

DESCRIPTION OF PALAEOLITHIC ARTIFACTS FROM SPIENNES, BELGIUM.*

par

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1. The site

The artifacts were found at Spiennes, 5 km. South of Mons, at a place known as Petit Spiennes, Par delà l'Eau. They came from a trench cut by J. Verheyleweghen in 1961 on the Western slope of a little hill at an altitude of about 65 m. At the foot of this slope runs the Rivière de Nouvelles. Exact data about the find-spot are not available. From spoken information it could be understood that this trench was located between a sunken road in the North and the railway trench in the South, probably on parcel Spiennes B/2, 293b.

After J. Verheyleweghen's death, the assemblage was bought by the Koninklijke Musea voor Kunst en Geschiedenis, Brussels. The cases in which the artifacts were put are labelled as follows :

"Collection J. Verheyleweghen

Spiennes — Mesvinien

Cailloutis mesvinien du versant ouest de la rivière Nouvelle."

2. First classification based on the degree of rolling.

The major part of the pieces are clearly rolled and damaged, for many pieces are broken and show accidental retouches. The artifacts (2346 objects) have been divided into three groups, based on the rolling the pieces were submitted to. The artifacts which have most suffered constitute a strongly rolled group : Group 3 (562 objects). The artifacts without

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damage, form a fresh group : Group 1 (593 objects). The artifacts which were less damaged than those of Group 3 have been gathered in Group 2 (1191 objects). A number of artifacts form borderline-cases, but the presented classification is the result of several attempts.

As working hypothesis it was assumed that the difference in rolling could possibly indicate a difference in age. This hypothesis was not admitted for the artifacts of the site Rissori (Adam and Tuffreau, 1973) which in the contrary are dealt with as a unit (see below).

3. Methods of description.

3. 1. Descriptive method of the artifacts.

The following attributes of every artifact have been studied ⁽¹⁾ : length (L), breadth (B), thickness (e), type of butt, flaking angle (A), breadth of the butt (Bh), thickness of the butt (eh), percentage of cortex covering the dorsal face, number of facets on the dorsal face (F), application of the Levallois Technique, frost-working, the proportion between the length and the breadth (L/B) ; the proportion of the breadth to the thickness (B/e), the proportion between the breadth and the thickness of the butt (Bh/eh).

It was found impossible to restrict the study only to the complete artifacts because of their small number. As the number of the blades in each of the 3 groups is too small (Group 1 : 70 ; Group 2 : 95 ; Group 3 : 48), no further elaboration has been aimed at.

Therefore the following procedure has been adopted : to note and elaborate as many data per artifact as possible.

3. 2. Descriptive method of the tools.

This description is based on the typological list of Bordes (Bordes, 1950).

4. Results.

4. 1. Descriptive method of the artifacts (Table 1).

The total mentioned in table 1, refers to the number of artifacts on which the attribute can be checked.

(1) All counts are mentioned in the file which is to be found in the Dienst Prehistorie, K.U.L., where this study was performed.

TABLE 1

Attribute analysis of the flakes

		mean	mode	standard deviation	Total
L (cm)	1	7,32	6,58	2,05	299
	2	6,55	5,87	1,46	695
	3	7,13	6,58	1,62	329
B (cm)	1	5,70	4,85	1,76	400
	2	5,38	4,89	1,40	883
	3	5,89	5,34	1,44	389
e (cm)	1	1,36	1,19	0,50	476
	2	1,57	1,46	0,51	1002
	3	1,87	1,65	0,59	455
Bh (cm)	1	3,22	2,38	1,53	238
	2	2,87	2,68	1,28	350
	3	3,03	2,59	1,38	165
eh (cm)	1	0,96	0,72	0,43	333
	2	1,05	0,84	0,45	537
	3	1,22	1,07	0,55	208
A (degrees)	1	110°	113°	8°	277
	2	112°	113°	8°	403
	3	115°	120°	8°	139
L/B	1	1,30	1,24	0,33	258
	2	1,25	1,17	0,32	601
	3	1,25	1,29	0,31	281
B/e	1	4,63	4,20	1,43	398
	2	3,72	3,35	1,08	868
	3	3,39	3,18	0,97	387
Bh/eh	1	3,75	2,69	1,83	236
	2	3,10	2,34	1,29	347
	3	2,68	2,45	1,02	165

Type of Butts	Plain	Conv.-Dih.	Faceted	Cortex-covered	Total
1	53,85 %	10,65 %	28,70 %	6,80 %	338
2	55,37 %	6,74 %	18,58 %	19,31 %	549
3	65,35 %	6,44 %	7,92 %	20,30 %	202

Levallois	Yes	No	Total
1	15,15 %	84,84 %	475
2	6,96 %	93,03 %	1005
3	5,78 %	94,21 %	432

Frost	Yes	No	Total
1	24,18 %	75,81 %	492
2	30,74 %	69,25 %	1057
3	44,72 %	55,27 %	474

L : length ; B : breadth ; e : thickness ; Bh : breadth of the butt ; eh : thickness of the butt ; A : flaking angle.

The flakes of Group 1 are the largest, those of Group 2 the shortest. Group 1 and Group 3 show certain similarities. As to the breadth, the flakes of Group 3 have the highest values and those of Group 2 the lowest. From Group 1 towards Group 3 most of the artifacts tend to a larger breadth. Generally from Group 1 to Group 3 the artifacts reveal an increasing thickness, a broadening of the butt, an expansion of the flaking angle, an approximation between the breadth and the thickness of the flake on the one side and between the thickness of the butt and its breadth on the other.

As to the butt types, an increase in the number of the plain butts and cortex-covered butts can be observed from Group 1 to Group 3. There is a decrease of the number of the convex-dihedral butts and of the faceted butts.

Likewise there is, from Group 1 to Group 3, a marked decrease of the number of Levallois flakes and an obvious increase of the number of flakes damaged by frost.

From Group 1 to Group 3, the value for the mean of the number of facets is respectively 3 (61 out of 251), 2 (132 out of 577) and 2 (74 out of 267). Flakes with a high number of facets occur mainly by Group 1, flakes with a low number of facets occur by Group 3. With reference to the percentage of cortex, a reduction of the number of flakes without cortex can be noticed going from Group 1 towards Group 3. Whatever, the difference between Group 2 and Group 3 is small here. In general the flakes of Group 2 have the largest proportion of cortex, those of Group 3, the smallest.

Almost all the flakes of the 3 groups were detached from the core by means of one single stroke (Group 1: 277 out of 338; Group 2: 421 out of 549; Group 3: 150 out of 202). The Levallois flakes detached by one stroke seem to have a relatively greater frequency than the non-Levallois flakes.

4. 2. Descriptive method of the tools. (Table 2 and Fig. 2).

Group 1 includes 593 artifacts in total. 492 of those are flakes of which 73 are Levallois (Fig. 2:1). Of these 73 Levallois flakes 10 are tools: 4 Levallois points (Fig. 2:2), 1 Mousterian point (Fig. 2:3), 1 single convex side scraper (Fig. 2:4), 1 double convex side scraper (Fig. 2:6), 1 end scraper, 1 borer (Fig. 2:10) and 1 notch (Fig. 2:14). The other tools are: 3 single convex side scrapers, 2 single concave side scrapers (Fig.

TABLE 2

List of tools.

%r.: real count; %ess.: essential count

Types (1)	Group 1			Group 2			Group 3		
	N	%r.	%ess.	N	%r.	%ess.	N	%r.	%ess.
1-2.	63	59,43	—	56	42,74	—	24	39,34	—
3.	4	3,77	—	6	4,58	—	1	1,63	—
5.	—	—	—	1	0,76	1,66	—	—	—
6.	1	0,94	2,77	3	2,29	5,00	—	—	—
7.	—	—	—	2	1,52	3,33	—	—	—
9.	—	—	—	3	2,29	5,00	1	1,63	2,94
10.	4	3,77	11,11	4	3,05	6,66	3	4,26	8,82
11.	2	1,88	5,55	1	0,76	1,66	—	—	—
13.	—	—	—	1	0,76	1,66	—	—	—
15.	2	1,88	5,55	—	—	—	2	3,27	5,88
17.	1	0,94	2,77	—	—	—	—	—	—
21.	—	—	—	1	0,76	1,66	1	1,63	2,94
23.	—	—	—	3	2,29	5,00	—	—	—
24.	3	2,88	8,33	—	—	—	1	1,63	2,94
27.	—	—	—	1	0,76	1,66	—	—	—
30-31.	2	1,88	5,55	—	—	—	—	—	—
32-33.	2	1,88	5,55	—	—	—	—	—	—
34-35.	1	0,94	2,77	1	0,76	1,66	—	—	—
37.	2	1,88	5,55	5	3,81	8,33	1	1,63	2,94
38.	9	8,48	25,00	7	5,34	11,66	5	8,19	14,70
39.	2	1,88	5,55	—	—	—	—	—	—
40.	—	—	—	2	1,52	3,33	—	—	—
42.	4	3,77	11,11	16	12,21	26,66	10	16,39	29,41
43.	—	—	—	—	—	—	2	3,27	5,88
45.	3	2,82	—	9	6,87	—	2	3,27	—
54.	1	0,94	2,77	6	4,58	10,00	4	6,55	11,76
56.	—	—	—	2	1,52	3,33	4	6,55	11,76
61.	—	—	—	1	0,76	1,66	—	—	—
	106			131			61		
Handaxe	8			4			—		
Core	23			35			40		

(1) Bordes, 1950 and 1972.

2:5), 1 double convex side scraper, 1 double concave-convex side scraper, 3 concave transverse scrapers (Fig. 2:7), 1 end scraper (Fig. 2:8), 2 atypical burins (Fig. 2:9), 2 atypical backed knives (Fig. 2:12), 9 naturally backed knives (Fig. 2:13), 2 raclettes (Fig. 2:11), 3 notches, 3 retouches on ventral face and 1 end-notched piece.

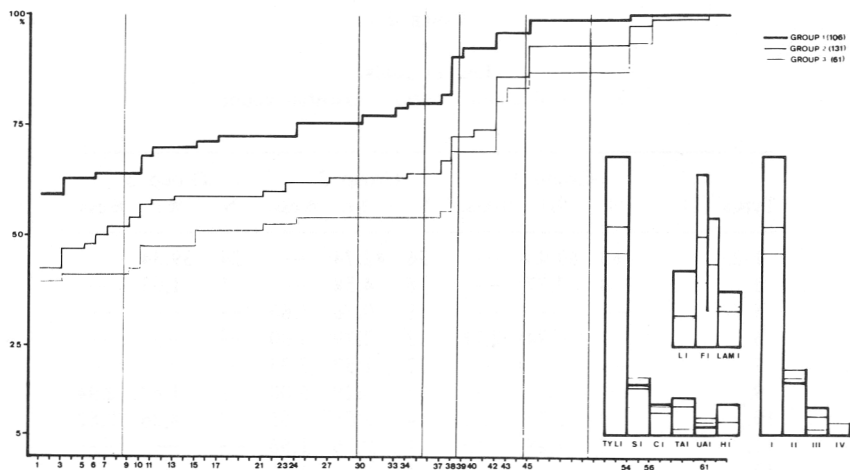


FIG. 1. — Cumulative diagram.

There are 70 blades, of which 25 Levallois. Cores are scarce : only 23. Of the 7 Levallois cores, there are 6 for flakes. The seventh core gave flakes on the one side and blades on the other. The cores are usually large. Three of the 6 Levallois cores for flakes gave only one flake. In some cases the cores are worked at both sides and show further centripetal flakes. There are 6 discoid cores, some of which are worked on both sides. Of the 3 globular cores, one specimen shows hammering traces. However, the only pyramidal core, with two opposite striking platforms, is little typical. Two prismatic cores for flakes have only one striking platform. The third prismatic core is for blades. Finally there are 3 shapeless cores. The 3 globular hammerstones cannot be assigned with certainty to one of the three groups.

There are 8 handaxes : 1 lanceolate, 2 cordiform (Fig. 2:16), 2 small oval-shaped (Fig. 2:15) and 3 fragments.

Group 1 is an industry of rather low Levallois Technique (LI) (Tabl. 3), not faceted (FI), but with a moderate number of faceted butts, with some convex-dihedral butts (FIr), but with a moderately high to high number of blades (Lam. I). This group belongs to the industries of Levallois facies (TyLI) with fairly side scrapers (SI), with some backed knives (UAI and TAI), with some handaxes (HI), but with many naturally backed knives. The Mousterian Group (II) is clearly dominant amongst the other characteristic groups and contains mainly side

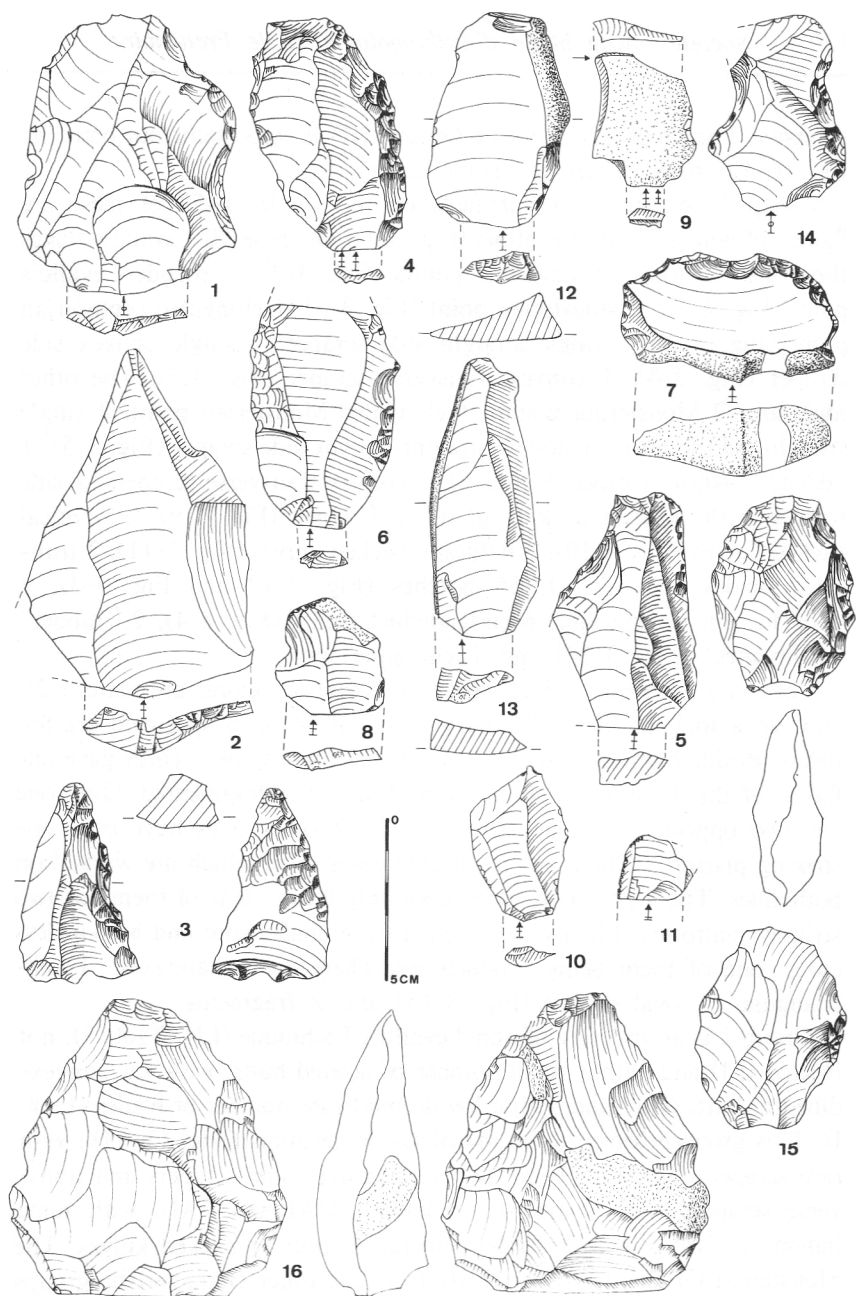


FIG. 2. Tools of Group 1.

1 : Levallois flake ; 2 : Levallois point ; 3 : Mousterian point ; 4 : single convex side scraper ; 5 : single concave side scraper ; 6 : double convex side scraper ; 7 : concave transverse scraper ; 8 : end scraper ; 9 : atypical burin ; 10 : borer ; 11 : raclette ; 12 : atypical backed knife ; 13 : naturally backed knife ; 14 : notch ; 15 : oval-shaped handaxe ; 16 : cordiform handaxe.

scrapers. The Upper-Palaeolithic Group (III) is important, but contains less typical tools. There are some cores.

Group 2 contains 1191 artifacts on the whole. 1057 of these are flakes, of which 70 are Levallois (Fig. 3:1). Of these 70 Levallois flakes there are 12 tools: 6 Levallois points (Fig. 3:2), 1 pseudo-Levallois point (Fig. 4:1), 1 Mousterian point (Fig. 3:3), 1 elongated Mousterian point (Fig. 4:2), 1 single straight side scraper, 1 single convex side scraper (Fig. 3:4), 1 convex transverse scraper (Fig. 3:7). The other tools are: 2 Mousterian points, 1 elongated Mousterian point, 2 single straight side scrapers, 1 double straight-convex side scraper (Fig. 3:5), 1 "déjeté" (offset) scraper (Fig. 3:6), 2 convex transverse scrapers, 1 side scraper with thinned back (Fig. 3:8), 1 borer (Fig. 3:9), 5 atypical backed knives (Fig. 3:10), 7 naturally backed knives (Fig. 3:11), 2 truncated blades (Fig. 3:12), 16 notches (Fig. 3:13 and Fig. 4:3), 9 retouches on ventral face, 6 end-notched pieces (Fig. 4:4), 2 "rabots" (pushplanes) (Fig. 3:14) and 1 chopping tool.

There are 95 blades, 18 of which are Levallois. Cores are scarce: 35 only on a total of 1191. Of the 9 Levallois cores, 5 specimens are for flakes. Beside big cores there are also small ones. Only 2 cores gave one flake. Of the 4 Levallois cores for blades, one is fragmented. Only one has two opposite striking platforms. The 2 other ones have only one striking platform. There are 13 discoid cores, 6 of which are worked on both sides. The 4 prismatic cores gave only flakes. One of them has two striking platforms. Finally there remain 1 globular core and 8 shapeless cores, one of them being fragmentary. There are 4 handaxes: 1 sub-triangular, 1 oval-shaped (Fig. 3:15) and 2 fragments.

Group 2 is an industry of non-Levallois Technique (LI) (Table 3), not faceted (FI) and with a small number of faceted butts, with few convex-dihedral butts (FIr) and with a low to moderate number of blades (Lam. I). This group belongs to the industries of Levallois facies (TyLI); with rare scrapers (SI), with very few single convex side scrapers and transverse scrapers, with some backed knives (UAI and TAI), with some handaxes (HI), but with fairly numerous naturally backed knives. The Mousterian Group (II) wins clearly from the other characteristic groups and contains an important number of points. The Upper-Palaeolithic Group (III) is moderate, but contains merely atypical backed knives. There are many notches. The Clacton notches slightly dominate the retouched notches. There are few cores.

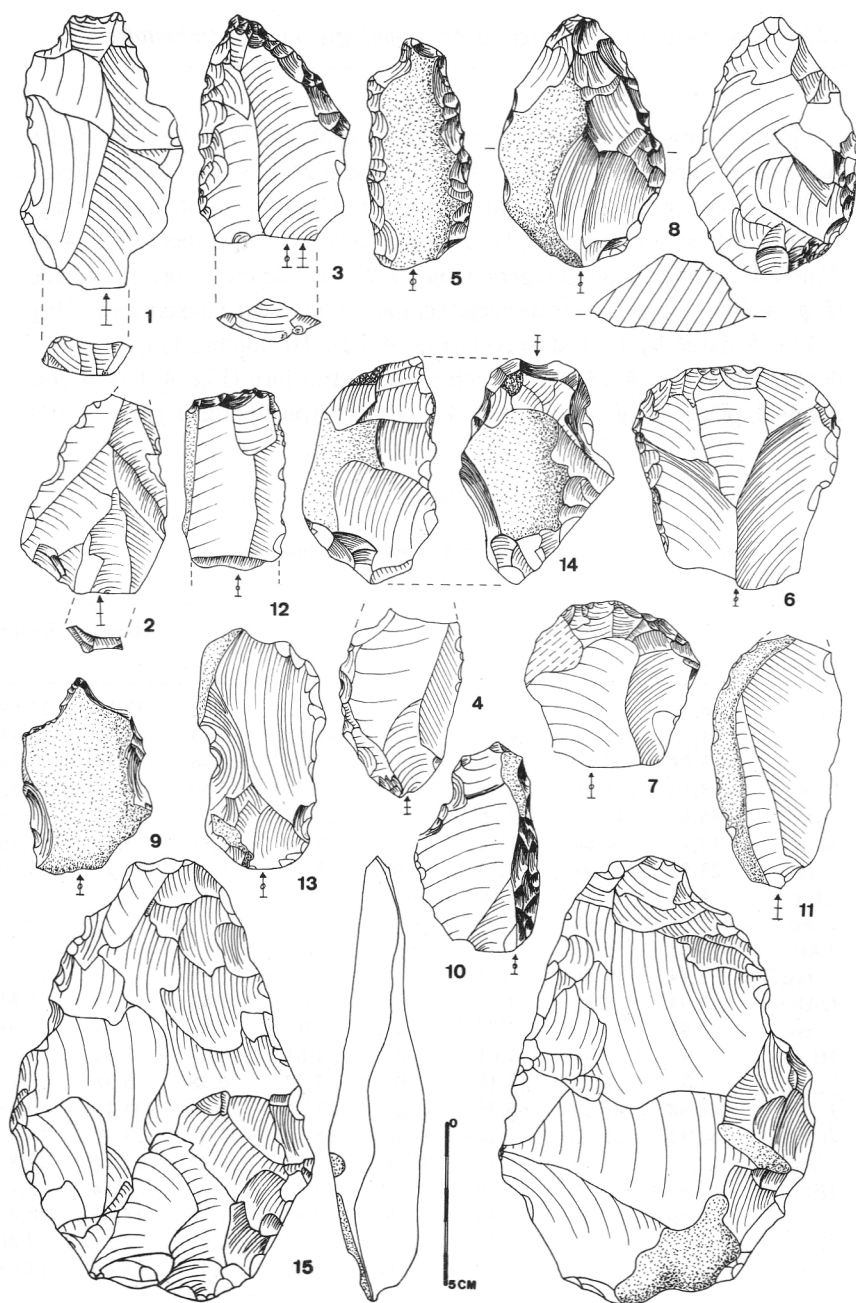


FIG. 3. — Tools of Group 2.

1 : Levallois flake ; 2 : Levallois point ; 3 : Mousterian point ; 4 : single convex side scraper ; 5 : double straight-convex side scraper ; 6 : "déjeté" (offset) scraper ; 7 : convex transverse scraper ; 8 : side scraper with thinned back ; 9 : borer ; 10 : atypical backed knife ; 11 : naturally backed knife ; 12 : truncated blade ; 13 : notch ; 14 : "rabot" (pushplane) ; 15 : oval-shaped handaxe.

Group 3 contains 562 artifacts on the whole. 474 of these are flakes, of which 25 are Levallois (Fig. 4:5). Of these 25 Levallois flakes there is only one tool: a Levallois point (Fig. 4:6). The other tools are: 1 single straight side scraper (Fig. 4:7), 3 single convex side scrapers (Fig. 4:8), 2 double convex side scrapers (Fig. 4:9), 1 "déjeté" (offset) scraper (Fig. 4:10), 1 concave transverse scraper, 1 atypical backed knife (Fig. 4:11), 5 naturally backed knives (Fig. 4:12), 10 notches (Fig. 4:13), 2 denticulates (Fig. 4:14), 2 retouches on ventral face (Fig. 4:15), 4 end-notched pieces (Fig. 4:16) and 4 "rabots" (pushplanes) (Fig. 4:17).

TABLE 3

Technical and typological indexes

	Coll. Verheyleweghen			Solesmes		Busigny	Hamel	Rissori
	3	2	1	bl	v + n			
LI	6,66	7,27	16,88	2,34	5,75	24,72	32,17	23,59
FI	14,35	25,31	39,34	34,22	44,56	44,53	42,04	26,54
FIr	7,94	18,57	28,69	22,81	27,31	41,06	36,93	23,28
Lam.I	9,19	8,24	12,45	4,69	7,98	17,40	26,72	16,32
TyLI	40,98	47,32	63,20	3,07	21,31	10,41	34,14	40,66
SI r.	13,11	10,68	11,32	18,61	26,22	37,97	26,38	17,46
ess.	23,52	23,33	33,33	40,00	37,20	51,47	48,37	35,58
CI r.	6,55	5,34	6,60	—	—	—	—	—
ess.	11,76	11,66	19,44	—	—	—	—	—
TAIr.	1,63	6,66	8,77	—	—	—	—	—
ess.	2,94	14,06	22,72	—	—	—	—	—
UAIr.	2,94	3,81	1,85	0	0	1,88	3,32	1,81
ess.	2,94	8,33	5,55	0	0	2,55	6,09	3,68
HI r.	0	2,96	7,01	0	1,61	0,43	3,01	0
ess.	0	6,25	18,18	0	2,27	0,58	5,38	0
I r.	40,98	47,32	63,20	3,07	21,31	10,41	34,14	40,66
II r.	13,11	15,26	12,26	18,61	29,50	39,42	28,82	19,57
ess.	23,52	33,33	36,11	40,00	41,86	53,43	52,84	39,87
IIIr.	1,63	4,58	6,60	9,23	14,75	8,69	8,64	5,12
ess.	2,94	10,00	19,44	20,00	20,93	11,78	15,85	10,42
IV r.	3,27	0	0	4,61	1,81	6,95	2,21	7,80
ess.	5,88	0	0	10,00	2,70	9,43	4,06	15,95

LI : Levallois index ; FI : faceting index ; FIr : faceting index (restricted) ; Lam. I : laminary index ; TyLI : typological Levallois index ; SI : scraper index ; CI : Charentian index ; TAI : total Acheulean index ; UAI : unifacial Acheulean index ; HI : handaxe index ; I : Levallois group ; II : Mousterian group ; III : Upper Palaeolithic group ; IV : Denticulate group ; r. : real count ; ess. : essential count.

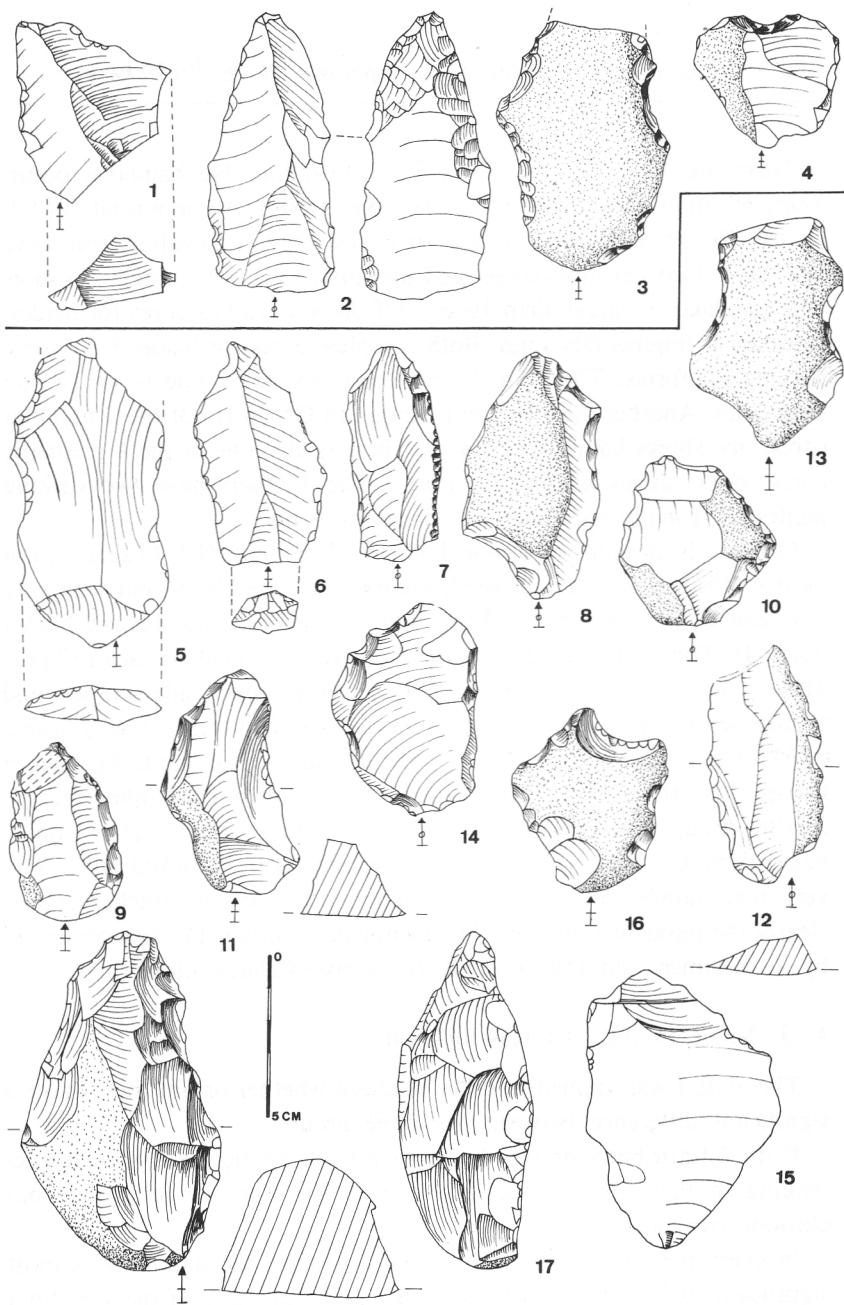


FIG. 4.

Tools of Group 2.

1 : pseudo-Levallois point ; 2 : elongated Mousterian point ; 3 : notch ; 4 : end-notched piece.

Tools of Group 3.

5 : Levallois flake ; 6 : Levallois point ; 7 : single straight side scraper ; 8 : single convex side scraper ; 9 : double convex side scraper ; 10 : "déjeté" (offset) scraper ; 11 : atypical backed knife ; 12 : naturally backed knife ; 13 : notch ; 14 : denticulate ; 15 : retouch on ventral face ; 16 : end-notched piece ; 17 : "rabot" (push-plane).

There are 48 blades, of which 7 are Levallois. No handaxes occur. There are more cores than in the two other groups: 40 on a total of 562. Of the 10 Levallois cores, 6 are for flakes. Only 1 Levallois core gave one flake. Two Levallois cores are fragmentary ones. No single Levallois core for flakes is larger than 10 cm. Of the 4 Levallois cores for blades, there are 2 fragmentary ones. Both complete cores for blades have three striking platforms. There are 11 discoid cores. Only one is worked on both sides. Another discoid core is reused in Group II. Of the 3 globular cores, one shows hammering traces. There is also one of the 4 prismatic cores which shows hammering traces. The 3 others have two striking platforms. Finally there are 12 shapeless cores.

Group 3 is an industry of non-Levallois Technique (LI) (Table 3), not faceted (FI) and with a very small number of faceted butts, but with very rare convex-dihedral butts (FIr), with a moderate number of blades (Lam. I). This group belongs to the industries of Levallois facies (TyLI) with a few scrapers (SI), with very little single convex side scrapers and transverse scrapers. Typical and atypical backed knives are very scarce (UAI and TAI) but there is a moderate number of naturally backed knives. The Mousterian Group (II) wins clearly from the other characteristic groups but contains exclusively side scrapers. The Upper-Palaeolithic Group (III) consists only of one atypical backed knife. The very high number of notches is striking. The Clacton notches exceed clearly the retouched notches. The Denticulate Group (IV) is represented by 2 specimen and thus exceeds the Upper-Palaeolithic Group.

4. 3. Value of the first classification.

The χ^2 -test was applied in order to check whether or not there exists a significant difference between the three groups.

If the 13 attributes on which the χ^2 -test was applied, are tabulated according to their significance level (Table 4), then the following conclusions can be drawn.

In every possible comparison of the 3 groups, the difference is most significant (0,1 %) for 5 attributes : B, e, F, frost, B/e. If the 1 % -limit is adopted, then another 2 attributes are added : Type of butts and Bh/eh. For 7 attributes the 3 groups belong to 3 different populations and thus the exactness of the first classification is confirmed. Moreover, 2 attributes : L and eh, have a significance of 0,1 % — so the highest — for the 3 of the 4 possibilities of comparison. Only for 2 attributes, Bh

and L/B, the difference is not significant ($> 10\%$). For these attributes, the 3 groups belong to the one and same population. The flaking angle seems to confirm the attribution of the 3 groups to 3 different populations rather than denying it. The attribute cortex points rather in the direction of one and the same population, like the attributes Bh and L/B.

TABLE 4
Results of the χ^2 -test

sign. level	Groups 1 + 2 + 3	Groups 1 + 2	Groups 2 + 3	Groups 1 + 3
0,1 %	L B e Type of butts F Frost eh A B/e Bh/eh	L B e Type of butts F Frost B/e Bh/eh	L B e F Frost eh B/e Type of butts Bh/eh Cortex	B e Type of butts F Frost eh A B/e Bh/eh
1 %				
5 %	Cortex	A		
10 %			A	L Cortex
$> 10\%$	Bh L/B	Cortex Bh eh L/B	Bh L/B	Bh L/B

The results of the description of all the artifacts generally confirm the correctness of the first classification. This classification based on the rolling the artifacts have undergone, corresponds therefore to a reality, so that the Collection Verheyeweghen comprises three groups.

To what extent is this difference noticeable when the tools only are taken in consideration?

At first sight the 3 diagrams of the real elementary cumulative diagram (Fig. 1) present an approximately identical picture, but the percentages of the different tool types of Group 3 increase when approaching Group 1. A first difference is to be found in the beginning of the diagrams. For the 3 groups the start is high. However, Group 1 has the highest percentage and Group 3 the lowest. The difference between Group 3 and Group 2 is small. The essential cumulative percentages and indexes have to be considered with some restriction because of the small number of the tools. Again, the similarities are obvious, although some differences have become clear.

As to the technical indexes, there is an increase from Group 3 to Group 1. As to the typological indexes, we observe about the same picture. Group 1 usually obtains the highest percentage, Group 3 the lowest. The characteristic groups present the same trend. As to the types of tools, there are a few differences to be noted. First, Group 2 has a high number of points when compared to Group 1 and Group 3. There is an increase of the number of the naturally backed knives from Group 3 to Group 1, but Group 2 has a somewhat smaller percentage than Group 3. There is a decrease of the number of notches from Group 3 to Group 1. The tools typical for the Upper-Palaeolithic increase from Group 3 to Group 1.

In spite of these differences, the similarities are important: high percentage of Levallois flakes, dominance of the Mousterian Group, a considerable number of blades, some rare or no handaxes, an important number of notches, a few points (with the exception of Group 2).

The description of the tools points to the important similarities between the three groups, which casts some doubt on the exactness of the first classification.

5. Comparisons ⁽²⁾

The best comparative data come from three sites in Northern France (Dép. du Nord): Solesmes (Sommé, Vaillant and Fagnart, 1972), Busigny (Tuffreau, 1972) and Hamel (Tuffreau, 1972) (Table 3).

Of the three groups from the Collection Verheyleneghen, only Group 1 shows some similarity with these three sites and then especially with

(2) For abbreviations, see table 3, p. 122.

Solesmes (v + n). The values for FI, FIr, SI, II and III present some resemblances. However there are striking differences : LI, TyLI and HI. For Group 2 and Group 3 the similarities are less obvious. Because of the small number of tools in the Coll. Verheyleweghen and in Solesmes (bl.: 65 ; v + n: 61), the essential percentages and indexes are not very trustworthy. Solesmes contains only 1 handaxe, Group 1 and Group 2 have more of them and therefore HI receives a higher value. The Coll. Verheyleweghen seems to contain few denticulates. The rolling of the artifacts makes it difficult to recognize this type of tool and therefore their percentage has to be considered with a certain caution.

The artifacts from the site Rissori (Belgium) (Adam and Tuffreau, 1973) can also be compared with those of the Coll. Verheyleweghen (Table 3). The values for FIr, Lam. I, SI, UAI, II and III show a striking similarity with these of Group 1. The values of LI, FI, TyLI, HI, I and IV are different however. Rissori presents also similarities with Group 2 for FI, FIr, II and III and with Group 3 for TyLI, HI and I. Rissori differs from the whole of the Coll. Verheyleweghen especially for LI, TyLI, HI and IV.

6. Conclusions

Considering all the flakes, the Coll. Verheyleweghen can be split into three groups. Considering only the tools, these three groups clearly show similarities. It seems impossible to assign each group to a well-defined industry, because of the small number of the tools. The same types of tools appear in each group. Due to the damaged condition of many artifacts it is difficult to identify certain types of tools. Yet it is possible to notice a certain evolution (going from Group 3 to Group 1) in the assemblage : the Levallois Technique is used more and more, the notches decrease in number, the naturally backed knives and the atypical backed knives increase gradually, the Upper-Palaeolithic tools become gradually more significant, the thickness of the flakes, the thickness of the butts, the flaking angle, the number of the plain butts and the number of the cortex-covered butts decrease gradually, on the contrary of the convex-dihedral and the faceted butts. Typical is also the decrease of the number of the flakes damaged by frost. As to the attribute "frost", which has the most important significance of all the attributes considered, we can also notice the following : independently from man the frost has affected the raw material the artifacts were made of. As flint was almost exclusively

used in each group, the difference in the presence of the frost traces in the artifacts is merely due to the intensity of the frost.

Thus, Group 3 suffered an intense frost period (or several frost periods) and Group 2 and Group 1 passed a frost period in which the frost activity grew weaker. As a result of this attribute the groups can be given a relative chronological order. The group which suffered most from the frost, is the oldest one : Group 3. The group which suffered less from the frost is the youngest : Group 1. Group 2 is to be placed between Group 3 and Group 1.

All this allows us to conclude that the Coll. Verheyleweghen contains three distinguishable groups of artifacts of which Group 3 is the oldest and Group 1 is the youngest.

The difference in rolling can also be explained as follows. Initially all artifacts may have belonged to the same find-spot. By erosion, the artifacts were moved, thus they became more or less rolled. This happened at Rissori, where all artifacts, in spite of the differences on stratigraphical position and physical appearance, were considered as one unit.

This could explain the important similarities of the tools between the three groups in the Coll. Verheyleweghen. However, we tend to consider the difference in rolling, the artifacts of the Collection show, as corresponding to a difference in age.

The stratigraphy of the site cannot teach anything new because spoken information reveals that the artifacts of the Collection came from the basal gravel of the Quaternary.

To ascribe each group of the Collection to a certain industry does not seem possible. It is merely possible to state that Group 1 shows certain similarity with Solesmes (v + n) which is classified as Typical Mousterian and that the Coll. Verheyleweghen as a whole shows similarities with Rissori which is classified as an Upper-Acheulean poor of handaxes or as a Premousterian of Saale-age.

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