DISCUSSION AND INTERPRETATION

Two aspects of the Hummerich site can now be examined; these are the exact chronological position of the Hummerich occupation within the European Middle Palaeolithic sequence and the function of the site.

Chronological position of the Hummerich assemblage

It has been shown by the geology (relative stratigraphy, sedimentology, absolute dating) and the palaeontology (micro- and macrofauna) that the crater of the Plaidter Hummerich was occupied during a more temperate phase (interstadial) of the early Weichselian. The lithic and faunal assemblages lie above (and in a very small number of cases within) a soil identified as that of the last interglacial which had formed upon loess of Saalian age and below loess deposits showing the renewed onset of stadial conditions.

In several of its aspects the lithic assemblage resembles those industries with a bifacial component. (»*Micoquien*«/»*Keilmessergruppen*«, »*Inventartyp Kartstein*«) described from the last glaciation. On the other hand, possibly due to the nature of the raw materials used at the Hummerich, the assemblage cannot be described as a typical example of any one of these industries. It must be borne in mind that less specific bifacial assemblages are also found in older contexts so that the presence of bifacial tools cannot alone date the Hummerich occupation more closely.

A feature not observed at the Hummerich is the presence of laminar debitage such as was present at the neighbouring Tönchesberg 2B site. Here, the assemblage, which was recovered from a colluvial humus, is assigned to a very early phase of Weichselian interstadial cooling (early Isotope Stage 5d?) and dated to ca. 115 ky/117 ky by thermoluminescence and palaeomagnetic studies (N. J. Conard 1992, 23). Other north-west European sites with similar industries have also been dated to the earlier part of the Weichselian interstadial complex. On the basis of the stratigraphic position of Rheindahlen Assemblage B1 N. J. Conard (1992, 82) plausibly suggests that charcoal of thermophilous tree species could date the industry to a very early phase of Weichselian interstadial cooling (Isotope Stage 5e-5d transition).

The dating of north-western French and Belgian laminar industries indicates two phases, one in a position similar to Tönchesberg 2B and Rheindahlen B1 and a younger phase during the first (»Brørup« or Isotope Stage 5c) interstadial (A. Tuffreau 1993, 104-106). The earlier phase is represented at Seclin, where a lower laminar industry is assigned to the end of the interglacial (transition Isotope Stages 5e-5d) and at Port-Racine where the older laminar industry is assigned to a cold phase at the end of the interglacial (Isotope Stage 5d) associated with a marine transgression dated to 117 ky. At both Seclin and Port-Racine the younger industries are assigned to the end of the first interstadial (Isotope Stage 5c), dated at Seclin by thermoluminescence to ca 91 ky and 95 ky. Riencourt Assemblage CA is also assigned to the end of the first (»Brørup«) interstadial Isotope Stage 5c while at Rocourt the laminar industry is located at the base of this first Stage 5c interstadial soil development.

Taken in isolation, the absence of a laminar component at the Hummerich clearly cannot be taken as an indication of a younger date than for sites with industries of this type, since the latter are relatively uncommon and other types of Middle Palaeolithic assemblage types existed at the same period of the early Weichselian. Nevertheless, if this detail is taken in conjunction with details of the stratigraphy of the two Rhineland sites it seems very probable that the occupation of the Hummerich is younger than Tönchesberg 2B. At the Tönchesberg, Assemblage 2B is covered by a stadial loess deposit which is itself overlain by further humic horizons (N. J. Conard 1992, 111). The Tönchesberg sediments have been comprehensively

dated by thermoluminescence (M. Frechen 1994) and it is clear that a long and complicated sequence of stadial/interstadial oscillations is far better preserved there than at the Hummerich (Fig. 106).
It is possible that the post-Eemian phase of cooling (Isotope Stage 5d?) represented at the Tönchesberg by the colluvial humus (containing Assemblage 2B) and the subsequent reworked loess horizon (*Schwemmlöß*) are represented at the Hummerich by the soliflucted Niveau C. In this case, the entire complex of *in situ* interstadial soils and humic colluvial deposits preserved at the Tönchesberg (Isotope Stages 5c - 5a, Isotope Stage 4 and possibly Isotope Stage 3) must be represented at the Hummerich by the humic Niveaux D1-D3 and the solifluction layer Niveau E. It is then impossible to determine whether the Hummerich deposits represent this entire time span condensed into a reduced sedimentary sequence or whether periods of arrested sedimentation or erosion have preserved only discontinuous parts of the Early and Middle Weichselian. If the latter is the case, it is uncertain which parts of the sequence are represented. Theoretically, Niveaux D1-D3 could represent the Stage 5c, 5b interstadials, but their interpretation as appreciably younger humic colluvial deposits such as those preserved above the *in situ* interstadial chernozems at the Tönchesberg is equally possible and, by inference from the different nature of the lithic assemblages at the two sites, perhaps more probable.

	Isotope Stage	Tönchesberg 2	TL* age (ky)	TL# age (ky)	Hummerich Level	TL age (ky)
Upper Weichselian	2	Pleniglacial loess	14.1 +/- 1.5 17.5 +/- 1.8	12.0 +/- 1.2 15.1 +/- 1.8	F	22.56 22.85 23.23
		Lohner Boden soil / Denekamp interstadial				
Middle Weichselian	3	Lower *Lohner Boden*	36.5 +/- 3.8	32.3 +/- 3.8		
		loessic colluvium (*Fließerde*)	64.3 +/- 7.0	68.9 +/- 7.3	E	
		humic colluvium (*Fließerde*)	65.5 +/- 8.7	75.6 +/- 9.8		
Lower Weichselian	4	upper marker loess humic colluvium (*Lehmbröckelsand*) lower (main) marker loess humic colluvium (*Fließerde*)	77.8 +/- 8.9	70.3 +/- 7.4	D3	
	5a	upper chernozem soil (Odderade?)			D2	
	5b	humic colluvium (*Fließerde*)	84.3 +/- 8.9	95.2 +/- 9.7		
	5c	lower chernozem soil (Brorup?)	84.1 +/- 9.2	90.5 +/- 11.2	D1	
		reworked loess (*Schwemmlöß*)	101.0 +/- 11.0	112.0 +/- 12.0		
	5d	colluvially reworked soil horizon (**Blake Event**)	85.7 +/- 9.8 90.7 +/- 9.6	89.0 +/- 11.5 92.9 +/- 11.5	C	
Eemian	5e	*Parabraunerde* soil	100.0 +/- 9.2	106.0 +/- 13.0	B	
		loess	116.0 +/- 13.0	118 +/- 12.0		
		tephra				
		loess	104.0 +/- 12.0	108.0 +/- 12.0		
	6	reworked loess (*Schwemmlöß*)	106.0 +/- 11.0	122.0 +/- 13.0		
		Naßboden soil			A	134.0 135.0

Fig. 106 Stratigraphy and absolute dating of deposits at the Tönchesberg (M. Frechen 1994) and the Hummerich (A. K. Singhvi *et al.* 1986). Tönchesberg TL dates obtained by * regeneration method or # additive dose method.

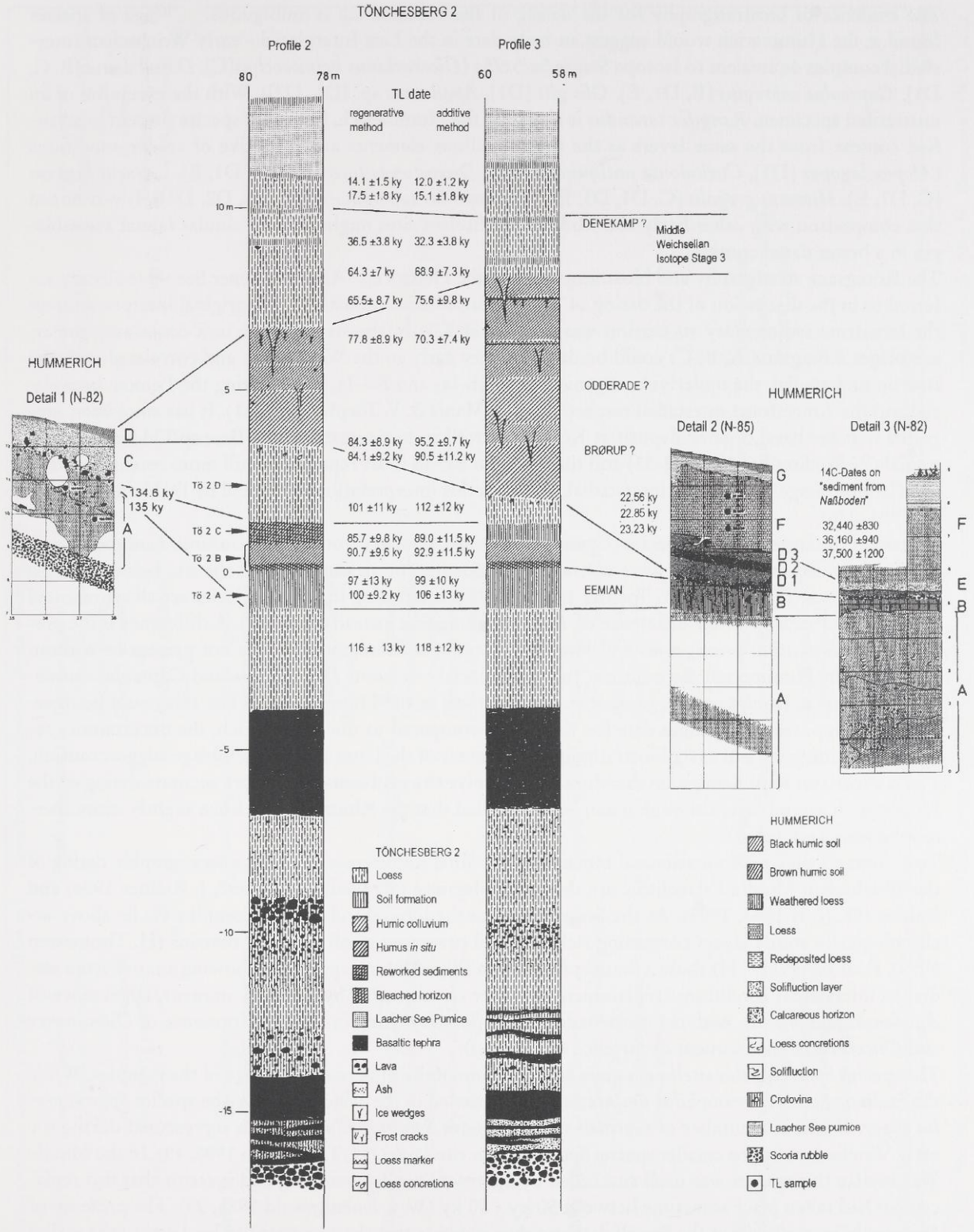

Fig. 107 Comparison of the stratigraphies of the Tönchesberg and the Plaidter Hummerich (Neuwieder Becken. After K. Kröger 1987 (fig. 4), N. J. Conard 1992 (fig. 19) and M. Frechen 1994 (fig. 7).

The evidence of biostratigraphy for the dating of the Hummerich is ambiguous. A range of species found at the Hummerich would suggest an early date in the Last Interglacial - early Weichselian Interstadial complex equivalent to Isotope Stages 5e/5 c/5a (*Dicerorhinus hemitoechus*[C], *Dama dama* [B, C, D1], *Capreolus capreolus* [B, D1, E], *Glis glis* [D1], *Apodemus* sp. [D1, D2]). With the exception of an unstratifed specimen, *Rangifer tarandus* is absent at the Hummerich, but other species present in stratified context from the same layers as the thermophilous elements are indicative of colder conditions (*Alopex lagopus* [D1], *Coelodonta antiquitatis* [D2], *Dicrostonyx torquatus* [C, D1, E], *Lagurus lagurus* [C, D1, E], *Microtus gregalis* [C, D1, D3, E], *Spermophilus superciliosus* [C, D1, D2, D3]). It was hoped that comparison with other Early and Middle Weichselian sites might provide similar faunal assemblages in a better dated context.

The Königsaue stratigraphy and biostratigraphy of the Pleistocene Ascherslebener See were already referred to in the discussion of the dating of Weichselian bifacial industries. The original interpretation of the lacustrine sedimentary succession was that Layer Kö-Ib (the stratigraphic unit containing the assemblages Königsaue A, B, C) could be dated to very early in the Weichselian and correlated with the Brørup interstadial, the underlying organic layers Kö-Ia_1 and Kö-Ia_2 representing the Eemian interglacial and the Amersfoort intestadial respectively (D. Mania & V. Toepfer 1973, 51). It has since been suggested that the basal organic deposit at Königsaue itself in fact represents the Brørup/Odderade interstadial (W. Weißmüller 1992, 32-33) and that horizon Kö-Ib must represent a still more recent Weichselian (Isotope Stage 3?) »Oerel« interstadial, although this interpretation is rejected by D. Mania (J. Richter 1994, 276).

Certain of the large mammal species (*Equus hydruntinus, Crocuta crocuta, Dicerorhinus hemitoechus,* cf. *Bison*) identified at Königsaue were considered diagnostic for an early date of the site before the first main cold phase (D. Mania & V. Toepfer 1973, 85). It is interesting that these species are all represented at the Hummerich (with the difference cf. *Bison* at Königsaue instead of cf. *Bos*). A difference is the presence of *Mammuthus primigenius* and *Rangifer tarandus* at Königsaue, species not present or without context at the Hummerich. By contrast, the »interglacial« elements *Dama dama* and *Capreolus capreolus* are absent at Königsaue but present in low numbers at the Hummerich. While this could be interpreted as supporting a younger date for Königsaue compared to the Hummerich, the uncertainties regarding the integrity and exact biostratigraphical context of the latter faunal assemblage suggest caution. The comparison with Königsaue therefore cannot solve the problem of the more accurate dating of the Hummerich assemblage, although it can be established that the Rhineland site has a slightly more thermophilous character.

Two German sites with microfaunal remains of potential importance for the biostratigraphic dating of the Weichselian Middle Palaeolithic are the Sesselfelsgrotte (W. Weißmüller 1992, J. Richter 1994) and Buhlen (O. Jöris 1993, 1994). At the Sesselfelsgrotte the bifacial industries (Complex G) lie above archaeologically sterile layers containing rich and well preserved small mammal remains (H. Thomassen 1996). Four layers (L - H) show a faunal progression (Fig. 108) interpreted as showing a move from stadial to interstadial conditions (replacement of *Sorex* cf. *coronatus* by *Sorex* cf. *araneus*, appearance of *Apodemus* and *Sicista*), with the most stadial phase possibly being in Layer K (presence of *Dicrostonyx* and *Cricetulus*, most frequent occurrence of *Lagurus*).

The species *Spermophilus citelloides* gives an indication of the biostratigraphic age of the complex. While the Saalian species *Spermophilus undulatus* was succeeded in the Weichselian by the species *Spermophilus superciliosus*, at a number of German sites the genus *Spermophilus* was also represented during the early Weichselian by the smaller species *Spermophilus citelloides* (H. Thomassen 1996, 49). In the Middle Weichselian this species was itself succeeded by *Spermophilus superciliosus*, and it seems that this replacement had taken place sometime between 50 ky - 40 ky (W. v. Koenigswald 1985, 29). The presence of *Spermophilus citelloides* at the Sesselfelsgrotte thus suggests that the sequence can be dated to the earlier Weichselian before the replacement of this species by its larger relative.

The Buhlen sequence also shows a faunal progression (shown only in part by Fig. 108), in this case from temperate to open/steppe and then to cold/stadial conditions. At Buhlen, the species of suslik present is

Buhlen sequence shows cooling from IIIb4 to I		Sesselfelsgrotte sequence shows warming from L to H			
Buhlen I	*Lagurus lagurus* *Spermophilus superciliosus* *Microtus gregalis* *Sorex araneus / kennardi* *Dicrostonyx torquatus* - -	**Sesselfelsgrotte H**	*Lagurus lagurus* *Spermophilus citelloides* *Microtus gregalis* *Sorex cf. araneus* - *Apodemus sylvaticus* *Sicista* sp.	**Plaidter Hummerich**	*Lagurus lagurus* *Spermophilus superciliosus* *Microtus gregalis* *Sorex* cf. *araneus* *Dicrostonyx torquatus* *Apodemus sylvaticus*
Buhlen II	*Lagurus lagurus* *Spermophilus superciliosus* + sp. *Microtus gregalis* *Sorex araneus / kennardi* *Dicrostonyx torquatus* - -	**Sesselfelsgrotte J**	*Lagurus lagurus* *Spermophilus citelloides* *Microtus gregalis* *Sorex* cf. *araneus, Sorex* cf. *coronatus* - *Apodemus sylvaticus* *Sicista* sp.		
Buhlen IIIb2	*Lagurus lagurus* *Spermophilus superciliosus* + sp. *Microtus gregalis* *Dicrostonyx torquatus* *Ochotona pusilla* - - -	**Sesselfelsgrotte K**	*Lagurus lagurus* *Spermophilus citelloides* *Microtus gregalis* *Dicrostonyx torquatus* *Cricetulus migratorius* *Apodemus sylvaticus* *Sicista* sp. *Sorex* cf. *araneus, Sorex* cf. *coronatus*		
Buhlen IIIb4	*Lagurus lagurus* *Spermophilus superciliosus* + sp. *Microtus gregalis* *Dicrostonyx torquatus* *Lemmus lemmus*	**Sesselfelsgrotte L**	*Lagurus lagurus* *Spermophilus citelloides* *Microtus gregalis* *Sorex cf. coronatus*		
Villa Seckendorff	- *Spermophilus citelloides* *Microtus gregalis* *Dicrostonyx torquatus* *Lemus lemmus* *Allactaga major*	**Stuttgart-Untertürkheim**	*Lagurus lagurus* *Spermophilus citelloides* - *Dicrostonyx torquatus* *Ochotona pusilla* *Allactaga major fossilis* *Phodopus songorus*	**Neumark-Nord**	*Lagurus lagurus* *Spermophilus citelloides* *Microtus gregalis*

Early Weichselian *Spermophilus citelloides* (and *superciliosus*) **Middle Weichselian** (post 50 / 40 ky) *Spermophilus superciliosus*

Fig. 108 Possible biostratigraphical position of the Hummerich relative to selected German Weichselian sites with small mammal faunas. After H. Thomassen 1996, O. Jöris 1993, W. v. Koenigswald 1985; W. -D. Heinrich 1990; W. Reiff 1994; S. Wenzel 1996.

Spermophilus superciliosus (O. Jöris 1993). If the entire Buhlen sequence dates to a period after the replacement of *Spermophilus citelloides* by *Spermophilus superciliosus* this should indicate a younger age for the sequence than for that of the Sesselfelsgrotte.
The small mammal sequences from Buhlen and the Sesselfelsgrotte could then theoretically be combined to show a cycle moving from interstadial - stadial - interstadial conditions (when the Buhlen sequence would represent the very recent Early Weichselian or Middle Weichselian).
This interpretation is supported by the »*Steppennagerschicht*« fauna from Stuttgart-Untertürkheim, assigned to the first phase of cooling (Isotope Stage 5d) after the Interglacial (S. Wenzel 1993, 1994, 1996), which includes the species *Spermophilus citelloides* (W. v. Koenigswald 1985, 9). Nevertheless, the large mammal fauna of this layer, which is stratified between two travertines formed in interglacial/interstadial conditions, contains a number of the less common species also recorded at the Hummerich (*Crocuta crocuta, Coelodonta antiquitatis, Equus hydruntinus*). The small mammal fauna contains the steppe lemming (*Lagurus lagurus*) and other small mammal species typical of open/stadial conditions (pika [*Ochotona pusilla*], the hamsters *Phodopus sungorus* and *Cricetus cricetus major*, and jerboa [*Allactaga major fossilis*]).
By contrast, an »*Allactaga* fauna« described for the Villa Seckendorff, also in Stuttgart, is described as younger than the »Brörup« interstadial (W. v. Koenigswald 1985). *Lagurus lagurus* is not found at this site although a number of other steppe and arctic elements are present (*Dicrostonyx gulielmi rotundus, Lemmus lemmus, Microtus gregalis*). The suslik species found at the Villa Seckendorff is also identified as *Spermophilus citelloides*.
The suslik found at the Hummerich is *Spermophilus superciliosus* which, by analogy with the suggested relative age of Buhlen and the Sesselfelsgrotte, might suggest a younger, rather than an older Weichselian age for the site. This comparison must however be treated with caution, since the species is, in fact, also found in the late Saalian levels at the site showing that the succession of species was a complicated phenomenon. In addition, it is unclear to what extent the different presence of the two species *Spermophilus citelloides* and *Spermophilus superciliosus* may also be influenced by geography, since the sites with the former species are found in southern Germany. The biostratigraphical value of their distinction would clearly be greatly reduced if this is an important factor.
The species *Lagurus lagurus* (found at Hummerich in Niveaux C, D1 and E) shows the existence of highly continental environmental conditions. The species is found sporadically during both the Saalian and the Weichselian in western Europe as a result of waves of immigration from the east (W.-D. Heinrich 1990). It is sometimes thought that the presence of *Lagurus* is specific to a singular early Weichselian horizon (the rodent layer known as the »*Steppennagerschicht*«) which can possibly be equated across Europe with Isotope Stage 5d (cf. Stuttgart-Untertürkheim). The absence of *Lagurus* at the Villa Seckendorf (dated to post-Brørup?) would not contradict this interpretation. The species is also found at Neumark-Nord (W.-D. Heinrich 1990).
That *Lagurus* in fact migrated into western Europe on several occasions has been pointed out by W. Reiff (1994, 46) who therefore disputes the value of this species for exact biostratigraphical dating. These doubts are clearly supported by the results from Sclayn in Belgium (located still further to the West than is the Hummerich) where *Lagurus* appears during the Weichselian on repeated occasions interpreted as Isotope Stage 5b, early Stage 4 and Stage 3 (J.-M. Cordy 1992, Fig. 12). Taken in conjunction with the older occurrences from southern Germany it seems that the presence of this species cannot give a more precise indication of the age of the Hummerich assemblage than is already known.
A final small mammal species which might give some indication of the finer biostratigraphical position of the Hummerich assemblage is *Arvicola terrestris*. The analysis of details of the tooth enamel of this species shows a different range of S. D. Q. values for the Saalian and Weichselian assemblages (Fig. 6). The Tönchesberg 2B and Hummerich Weichselian populations also show different values (T. v. Kolfschoten & G. Roth 1993, Fig. 10) and this difference might be interpreted as showing the elapse of an appreciable period of time between the deposition of the two assemblages.
In summary, the period of time represented by the upper Hummerich stratigraphy corresponds either

to a younger phase of the early Weichselian or to the early Middle Weichselian which is characterised by species showing dry and open conditions (*Equus* sp., *Equus hydruntinus, Lagurus lagurus, Spermophilus superciliosus*) with a low but continued (repeated?) presence of thermophilous/forest mammal species such as *Capreolus capreolus* and *Dama dama, Glis glis*. The absence of full periglacial conditions is suggested by the absence/low representation of truly »arctic« species. The Hummerich succession appears to be younger than the base of the Tönchesberg Weichselian succession assigned to the first Weichselian interstadial Stage 5d and containing laminar Assemblage Tö 2B.
The Hummerich lithic assemblage contains a number of features which can be linked to early/middle Weichselian industries with bifacial tools (*»Keilmessergruppen«/Mousterien Inventartyp Kartstein*) although the exact affinities of the Hummerich material cannot be more closely defined. Nevertheless, it is possible to combine these various lines of evidence to place the Hummerich in its approximate European chrono-, archaeological and biostratigraphical context (fig. 109) and to suggest that the ecological background of this recent phase of the Middle Palaeolithic can be characterised at the site in an unusually comprehensive way.

Site function

It has been pointed out that there are good reasons for believing that the Hummerich site has been heavily influenced by a number of secondary processes such as reworking of sediments and their palaeontological and archaeological content by erosion and the differential weathering and preservation of the faunal assemblage. Equally, there is no certainty that most or all of the fauna can be causally linked with the Middle Palaeolithic occupation(s) of the site attested by the lithic assemblage. That the entire site could not be excavated is a further, negative factor in the analysis.
Despite all these problems an interpretation of the possible function of the site and the reasons for its occupation by Middle Palaeolithic hominids should be attempted, in the full knowledge that this will be to a large extent speculative.
The geology of the site makes it clear that the Hummerich was not visited by hominids for purposes of provisioning with raw material. Although some artefacts (perhaps the majority) were clearly produced on the spot using materials transported to the site, a function as a specialised quarry or lithic production site (*atelier*) cf. L. Fiedler & S. Veil (1974); A. Luttropp & G. Bosinski (1971), R.-W. Schmitz (1995) can certainly be ruled out and artefact production will have been linked to the needs of the hominid group as they arose.
The presence of a large faunal assemblage and a small number of bones recognizably modified by humans suggests that these needs will have included activities linked to hunting or butchery. Exploitation of large mammals certainly played a role at the Hummerich and various categories of Middle Palaeolithic sites can be proposed as models for activities carried out within the shelter of the crater.
The first and most easily recognisable of these should be the kill/butchery site of a single animal individual. Such sites are, perhaps surprisingly, uncommon in the Middle Palaeolithic. Chronologically relevant examples of well preserved sites with single individual animal carcasses are Gröbern and Neumark-Nord in the Geiseltal (D. Mania, M. Thomae, T. Litt & T. Weber 1990; D. Mania & M. Thomae 1988) and Lehringen in Lower Saxony (H. Thieme & S. Veil 1985).
The well known arguments over the »correct« interpretation of these localities as the sites of true kills or merely as evidence for scavenging activities by early hominids need not be repeated in detail here. The evidence of the Lehringen wooden spear for the ability of Neandertals to actively hunt has been disputed (C. Gamble 1987), but the discovery at Schöningen near Brunswick in Lower Saxony of a number of spears which were clearly carefully manufactured to be used as projectiles (H. Thieme & R. Maier 1995; H. Thieme, D. Mania, B. Urban & T. v. Kolfschoten 1993) removes any reasonable doubt that early hominids were adequately armed with hunting weapons. That the lithic and faunal remains at the

France		Lower Rhineland	Central Rhineland
Site / Horizon	Technocomplex	Site / Technocomplex	
		Rheindahlen A1 (angle-backed point*)	
			Remagen-Schwalbenberg (*Blattspitzengruppen*?)
Riencourt A Corbehem Hénin-sur-Cojeul	Moustérien typique	Rheindahlen A2 Patina-Komplex cf. late "*Moustérien Typ Balve IV*"	
			↑ ?
Riencourt B1, B2	*Moustérien charentien à pièces bifaciales* (with "Micoquian influence")		**Plaidter Hummerich**
			? ↓
Riencourt C	*Moustérien de type Ferrassie* with "*bifaces MTA*" and a "*faciès laminaire*"	Rheindahlen A3 (MTA)	Ariendorf 1
Seclin Riencourt CA	*MTA industrie laminaire* ("*Seclinien*")	Rheindahlen B1 "*Westwand*" laminar industry ("*Rheindahlien*")	Tönchesberg 2b laminar industry
		Rheindahlen B2 "*Micoquekeil*" "*Typ Bockstein*"	
	SAALE - WEICHSEL INTERGLACIAL (Isotope Stage 5e)		
Biache IIA, II base	*Moustérien Ferrassie*	Rheindahlen B3 "*Ostecke*" Mousterian "*Typ Rheindahlen*"	Schweinskopf Wannen Ariendorf 2
Salouel, Biache H	*Moustérien à denticulés*		
Bapaume-Osiers Montières	*Epi-Acheuléen*	Rheindahlen B4	
		Rheindahlen B5	
	INTERGLACIAL (Isotope Stage 7)		
Gouzeaucourt Atelier Commont Cagny l'Epinette	*Paléolithique moyen de faciès cambrésien* (Upper Acheulian) *Acheuléen*	Rheindahlen C1 (quartz) Lower Palaeolithic ?	Ariendorf 3
		INTERGLACIAL	Kärlich-Seeufer (Lower Palaeolithic)
		Rheindahlen D1 (quartz) Lower Palaeolithic ?	
		INTERGLACIAL	Miesenheim 1 (Lower Palaeolithic)

Fig. 109 Proposed correlation of the relative chronology of some Palaeolithic technocomplexes in Northern France and the Rhineland (* the point from Rheindahlen A1 is probably late Palaeolithic). After G. Bosinski 1967; S. Veil 1978; A. Tuffreau 1992, 1993.

Hummerich represent numerous individual kill sites accumulated over an unknown length of time is clearly a possibility. Conceivably, the very rare spatially restricted accumulations of single carcasses is due to the fragmentary survival of primary evidence for such events.
An alternative to individual kills of single animals would be the mass slaughter of several animals of one species as a single event. Sites with large monospecific accumulations of faunal remains are well known from the Upper Palaeolithic and in this context they are generally accepted as evidence for the ability of anatomically modern humans to exploit herds of ungulate species more effectively by the use of mass kill strategies (drives, ambushes, etc). Similar sites, in particular with accumulations of large bovid remains, are also known from earlier contexts (C. Farizy & F. David 1988, 1992; S. Gaudzinski 1996) and seem relevant in regard to the Hummerich. They are described from the French sites Champlost (C. Farizy 1988), Mauran (C. Girard & F. David 1982; C. Farizy, F. David & J. Jaubert 1994) and La Borde (J. Jaubert *et al.* 1990) and from Il'skaya I in the Caucasus (J. F. Hoffecker, G. F. Baryshnikov & O. Potapova 1991). It has been suggested that the association of a series of wooden spears with a large number of individuals of horse at the Schöningen site may also be due to a mass kill in a much older context (pers. comm. H. Thieme, Hannover, March 1998).
A chronologically and geographically close example of such a site is the early Weichselian site Wallertheim in Rheinhessen excavated in the 1920's (S. Gaudzinski 1995a, 1995b). The latter author argues that Middle Palaeolithic sites of this nature can be seen as the direct equivalents of their Upper Palaeolithic counterparts and suggests that Middle and Upper Palaeolithic patterns of prey exploitation might have been more similar than is often thought (S. Gaudzinski 1993, 1996). A site of a different nature is La Cotte de St. Brelade on Jersey (P. Callow & J. M. Cornford, J. M. 1986) where it is believed that the carcasses of several individuals of mammoth and woolly rhinoceros (in part excavated stacked and sorted by body part) might represent the result of one or more mass kills, perhaps in the form of drives over the headland cliff.
A problem in the interpretation of sites with many individuals of one species is the resolution of the depth of time involved in their accumulation. A large number of kills of individuals, or small numbers of individuals could conceivably present the same archaeological picture as a single mass kill and only arguments for selective exploitation of body parts due to the presence of a great surplus of resources might enable their distinction. A minimalistic view could be that such sites merely reflect (repeated?) exploitation of constant factors such as topography, animal ethology and seasonality patterns. Recent excavations at Wallertheim, where the fine stratigraphy is more clear than at the Hummerich, show that single bison carcasses can indeed be found in isolated contexts (N. J. Conard, D. S. Adler, D. T. Forrest & P. J. Kaszas 1994, 1995) and also distinguished a series of distinct occupations by hominids through much of the early Weichselian. The possibility that a number of separate hunting strategies are represented at this site is therefore quite high.
In the case of the Hummerich, where the fauna includes a diversity of species and which, due to the location (at the summit of a steep hill), is not likely to have lain on an animal migration route, an interpretation of the site as the locality of mass kills by ambush or drives seems highly unlikely. It is an open question whether repeated single kills of individuals might have actually taken place at the site itself. Although other Middle Palaeolithic sites in the Neuwied Basin have been interpreted as hunting localities (A. Justus 1992, 158), the topography of these sites is quite different from that of the Hummerich. It is anyway improbable that all sites can be interpreted in the same way.
The extensive area of the area occupied at the Hummerich and the relatively large lithic assemblage suggest repeated occupation over time and might speak for a diversity of functions for the site. The use of fire possibly indicates »domestic« activities or, at least, extended stays by hominids. An interpretation of the Hummerich as a »home site« can only remain speculative since any structures (dwellings, hearths) that may have originally been present have not survived. This is not in itself so unusual since features interpreted as Middle Palaeolithic dwelling structures are often ambiguous (Ariendorf Layer 2, G. Bosinski *et al.* 1983), while other claims for dwelling structures such as Rheindahlen B1 »Westwand-Komplex«, Dwelling 1 (H. Thieme 1990), Buhlen Lower Site, Layer 4 (Fiedler, L. & Hilbert, K. 1987)

or Maastricht-Belvédère Site C, Southern Concentration (W. Roebroeks 1988) have been criticised (although in some cases substantiated [D. Stapert 1992]). Refitting of the lithic assemblage, which at other Middle Palaeolithic sites has provided information of varying complexity on settlement dynamics (e. g. Maastricht-Belvédère Site K: D. de Loecker 1992, 1993, 1994; Schweinskopf-Karmelenberg: J. Schäfer 1990b), is of only limited value for this question at the Hummerich and demonstrates secondary geological rather than primary archaeological phenomena.

It may be that it is illusory to search for one explanation for the Middle Palaeolithic occupation of the Hummerich. Given the unknown, but undoubtedly long, period of time represented by the accumulation of the sediment layers containing archaeological and faunal material it is very probable that the site was visited by Neandertals on several unrelated occasions. Extensive Middle Palaeolithic open sites with large lithic and/or faunal assemblages are not uncommon and several have been referred to in various contexts by the present study (Salzgitter-Lebenstedt: K. Grote 1978; A. Tode 1982; A. Tode *et al.* 1953; Riencourt-lès-Bapaume: A. Tuffreau *et al.* 1991; A. Tuffreau 1993; Biache-Saint-Vaast: A. Tuffreau & J. Sommé 1988; Seclin: A. Tuffreau *et al.* 1985; Maastricht-Belvédère: W. Roebroeks 1988; Rheindahlen B1 »Westwand«: H. Thieme 1983, J. Thissen 1986). At a number of these it is clear that quite different activities took place (intensive knapping [D. de Loecker 1992, 1993, 1994], animal butchering [P. Auguste 1988, 1991, 1992, 1993, 1994], use of fire, construction of dwelling structures [D. Stapert 1992]) so that they can quite probably be regarded as a palimpsest of several occupations or multi-functional episodes.

The Middle Palaeolithic occupation of the Plaidter Hummerich must be interpreted in this light. A number of specialised functions (quarry or *atelier*, monospecific mass-kill site) can be excluded, but otherwise it is probable that a range of activities (production of lithic artefacts, butchery of animals, use of fire) was carried out by hominids at the site. The initially surprising location of the site, at the summit of a volcano, may also indicate the deliberate and repeated incorporation by Neanderthals of this unusual topographic situation into their strategy of use of the relatively open landscape of the Neuwied Basin.