therefore inadmissible. The end-scrapers on blades cannot be used for typological purposes either. The two artifacts somewhat resembling backed blades, are explicitly described as cortex-flakes by Angeli. No bone industry has been noted at the site. The tools are throughout rather small.

Typologically, Langmannersdorf can only be described as a very impoverished blade industry of relatively small tools, the predominant type of which is the burin. Except for a possible connection on the basis of burins, there are no indications here, which would permit linking this assemblage with the remainder of the Austrian loess stations; nor is there any justification for using the terms Aurignacian and Gravettian. The mere occurrence of a few steep scrapers and one dubious conical scraper cannot be used to identify this assemblage.

Thus neither the geology nor the artifacts permit a chronological or typological classification of Langmannersdorf. Were it not for the abundant late Pleistocene fauna, the site could typologically stand anywhere between the Upper Paleolithic and the Mesolithic. Since nothing can be said regarding the connections of this amorphous industry, nothing can, obviously, be stated regarding its origins either. The pit dwelling in the loess certainly suggests eastern connections. On the other hand such constructions occur by Mesolithic times in Germany, where they are not derived from the East.

It does not seem permissible to this writer, to do what Angeli does, and Pittioni endorses, namely to extrapolate from negative evidence. To say that such and such an assemblage is connected with such and such another one, because neither has any typical tools, appears to be faulty reasoning. Again, the typological and chronological connections postulated by Pittioni (1954) between Langmannersdorf and Kamegg



are not convincing at all. The only factor the two industries have in common, is a predominance of burins over other types of tools.

The triangular leaf-shaped point of allegedly Solutrean character, mentioned but not illustrated by Angeli, presents a problem which, for the time being, has to remain unanswered. It may be pointed out, however, that neither Pittioni (1954) nor Freund (1952), who both mention the other Austrian loess sites that have yielded types of possible Solutrean affiliations (such as Bruderndorf and Grossweikersdorf), refer to the supposed Langmannersdorf point. Nor, for that matter, does Angeli (1952—53) list it in the inventory of all the Langmannersdorf finds appended to his paper.

Somewhat problematical is the piece of amber referred to by Angeli (1952—53 : 43). During the Würm glaciation the Baltic region was completely covered by an ice sheet. Where then, does the present specimen come from? Can it be used for chronological purposes? For the time being, this question too, has to remain unanswered.

#### K a m e g g

The evidence from Kamegg suggests to Brandtner (1954—55) that the palaeolithic hunters of this region were essentially east-northeastward oriented. The horse was the main animal hunted; the reindeer was considerably less important, possibly because the climate during Würm II times was not favourable to this beast in Lower Austria. However, it was hunted, and the scarcity of reindeer antler noted, needs explanation, particularly since this material was of considerable value and importance to the glacial hunters. Brandtner believes that during Würm II times the principal area, inhabited by the reindeer was further north than Lower Austria. Only during winter would this animal have ventured into these northern regions, to which it was ecologically unsuited. Brandtner (1954—55) furthermore believes, that the Aurignacian hunters of Lower Austria were economically based on mammoth hunting which would make them follow the migrations of this beast during winter time. The direction of these annual migrations was south-east. Only in summer would they return to the loess regions of Lower Austria. If they hunted the reindeer during their summer expeditions, this animal would as yet be without antler, since the reindeer sheds its antlers. Thus the virtual absence of antler at the Austrian palaeolithic stations could be explained. The antler that does occur on these sites occasionally, was, in Brandtner's opinion, probably collected elsewhere, possibly in Northern Moravia. This assumption would be in agreement with the origin of the lithic raw material of Kamegg which can be traced to that region. All this demonstrates the strong eastern ties of the site.

Kamegg thus represents a summer hunting camp. The winter hunt must have taken place somewhat further to the south. The exclusive southeastern origin of numerous mollusk shells found at the site (Papp, 1952) indicates perhaps the general area of the winter hunting grounds. On the other hand, the shells may have been traded into the Lower Austrian region. Brandtner's opinion that these mollusks were brought

along in the course of *the* migration of the Kamegg peoples from their hypothetical southeastern homesteads, seems more speculative than the evidence could possibly justify. This also applies to all speculations on hypothetical, clearly defined, winter and summer hunting groups and grounds.

By contrast to the other Austrian loess stations Kamegg occupies a unique position. In spite of the presence here of a rich, if rather nondescript, bone industry, and the presence of groove-and-splinter technique, which may possibly suggest a late date for Kamegg, the total assemblage, according to Brandtner (1954—55), would well fit into the general culture sequence of the area. He considers the alleged Chatelperron points, the burin types, and the typically Aurignacian-like scrapers (!) to represent archaic elements in the assemblage. Combined tools he believes to be a late element, which would fall well within the Gravettian. The similarities between Kamegg and Unterwisternitz in Moravia are considerable. Both sites yielded the same raw material. The backed bladelets in spite of their local variations, have their typological counterparts not only at Unterwisternitz (which on geochronological grounds is younger than Kamegg: Würm II/III), but also at Aggsbach and Willendorf. So-called 'barbs' and 'engraving points' are also used by Brandtner (1954—55) to tie these sites together, he considers the Kamegg zinkens and triangular-sectioned points to be the two features of the site for which no parallels can be found. However, he claims that Felgenhauer (1950, Pl. III) had noted, but not recognized a zinken from the site of Spitz-Miesslingtal. It may be stated here that, judging by the illustration, this tool is no more a zinken than the ones Brandtner claims from Kamegg. To demonstrate what kind of, and how far reaching conclusions can be drawn from the erroneous (or at the very best, dubious) identification of an artifact, Brandtner's argument on the zinkens and their connections will be reproduced here.

First, in connection with the alleged zinken from Spitz, it is stated that chronologically this site is not too well fixed. The geochronological evidence suggests a Würm II date which would equate with Kamegg, whilst Felgenhauer's (1950) typological analysis would seem to indicate a somewhat later period. Brandtner (1954—55: 83) believes, on the basis of the zinken, the geochronological evidence, and other typological similarities, that the earlier date for Spitz-Miesslingtal is closer to the truth than the typologically derived one.

Of interest, as Brandtner (1954—55) points out, is that thus the zinkens occur here, in the east, considerably earlier than in the north and northwest. Moreover it remained virtually unknown in France, whilst in the Russian Palaeolithic it is supposed to be quite common. This may indicate that the zinken is not a Magdalenian type, but rather that it moved west in the course of the Eastern Gravettian expansion from southeastern to central Europe.

Bone tools are, in Brandtner's view, not characteristic of the Gravettian. Hence the Kamegg bone assemblage may suggest the strong Aurignacian roots of this site. Finally it is said, in order to correlate the "Aurignacian roots" with the otherwise clearly un-Aurignacian materials from Kamegg, that "the Magdalenian is the final

result of a fusion of Aurignacian and Gravettian elements" (Brandtner, 1954—55 : 84). The groove-and-splinter technique of bone working which on geochronological grounds appears earlier in Austria than it does in northern and northwestern Europe, may thus be ancestral to the development of the same technique in the Hamburgian — unless of course it was invented independently twice.

All the above speculations — *nota bene*, based on the evidence of two dubious artifacts — are finally summed up as follows: Geochronologically Kamegg is probably slightly younger than Willendorf II/5—6. But Brandtner (1954—55) believes that it falls within the general framework of the Eastern Gravettian "... which presumably reached Lower Austria in several waves"; this Eastern Gravettian in turn introduced with each wave, depending on the "... slightly different routes of invasion", different cultural components into the region (1954—55 : 85). Since the Hamburgian is said to have southeastern affiliations, Brandtner does not entirely exclude the possibility that a splinter group of northern Moravian summer hunters branched away from its parent group and moved directly to Northern Germany.

It is hardly necessary to comment on these speculative theories put forth by Brandtner. In this writer's opinion it is objectionable to theorize thus on palaeolithic migrations, the more so, when the theories are not supported by at least one piece of sound evidence.

What then is the significance of Kamegg, and what can possibly be deduced from it?

In the first place it should be restated that the site yielded neither 'Gravette' points, nor any convincing Chatelperron points; also, the alleged zinkens are not what they have been claimed to be. Some of the scrapers on the other hand, do very much look like steep scrapers. However, steep scrapers *per se* need not indicate Aurignacian affiliations, particularly when no other Aurignacian elements have come to light in the assemblage.

Thus it will be seen that the foundations on which Brandtner's typo-chronology is based, are very shaky indeed.

Kamegg is characterized by an assemblage in which burins predominate and in which blades are very poorly developed. Both these traits are reminiscent of Langmannersdorf, but quantitatively there are by far more blades at Kamegg than at Langmannersdorf. Apart from the latter site, no palaeolithic station of Lower Austria has so far yielded such a large number of burins as Kamegg did. Another unique feature of Kamegg is the bone industry it yielded, which unfortunately is qualitatively very poor.

Ecologically it is highly significant that the hunters of Kamegg chased the horse rather than the mammoth, as did the inhabitants of all other Austrian loess sites from which sufficient data are available.

From a technological point of view the groove-and-splinter bone working technique of Kamegg is remarkable. Economically it is interesting to note that the Kamegg hunters obtained much of their lithic raw material from Moravia, and that the ornamental shells are at least partly of foreign, southeastern, provenience.

Micro-blades are well represented in the overall assemblage. This immediately suggests Aggsbach, where however, the 'microlithic' elements dominate the picture absolutely. Also the atypical single-shouldered points are of interest but of little precise chronological value.

In the above paragraphs the actual data on Kamegg have been summarized. In this writer's opinion, the only conclusions that can be reached on their basis without getting into the quicksands of speculation are these:

Kamegg is characterized by a rather amorphous Upper Palaeolithic blade industry in which burins and unretouched blades predominate. Ecologically the inhabitants of this camp site differed from their neighbours in as much as they hunted the horse rather than the mammoth. To discern typologically early or late features in the stone industry is not possible; the artifacts are too poor typologically to permit this. The questions of the Moravian flint, the mollusks of foreign origin, and the groove-and-splinter technique which is supposed to be of Eastern origin, are interesting pointers regarding the affiliations of the Kamegg people. But they are no more than that. These data certainly do not warrant speculations on migrations, leave alone migrations in several waves.

In its amorphousness Kamegg rather resembles Langmannersdorf, but this is negative evidence. None of the positive data listed have parallels at Langmannersdorf. To do what Pittioni did (1954 : 96), i. e. to equate Langmannersdorf with Kamegg, and to make Langmannersdorf the exponent of a retarded, and Kamegg the exponent of a progressive hangover of the Aurignacian, does not seem to be justified by the facts.

#### Spitz-Miesslingtal

The site of Spitz-Miesslingtal has yielded two occupation layers which could not be separated on typological grounds. The stone industry is represented by remarkably small tools among which no Aurignacian types have been noted, though Felgenhauer (1950 : 53) states that "... the typical Aurignacian steep retouch ... was occasionally observed". The present writer has looked in vain for this trait. On the basis of the alleged 'Gravette' forms and the 'microliths' as well as on the basis of the small borers, Felgenhauer concludes that the Spitz-Miesslingtal assemblage should be called a Gravettian. It cannot be a Magdalenian, because not a single bone tool was found, though the bones of the fauna are remarkably well preserved. This does not suggest that any bone tools that might have been used at Spitz-Miesslingtal had decomposed in the course of time.

Pittioni (1954) points out that the overall smallness of the industry and the presence of borers, as well as the absence of any Aurignacian tool types, suggest a late date for the assemblage. Also there are forms among the burins and borers which are reminiscent of such late types as parrot-beaked burin. Pittioni (1954) places Spitz-Miesslingtal chronologically later than Willendorf II/9.

On the whole this assemblage resembles that of Langmannersdorf. The only distur-

bing factor in this equation is that the blade element at Spitz-Miesslingtal is infinitely superior to that of Langmannersdorf. There is nothing about the vaguely backed blades described and illustrated by Felgenhauer (1950) that suggests Gravette elements. The 'microliths', judging by the illustrations, are very amorphous indeed. Even if they are, as Felgenhauer (1950) claims, tiny backed blades, they certainly do not suggest a Gravettian element here. There is nothing at Spitz-Miesslingtal, that is indicative of Aurignacian elements either. To use the parrot-beaked borer as a chronological index fossil seems dubious, since the specimen in question, with its three borer-ends, is atypical as it is. The burin of similar type would appear to be even less useful for chronological purposes. In the first place, it is an isolated specimen, and in the second place, types such as the one illustrated here, occur in other chronological contexts as well.

Among the faunistic remains, the mammoth is conspicuous by its absence in an otherwise typical Late Pleistocene assemblage.

How secure Bayer's (1927a) geological observations are grounded is difficult to decide, since the exposures are no longer open to inspection.

What remains at Spitz-Miesslingtal, is a somewhat amorphous blade industry characterized by rather small tools, among which blades predominate. Backed bladelets occur in small quantities. On the whole the assemblage conveys a late impression, though it is not possible, at present, to give even a relative date. To place Spitz-Miesslingtal, as Pittioni (1954 : 94) does, chronologically between Langmannersdorf and Kamegg on the one hand, and Willendorf II/9 and Krems-Wachtberg on the other, does not appear to be justified by the available data.

#### G o b e l s b u r g

The site of Gobelsburg has yielded three cultural levels. Obermaier (1908), after dismissing layer 1 as too insignificant for identification, states that layers 2 and 3 contain typologically more or less the same materials. The interval that had elapsed between the two later occupations must have been a very short one. Obermaier notes the poor representation of Aurignacian types, the predominance of nibbled over heavy marginal retouch, and the strong representation of small bladelets. Also, he notes numerous worked pieces of antler. All these features lead him to the conclusion that Gobelsburg represents an early, typologically poor Magdalenian.

This writer agrees with Obermaier in as much as there does not seem to be a difference between layers 2 and 3. Obermaier's conclusion that Gobelsburg represents an early Magdalenian is startling because by implication it would place a great number of the other Lower Austrian loess stations into the Magdalenian too. It also necessitates the assumption that the cultural deposits are in a loess of Würm III date. The geological evidence neither proves nor disproves this. Pittioni (1954) puts Gobelsburg chronologically into the same phase as Willendorf II/6—7. The absence of 'Gravette' points at Gobelsburg, and the presence of well developed steep scrapers

at this site, but not noted at Willendorf II, make it difficult to accept this equation. On the other hand, Obermaier's Magdalenian date cannot be proved.

The evidence as far as it goes, shows the following facts: Gobelsburg is characterized by a blade industry with such Aurignacian features as well developed steep scrapers, and somewhat infrequent heavy marginal retouch. In this writer's opinion, these traits are much better represented than Obermaier (1908) would have it. The small blades and micro-forms include pointed and backed types, none of which, however, can be styled Gravettian. The bone industry is rather rich; if non descript; the only other site that has yielded a bone industry worth mentioning is Kamegg. The Gobelsburg fauna (*Canis lupus*, *Ursus spel.*, *Elephas primig.*, *Rhinoceros tich.*, *Rangifer tarandus*) suggests a cold steppe climate. Ecologically, the hunters were dependent on reindeer; on geological grounds, no date can be determined for the site.

#### G r o s s w e i k e r s d o r f

Summarizing the evidence, Bayer (1922) expresses the belief, that Grossweikersdorf represents the latest phase of the Aurignacian, if not an early Solutrean. Pittioni (1954) rejects Bayer's views, because the other alleged early Solutrean site of the Lower Austrian loess region at Bruderndorf, has recently yielded two scrapers, including one nose scraper, which may suggest Willendorf II/5, connections. In any case, the series of artifacts from Grossweikersdorf is too small to permit any conclusions to be drawn. Already in the discussion of Willendorf II this has been noted.

The alleged Solutrean tool types are, in the present writer's opinion, somewhat doubtful. Freund (1952), relying entirely on Bayer's unillustrated paper, even without having seen the Grossweikersdorf material, cautions against an overestimation of the assemblage. It also appears that the leaf-shaped point from Bruderndorf was not accepted by Bayer, who thought it to be of Neolithic age. According to Freund (1952) this specimen is very similar to the leaf-shaped points from Moravany. This, of course, again gets us nowhere, and the information is given here only for completeness' sake.

In conclusion it can be said that the evidence of Grossweikersdorf, geological as well as artifactual, is at present too scanty to warrant any conclusions to be drawn. In the first place the nature of the loess is not clear, the data on the depth at which the artifacts were encountered are not consistent, and in any case, the finds were apparently not *in situ*. In the second place, the range of tools is too limited to enable us to assign the assemblage into a frame of reference. However, the tools, in general, fit into the overall picture of the palaeolithic materials from the Lower Austrian loess stations. There certainly do not seem to be any reasons why Grossweikersdorf should be equated with either Willendorf II/7 or II/9 (Pittioni, 1954).

#### G r u e b g r a b e n

Both Kiessling (1919) and Obermaier (1908) have recognized mousteroid elements at Gruebgraben; but they call the total assemblage an '*Aurignacien typique*' of the

same type as that of Krems-Hundssteig. Pittioni (1954) equates Gruebgraben with Willendorf II/6—8, with Langenlois and with Gobelsburg. He considers the assemblages from these sites typologically very close. Bayer (1909) places them together with Krems-Hundssteig into Würm II without, however, attempting a finer geochronological classification.

The stratigraphy at Gruebgraben only reveals that the cultural deposit occurs in the loess at a considerable depth below surface. For chronological purposes, this evidence is of little use. Kiessling's publication (1919) of the site is so poor, and the illustrations are on the whole so cryptic, that little sense can be made of either. The present writer feels very reluctant to accept the fragmentary, alleged strangulated blades as true representatives of the type. There would appear to be no elements sufficiently characteristic in this assemblage, to warrant either an equation with Krems-Hundssteig, as Obermaier and Kiessling (1919) suggest, or with Willendorf II/6—8, as Pittioni (1954) suggests. The only Aurignacian traits in the Gruebgraben assemblage are steep scrapers and occasional heavy marginal retouch. It is of interest to note that there are no backed blade elements, nor any micro-blades to speak of. Neither of these factors argues in favour of a typological equation with either Gobelsburg, Krems-Hundssteig or Willendorf II/6—8. Thus, the assemblage of Gruebgraben represents another of those ill-defineable tool complexes so commonly to be met with in Lower Austria. It is clearly a blade industry with certain Aurignacian characteristics. If it has to be equated on typological grounds, it would seem that its closest relative is Getzersdorf, but this should be taken *cum grano salis*.

#### K r e m s - W a c h t b e r g

Except for an occasional mention by Fischer (1892) and Kiessling (1934) the Krems-Wachtberg site appears to have remained unpublished. Pittioni (1954) has given a short summary of the material on which the following remarks are based.

According to Pittioni the Krems-Wachtberg artifacts are much simpler in type than those from Krems-Hundssteig. They are, therefore, considered to be of much younger date than the Krems-Hundssteig finds, and the other Lower Austrian assemblages with which they have been connected. The artifacts include some unretouched blades, one end-scraper on a blade, a few backed blades, an excellent atypical single-shouldered point, and a tiny denticulate blade. The last-named type is considered to be an extraneous element, a claim that has not been made for a similar piece found at Aggsbach. Pittioni (1954) equates Krems-Wachtberg with Willendorf II/9, for reasons that are not clear to this writer. If one has to correlate it, there seems, on the basis of the single-shouldered point and the backed blades, no reason why Krems-Wachtberg should not be equated with Willendorf II/5, or II/7.

As these remarks indicate, the material from Krems-Wachtberg is too scanty to allow an exact chronological equation with other sites. It may fit anywhere between Willendorf II/5 and II/9. Whether or not the denticulate bladelet is of significance is a moot point. It is interesting to note that a similar type was found at Aggsbach.



### Stollhofen

The two localities of Stollhofen are quite close to each other. The paleolithic finds in both cases were made in the loess, apparently *in situ*. Locality B is geochronologically interesting because of a thin fluvatile deposit which overlies the archaeological stratum. Could this perhaps be equated with the Paudorf zone? Bayer's (1909) data, unfortunately, are too scanty on this point to be of use.

The stone artifacts from locality A are characterized by a keeled scraper, which goes to show, that the assemblage is in line with many of the other Lower Austrian loess sites. Little else can be said about it. An equation with any of the Willendorf stages seems hasty.

The tool assemblage from locality B has yielded no typologically useful artifacts at all. On the whole it conveys a rather crude and amorphous impression. Again, an equation with any of the Willendorf stages seems unwise. Also, there is nothing to indicate that the two localities among each other are genetically and chronologically connected, as Bayer (1909 : 160) has suggested. Pittioni's (1954 : 94) equation of Stollhofen with Willendorf II/5 does not appear to be justified by the data.

### Senftenberg

The Senftenberg tool assemblage represents an Upper Palaeolithic blade industry. It is characterized by two features, the absence of burins, and the occurrence of one keeled scraper. Hampl's (1950) atypical single-shouldered points have to be categorically rejected. Pittioni (1954) equates Senftenberg with Willendorf II/5 on the basis of the scrapers (presumably the keeled scraper, since the end-scrapers are clearly of little chronological value). To this writer, this single keeled scraper cannot be taken as chronologically valid evidence, particularly since no other element of the assemblage suggests Aurignacian connections. Therefore Pittioni's (1954) equation should be carefully reconsidered; for the time being the present writer cannot accept it as valid.

The Senftenberg C-14 date, placing the assemblage into the Göttweig Interstadial would, however, argue against a Willendorf II/5 equation because this level was found in the Würm II loess overlying the Göttweig zone.

### Spitz-Singerriedl

Felgenhauer's (1952) paper is an excellent example of the kind of uncritical reasoning that pervades some of the reports on the Lower Austrian palaeolithic stations. It is clear that on the basis of the data at hand, the site cannot be dated geologically; it may be Würm II or Würm III. Were it not for the fauna which clearly is of Late Pleistocene age, it might be Neolithic. The total number of seven artifacts would, under no circumstances, permit an unequivocal dating on typological grounds. In this writer's opinion neither the 'Gravette' point nor the keeled scraper conform to the types. To talk of an Eastern Gravettian would be daring, even if those tools



were unambiguous. To do this, however, on the basis of the miserable material found at Spitz-Singerriedl is quite unacceptable. All that can be said about this site is that it yielded a non-descript, numerically insignificant assemblage of tools of a blade industry associated with a Late Pleistocene fauna. To place it, as Pittioni (1954 : 94) has done, later than Willendorf II/9 but earlier than Langmannersdorf and Kamegg, is not justified by the facts.

#### W I L L E N D O R F I

At Willendorf I, the stratigraphy of which is not clearly described, Pittioni (1932) notes the absence of such Aurignacian types as steep scrapers and strangulated blades. On the other hand, he notes the presence of heavy marginal retouch and keeled scrapers. He places Willendorf I in the Aurignacian (IV—V). By comparison with Willendorf II, the present materials do not antedate Willendorf II/5.

It should be pointed out that in addition to the absence of the types noted by Pittioni, there do not appear to occur at Willendorf I any backed blades either. The absence of these forms renders an equation with Willendorf II somewhat difficult. The links between the two sites lie in the occurrence of atypical single-shouldered points at both. Any closer correlation is impossible at present. On the basis of the available data it seems unwarranted to equate Willendorf I with any of the Western European Aurignacian stages. The industry here is clearly a blade industry, the only Aurignacian features of which are the heavy marginal retouch and the keeled scrapers. Judging by the description — and only by the description — these tools are none too typical.

The C-14 date for Willendorf I, derived from a charcoal sample, which should date from the very end of the Göttweig Interstadial, is supposed to equate with Willendorf II/6. Since, however, Willendorf II/6 lies in the Würm II loess, this cannot be correct.

#### O t h e r s i t e s

In addition to the sites discussed in this paper so far, there have been reported in the literature a fairly large number of other real and presumed palaeolithic loess stations from Lower Austria. Some of these have actually yielded one or two artifacts; others have apparently yielded quite substantial tool series; again, others have produced nothing but charcoal remains and some indistinct flakes. One thing all these sites have in common is, that they have been very inadequately published, usually in very short notes and without illustrations. For completeness' sake these sites are listed here with their appropriate bibliographical references: Steinaweg bei Göttweig (Weinfurter, 1950), Woensdorf/Wachau (Hörnes, 1907), Limberg (Pittioni, 1954; Gulder, 1953); Fundberichte aus Österreich 3, 1948), Tautendorf (Bayer, 1926), Horn (Bayer, 1926; Pittioni, 1954), Plank am Kamp (Pittioni, 1954), Ronthal (Bayer, 1925), Kotzendorf (Bayer, 1927 b), Roggendorf-Königsberg (Brandtner and Zabusch, 1950), Stillfried (Franz, 1925), Bruderndorf (Abel, 1922; Weinfurter, 1950; Freund, 1952; Pittioni,

1954), Stratzing-Galgenberg (Weinfurter, 1950), Gösing am Wagram (Bayer, 1925; Wurmbrand, 1879), Zeiselberg (Obermaier, 1908), Weissenkirchen (Pittioni, 1954), Langenlois (Obermaier, 1908; Pittioni, 1954), Rothengrub-Unterloiben (Bayer, 1909; Pittioni, 1954).

Among these sites Weissenkirchen, Langenlois and Stillfried seem the most interesting. The former two stations have already been mentioned repeatedly in this text; nothing more need to be added except perhaps that the Langenlois industry, represented by no more than eight artifacts, appears to be remarkably well made. Stillfried is of some interest since it yielded a single-shouldered point of Willendorf II/9 type. Rothengrub-Unterloiben yielded a single tool, a fragmentary backed blade. Stratzing-Galgenberg has produced a steep scraper, Zeiselberg two, and Bruderndorf a bifacial leaf-shaped point, the circumstances of this tool's recovery being most uncertain.

#### CONCLUSIONS

The Lower Austrian loess region has yielded only one site with a stratigraphy that can possibly be used for analytical purposes. This site is Willendorf II. In the case of all other sites that have yielded some sort of cultural stratigraphy, the assemblages from the different layers have proved to be homogenous.

Willendorf has been subdivided on geological grounds into two phases. Phase I covers layers 1—4 within a geological deposit that appears to be of Würm I/II Interstadial age. Phase II is characterized by layers 5—9, and covers the loess accumulation subsequent to the Göttweig loam of first Interstadial age. On typological grounds Phase I is characterized by a somewhat crude blade industry with two diagnostic traits: the presence of conical scrapers and the absence of burins. The overall picture does not allow any conclusions to be drawn, because the assemblages are numerically very poorly represented. Phase II has given the following diagnostic types: atypical single-shouldered points, 'Gravette' blades, heavy marginal retouch of Aurignacian type, and a rather non-descript micro-blade industry. Steep scrapers are virtually absent in both phases. No strangulated blades have been reported either. There is no bone industry to speak of, except for the curious antler sleeves from Phase II.

The only Aurignacian elements at Willendorf are heavy marginal retouch and conical scrapers. The latter are not common, however, in the French Aurignacian sequence. Typologically there is little difference within the layers of each phase. Correlating the other Austrian loess sites with Willendorf, it is critical to note that such diagnostic types as atypical single shouldered points and points of 'Gravette' type occur in some form or other in all the layers of phase II. It should be pointed out here, that these two types are the only ones that could be considered as evidence for a Gravettian admixture. They are, however, never common.

The overall assemblage from Willendorf II is typologically rather poor, and therefore ill-suited to be used as a measuring rod against which all the remaining loess sites of Lower Austria could be appraised.

Krems-Hundssteig is the site with the greatest number of Aurignacian elements.

Here we find conical scrapers, steep scrapers, keeled scrapers, heavy marginal retouch, strangulated blades and one busked burin. In addition, however, there are Font Yves points (Kremser Spitze) and small backed blades. These elements would at first appear to be out of place here. However, the site of Font Yves (Corrèze) has yielded precisely such an assemblage, consisting of typical Aurignacian forms and Font-Yves points. In France this site is considered to be very late; Krems is claimed to be early, largely because of its strong mousteroid elements. These, however, need not be regarded as evidence for an early date, because in France mousteroid types occur right through the Aurignacian. It may be pointed out also that further East, in Russia, mousteroid forms survived until very late.

Krems-Hundssteig is unparalleled in Lower Austria, no other site having yielded such clearly defined tool types. It has also been claimed to be an early site because of its conical scrapers, which at Willendorf II occur in layer 4 of phase I. However, this equation is spurious. The conical scrapers are the only type which can stand a comparison between the two sites. They have nothing else in common. On the other hand, to point towards Willendorf II/5 for an equation with Krems because here too we have certain elements which can be correlated, is equally unwarranted. Willendorf II/5 has excellent points of 'Gravette' type and atypical single-shouldered points. Both these features are absent at Krems-Hundssteig. It has yielded neither conical scrapers, strangulated blades, Font Yves points nor any steep and keeled scrapers to speak of. However, these are all types common at Krems. Therefore an equation between Willendorf II/5 and Krems-Hundssteig is not workable either. None can, by implication, the layers above Willendorf II/5 be equated with Krems-Hundssteig. It can only be concluded that for the present no evidence has come to light that permits a satisfactory link to be established between the two sites.

Getzersdorf has also been equated with Willendorf II/5. The only feature that connects these two sites, is heavy marginal retouch. No points of 'Gravette' type and no atypical single-shouldered points have been reported from Getzersdorf. Nor has it yielded a micro-blade industry worth mentioning. Within the other Austrian loess stations the Getzersdorf assemblage is too generalized to permit comparison.

The sites of Stollhofen and Senftenberg have both been equated with Willendorf II/5. In the case of Senftenberg this was done on the basis of two alleged atypical single shouldered points which clearly have no claim to belong to this tool type. In the case of Stollhofen the reasons for the equation are not clear. The assemblage is numerically negligible and devoid of any valuable types.

Willendorf II/6—8 is typologically a direct continuation of Willendorf II/5. Broadly speaking it is characterized by the same tool types as the last layer. Internally the former three layers are claimed to be very closely related, if not actually identical in content. All the sites to be discussed in the following lines, with the exception of Aggsbach, are equated with Willendorf II/6—7. Only Aggsbach is paralleled with Willendorf II/8. We will now proceed to test the validity of these equations.

Langenlois should be ruled out completely. This site yielded less than 10 artifacts, none of which is typical; all that can be said about it is that it represents a blade industry.

Gruebgraben has yielded, on the positive side, a number of good steep scrapers, some blades with heavy marginal retouch and a few notched blades. On the negative side the absence of true strangulated blades, of 'Gravette'-like forms, and of backed bladelets should be noted. The latter two types are common at Willendorf II/6—7. Neither site has produced strangulated blades; but steep scrapers, reasonably common at Gruebgraben have not been reported from Willendorf II/6—7. Thus in the ultimate analysis, the equation here is based on the heavy marginal retouch alone. This is not, however, sufficient to permit a valid equation.

Grossweikersdorf, again, has not yielded a sufficient number of tools to permit a valid equation. The picture here, moreover has been blurred by the presence of alleged Solutrean types, which appear to be more than dubious. There are no forms of any diagnostic value at Grossweikersdorf, which would permit an equation with Willendorf II/6—7.

Gobelsburg has better claims to a parallelization with one of the upper levels of Willendorf II, though it is not clear why it has to be with Willendorf II/6—7. The site has yielded a small blade industry, (excluding, however 'Gravette' points), blades with heavy marginal retouch, steep scrapers and one atypical single-shouldered point. Here we have three features that can be correlated with Willendorf II. Only the steep scrapers do not fit the evidence. Moreover, the bone industry of Gobelsburg is not paralleled at Willendorf II. The latter point however, is of least weight, since it may well be, that due to local soil conditions a hypothetical bone industry has not survived the ravages of time.

Finally, there is to be considered the equation between Aggsbach and Willendorf II/8. It has already been stated, that Willendorf II/8 is not substantially different from the underlying deposits 6—7. Aggsbach is characterized by delicately worked tools of rather small size. Its major and diagnostic feature is the huge proportion of micro-blades, which by far exceed 50 percent of the total assemblage. These tools include backed blades, alleged single-shouldered points and some unequivocal Font Yves points (Kremser Spitzen). The alleged Gravette points are clearly not true to type. Nor are the illustrated atypical single-shouldered points. Thus the equation between Willendorf II/8 and Aggsbach is essentially based on the heavy marginal retouch. All other elements are divergent.

Willendorf II/9 has been equated with Krems-Wachtberg and Weissenkirchen. On the whole, the only difference between Willendorf II/9 and the underlying layers of Phase II, seems to lie in the occurrence of the famous Venus figurines in layer 9. The assemblage is much the same as those from Willendorf II/6—8.

Weissenkirchen has yielded less than 10 artifacts, none of which is typical. It therefore has to be ruled out for purposes of equation. The situation at Krems-Wachtberg is little better; only here an atypical single-shouldered point has been found.

This however, is no evidence for such a narrow equation as that suggested by Pittioni (1954).

Next, the sites of Spitz-Miesslingtal and Spitz-Singerriedl have been chronologically equated, and placed later than Willendorf II/9. In neither case is the reason for this clear. Spitz-Singerriedl has, objectively speaking, yielded no artifacts that can be used for typo-chronological purposes. Neither the alleged fragmentary Gravette point nor the keeled scraper are at all convincing. Even if they were, there would be no reason to date this site later than Willendorf II/9. In any case there are not enough artifacts to permit any conclusions to be drawn. Spitz-Miesslingtal too, is useless for correlational purposes. Again, this site has yielded no clearly definable types. The one and only steep scraper is somewhat atypical and of little typological use. The industry is very impoverished and has no definable Aurignacian characteristics. On the other hand, there is nothing Gravettian in it either. Moreover there is nothing that warrants the chronological position it has been placed in by Pittioni (1954).

Finally there are the two sites of Langmannersdorf and Kamegg which Pittioni (1954) considers to be contemporary and later than the two Spitz sites. Typologically both assemblages are remarkably poor. Both sites are characterized by two features. One is the general amorphousness of the two assemblages; the other is the extremely high proportion of burins at both sites. But there are certain points in which they radically differ. In the first place, the Kamegg people were horse hunters, whilst the occupants of Langmannersdorf hunted the mammoth. In the second place, Kamegg can boast of a fairly rich, if amorphous, bone industry which Langmannersdorf can not. Finally, Kamegg, exhibits a feature that no other Lower Austrian loess station has so far shown, namely evidence for the groove-and-splinter bone working technique. Neither of the two sites is apparently derived from either a so-called Gravettian or an Aurignacian. Contrary to Pittioni (1954) the present writer does not see in the one assemblage a progressive, and in the other a retarded development of a hypothetical Lower Austrian Aurignacian/Gravettian sequence; it is not at all clear on what grounds these two sites have been chronologically placed at the top of the Lower Austrian sequence.

The fauna from all the sites exhibits the same characteristics. It is invariably a cold fauna. At some sites the mammoth dominates the picture, at others the horse; and again at others the reindeer. But in the overall view, the picture is consistent.

Geologically little can be said. Most of the sites occur in the loess — the exception being Phase I of Willendorf II and on the basis of recent C-14 dates Willendorf I and Senftenberg. Provided the geological interpretations are correct, most of the sites would appear to date from the Würm II stadial. However, at no site where geochronological data could be read from the stratigraphy, has a third loess, overlying the Paudorf zone, been clearly established. Hence it is perhaps wise to take the geochronological interpretations *cum grano salis*. Again, in none of the cases where a geochronological stratigraphy could be discerned, did the archaeological materials clearly indicate an early, Würm II date. The only site which might have cleared up this point

is Krems; but here, unfortunately, observations can no longer be made since the site has been destroyed. Summing up the evidence, it would appear to the present writer that there are no good reasons to apply the French terminology for the Aurignacian/Périgordian in Lower Austria. With the exception of Krems, no site has yielded a sufficient number of elements, typologically or quantitatively, that might have warranted the application of this terminology. At best one can only talk of a series of Upper Palaeolithic blade industries of uncertain age, exhibiting in varying degrees some of the elements that characterize the Aurignacian and Gravettian industries of western Europe. In no case, excepting Krems, does it appear admissible to use the French terminology and thereby to inject a cultural meaning into the assemblages.

Internally the typo-chronological structure set up by Pittioni (1954) for Lower Austria would appear to be untenable. A close analysis of the archaeological data shows, how vaguely the various sites are related among each other. To derive a relative chronology from the lithic assemblages seems unrealistic. The site of Willendorf II, which has been chosen as the yard-stick for the Lower Austrian sequence does not yield materials typical enough to permit them to be used for comparative purposes.

In this writer's view, the situation appears to be thus: three very broad and very vague groups can be distinguished in the tool assemblages from the loess stations. First, there is Krems-Hundssteig, the best defined site of the region, which has some very clear Aurignacian affiliations. Second, there is a broad group of sites including Willendorf I and II, Getzersdorf, Gobelsburg, Gruebgraben, etc., which all exhibit a few traits characteristic of the Western Aurignacian and Gravettian assemblages. On the whole these similarities are, however, rather vague and indefinite. Possibly the site of Aggsbach fits here, but in view of the predominance of microforms at this site, the chances are that it does not — for the time being this must remain a moot point. Third, there are the two sites of Spitz, Langmannersdorf and Kamegg. These are all characterized by a certain amorphousness. It is possible that the former two sites do not fit here; neither of them yielded quantitatively a sufficient number of artifacts, to be certain on this point.

The major mistake made in Lower Austria would appear to be that of grouping all the sites together on the basis of their common occurrence in the loess. It therefore seems wrong to conclude that the materials from such loess stations must be related. In fact the evidence appears to flatly contradict this.

Finally this author believes that there are no reasons at this stage to set up a chronological scheme for the sites discussed in this paper. The evidence does not warrant such a scheme, it being impossible to convincingly equate any of the sites with the rather ill-defined cultural stratigraphy of Willendorf II.

Regarding the alleged eastern origin of the Gravettian, it can only be said that the evidence for this assumption is scanty indeed.

The groove-and-splinter technique at Kamegg, the southeastern gastropods, the Willendorf II antler sleeves, and the Moravian flint raw material from the same site, as well as the general amorphousness of much of the Lower Austrian material can be

quoted in favour of this hypothesis. The question of the Venus figurines will not be taken into consideration here, as this paper is concerned with the stone assemblages rather than with the artistic religious manifestations of the Stone Age.

On the whole the artifacts from the Lower Austrian loess stations do not suggest eastern connections anymore than they suggest, with the exception of Krems-Hundssteig, western ones. It is, of course, quite possible that they were indirectly subjected to influences from both regions. But with the evidence at hand this cannot as yet be established.

### Z u s a m m e n f a s s u n g

Die niederösterreichischen Lößrastplätze des Jungpaläolithikums werden in der Literatur oft als Aurignacien oder Gravettien östlicher Prägung bezeichnet. Der Zweck dieser Arbeit ist es, die veröffentlichten Inventare dieser Stationen auf die Stichhaltigkeit ihrer kulturellen Zuordnung hin zu untersuchen. Ebenfalls soll das von P i t t i o n i (1954) aufgestellte chronologische Schema für die niederösterreichischen jungpaläolithischen Stationen kritisch betrachtet werden.

Kulturgruppen wie das Aurignacien oder Gravettien sind in Frankreich, d. h. in Westeuropa, definiert worden. Sie lassen sich durch gewisse, klar umrissene und jeweils zusammen auftretende Gerätetypen definieren. Abgesehen von dieser rein typologischen Definition eines paläolithischen Komplexes, müssen in einer entsprechenden Industrie auch die quantitativen Verhältnisse der verschiedenen Typen zu- und untereinander mit in Betracht gezogen werden. Das Vorkommen eines vereinzelt Hochkratzers in einer Klingeindustrie definiert noch kein Aurignacien, das bekanntlich durch das sehr häufige Vorkommen von Hochkratzern ausgezeichnet ist. Ein jungpaläolithischer Verband hat also zumindest zwei Dimensionen, die ihn charakterisieren: Eine rein typologische Dimension, in der die Leitform isoliert und auf ihre Exklusivität hin bewertet wird, und eine quantitativ-typologische Dimension. Da über die tatsächlichen Zusammenhänge zwischen menschlichen Gruppen und ihren Industrien während der Steinzeit wenig bekannt ist, kann nur absolute Klarheit der die Gerätekomplexe charakterisierenden Begriffe und Definitionen zu einigermaßen brauchbaren Resultaten führen und vielleicht gewisse Zusammenhänge beleuchten. Will man also die jungpaläolithischen Lößrastplätze Niederösterreichs mit dem Aurignacien und Gravettien in Zusammenhang bringen, so müssen, abgesehen von der geochronologischen Stellung der Stationen, folgende Fragen geklärt werden: Inwiefern ähneln die österreichischen Industrien denen des klassischen Aurignacien und Gravettien? Wie viele rein typologische und quantitativ-typologische Berührungspunkte haben die beiden Gebiete? Dabei muß im Auge behalten werden, daß letzten Endes sich alle Klingenkulturen gleichen. Zu rein typologischen Vergleichszwecken darf man daher nur typologisch empfindliche Typen verwenden. Allen Klingenkulturen gemeinsame Formen, wie z. B. Klinge, sind typologisch in diesem Sinne so gut wie wertlos. Die üblichen Stichelformen lassen sich ebenfalls kaum verwenden. Der einzige wirklich klare Aurignacienstichel ist der burin busqué. In Niederösterreich ist



er nur mit einem einzigen Exemplar in Krems-Hundssteig vertreten. Aurignacien-Knochenspitzen sind aus Niederösterreich überhaupt nicht bekannt. Doppelseitige Kerbklingen sind, in sehr geringer Anzahl, nur in Krems gefunden worden. Die typische Aurignacien-Steilretusche ist in Niederösterreich nicht übermäßig häufig anzutreffen. Lediglich die Hoch- und Kielkratzer sind in größerer Anzahl vertreten. Gravetteartige Messer mit abgedrücktem Rücken — nicht jedes Messer mit abgedrücktem Rücken muß ein Gravettetypus sein! — kommen in Niederösterreich in geringer Anzahl vor, jedoch oft in durchaus nicht typisch gravetteartigem Zusammenhang. Das trifft auch auf die atypischen Stielspitzen zu.

Zusammenfassend hat die Analyse ergeben, daß die niederösterreichischen Lößstationen des Jungpaläolithikums nur recht wenige, klar umreißbare Berührungspunkte mit dem typischen Aurignacien und Gravettien haben. Lediglich Krems-Hundssteig läßt sich, bis zu einem gewissen Grade, mit dem Aurignacien vergleichen. Allerdings wären in diesem Falle noch die quantitativen Verhältnisse der Gerätetypen zueinander zu klären.

Die Mehrzahl der niederösterreichischen Lößstationen weist vereinzelte Elemente auf, die man als aurignacien- oder gravettienartig bezeichnen kann. Hauptsächlich handelt es sich hierbei um Messer mit abgestumpften Rücken atypische Stielspitzen und Hoch- und Kielkratzer. Zumeist treten diese Elemente jedoch in Rahmen auf, die man durchaus nicht als Aurignacien oder Gravettien bezeichnen darf.

Langmannersdorf, Kamegg und Aggsbach lassen sich überhaupt nicht in ein auf dem Aurignacien oder Gravettien fußendes Schema einreihen. Den ersten beiden Stationen fehlen jegliche Typen, die einen Vergleich zulassen würden. Im Falle von Aggsbach lassen die mit über 50 % vertretenen Mikrogeräte einen Vergleich mit dem Aurignacien und/oder Gravettien ebenfalls nicht zu.

Vielfach begegnet man in der Literatur auch „Typen“, wie z. B. Zinken und Chatelperronspitzen, die bei näherem Betrachten durchaus nicht als solche angesprochen werden können. Diese typologische Konfusion hat viel dazu beigetragen, das Bild des niederösterreichischen Jungpaläolithikums zu verwischen.

Pittionis Schema (1954), in dem Willendorf II als chronologisch-kultureller Maßstab für die übrigen Lößstationen benutzt wird, läßt sich wohl nicht aufrechterhalten. Dazu sind weder die Geräteinventare der verschiedenen Willendorfschichten, noch die der anderen Stationen genügend differenzierbar. Die niederösterreichischen Industrien des Jungpaläolithikums sind durchaus nicht so nahe miteinander verwandt, wie es ihr gemeinsames Vorkommen im Löß zunächst annehmen läßt. Zukünftige Grabungen und detailliertere Analysen der schon vorhandenen Gerätebestände werden sicherlich verschiedene, sehr unterschiedliche, Gruppen aufzuweisen haben. Schon heute lassen sich offenbar vier Gruppen profilieren. Die erste, dem westeuropäischen Aurignacien am nächsten stehende, ist lediglich in Krems-Hundssteig vertreten. Die zweite, der bis auf weiteres die meisten der bisher bekannten niederösterreichischen Lößrastplätze angehören, weist lediglich isolierte Elemente des Aurignacien und/oder des Gravettien auf. Die dritte Gruppe hat weder mit dem Aurignacien noch mit dem Gravettien



irgendwelche Zusammenhänge. Schließlich sei noch der Komplex von Aggsbach erwähnt, der zwar die typische Aurignacien-Steilretusche aufweist, aber mit seinen Mikrogeräten völlig aus dem Rahmen fällt.

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