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Upland settlement and technological aspects of the eastern ligurian Mesolithic

ABSTRACT

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The paper discusses the distribution of the mesolithic upland sites of Eastern Liguria, a region where the Apennine chain lie very close to the sea. One of the Late Mesolithic sites, located at 1,350 m a.s.l., yielded 240 cores. They are analysed, and compared with a smaller Early Mesolithic collection (31 cores).

Parole chiave: Appennino, nucleo, Olocene, Liguria Orientale, Mesolitico, prenucleo, insediamento d'altura.

Key words: Apennine, core, Holocene, Eastern Liguria, Mesolithic, precore, upland settlement.

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1. Foreword

During the Iron Age, several «Ligurian» tribes inhabited a fairly large territory that spread from the Arno River in northern Tuscany to the south, the Rhone river in southern France to the east, the Po river to the north. The *IX regio* of Italy, established by emperor Augustus, named *Liguria,* was perhaps smaller, but still a much wider area of land than the present-day political entity, which consists of a narrow strip of mountains facing the Gulf of Genoa, the seaport that determined the Medieval and Modern Ages history of the region.

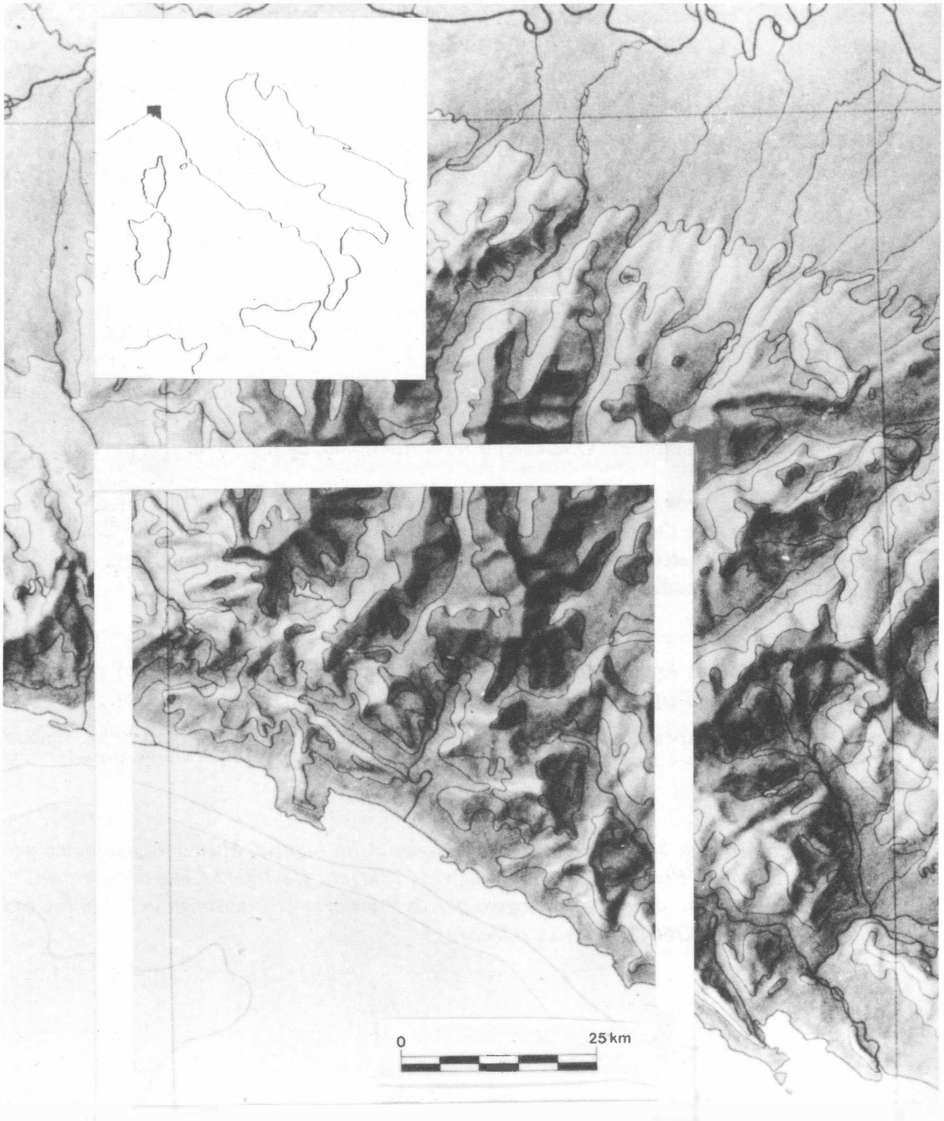

Fig. 1 - The investigated area in the northern Apennine.

The landscape is very hilly: it looks like a continuous chain of mountains, located to the north of the Tirrenian Sea and shaped as an arc, some 250 kms long from east to west. The city of Genoa is situated on the tip.

The seaward slopes drop steeply into the sea, leaving almost no coastal plain. In fact, most of the few, small and isolated coastal plains existing have been formed by colluvium mainly of post-Roman age. As far as geology and morphology are concerned, this arc-shaped region is subdivided into two quite different parts:

1) a western Bank, belonging to the «Alpi Marittime» part of the Alpine chain, mainly composed of calcareous rocks; mountains measure over 2,000 m a.s.l.
2) an eastern Bank, roughly coincident with the beginning of the Apennine chain, which continues direction south-east till the very end of the Italian peninsula.

Here ophiolithes and schist formations are dominant in a very complicated geological context, where reduced karstic morphologies appear only occasionally. In eastern Liguria, sea-facing slopes are even steeper and the coastal plains more restricted than on the western side, although relative mountain height is lower, reaching a maximum of 1,799 m a.s.l. (Monte Maggiorasca). The main watershed is in some cases situated at a very short distance from the sea (to a minimum of 25 kms), providing very short and steep valleys, with unreliable streams that flood easily or dry up according to rainfall variations.

Oriented with the vertex toward north, the arc-shaped chains of Ligurian mountains provide shelter against the cold winter winds blowing from the north, and at the same time act like a trap for warm and moist winds blowing from the south-east, leading an autumn and spring regime of light rains. Such aspects, in addition to the thermal-regulation effect of the sea, grant the maritime side of the coastal hills a very good climate, with warm winters, cool summers and moist mid-seasons. In fact, current average temperature and general climatic conditions, are both quoted among the best registered so far in the whole Italian peninsula. This does not apply to the highest reliefs of the main watershed, where winters are cold and snowy, similarly to many other mountain areas of the Apennine.

Where geological and pedological factors are compatible, such climatic conditions allow the growth of a dense and rather continuous woodland cover.

Due to the hilly morphology, to the dense woodland still covering a large part of the north-facing slopes, and to the widespread transformation of the south-facing slopes by centuries (millennia) of deforestation, erosion and terracing, the archaeology of the region is poor.

This is particularly evident in the case of Early Holocene remains, whose scarcity in the most densely populated areas is stressed by the postglacial rise of sea level that submerged former coastal areas.

Furthermore the valleys are filled by thick colluvial deposits that seal Early Holocene valley sites several metres below the present-day surface.

Therefore reliefs and mountain territories are the most favourable areas for archaeological investigation in the region.

In fact, several surveys and surface collections have been carried out over the last twenty years by Osvaldo Baffico, Augusto Nebiacolombo, Cesare Galimberti, Bruno Valli, Nadia Campana, Sergio Nicora and the authors in the central part of the eastern Ligurian Apennines. This research provided about sixty Holocene findings over an area of about 30 square kms. The study of site distribution gives useful information about the

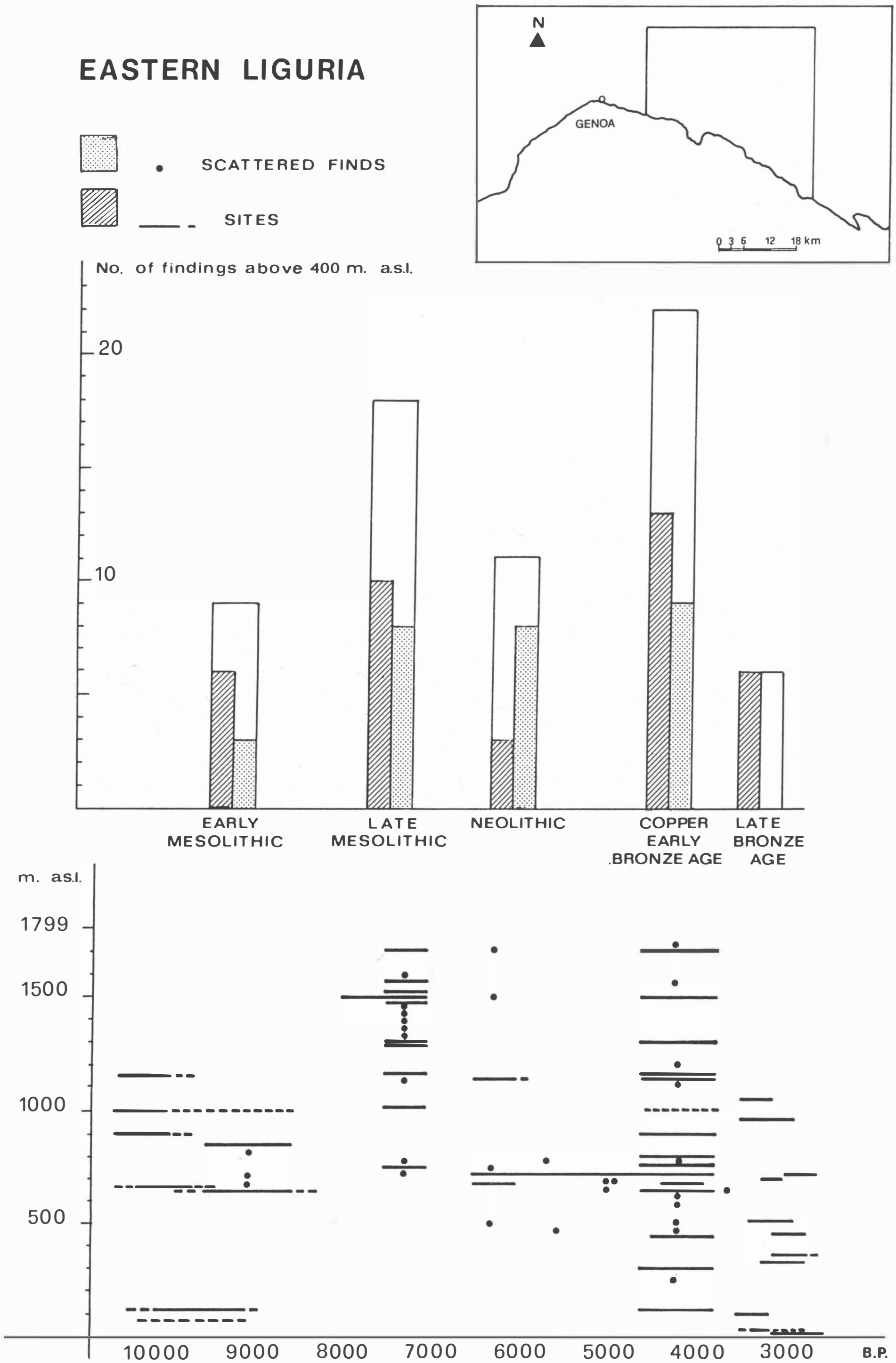

Fig. 2 - The location of finds according to chronology and altitude. Dots: scattered finds; lines: sites.

changes in upland settlement locations that occurred during the Holocene (fig. 2). For this purpose the finds have been subdivided into two main categories:

a) assemblages of differentiated tools of equal chronology, which may suggest differentiated activities carried out by a (even very small) group.

b) scattered tools, or just a few artefacts, which can be considered related to sporadic (unsystematic) visits.

Such findings are plotted in fig. 2, according to chronological and cultural order and to the height a.s.l. Type a) finds are represented as lines, type b) as dots. It appears that the evidence for human presence increased both in numbers and in altitudes of location of finds from the Early to the Late Mesolithic. This was then followed by a sharp decrease during the Neolithic and by a subsequent new increase during the Copper Age, attributed to the introduction of pastoral economy at high altitude (Maggi & Nisbet, 1991).

2. Location of mesolithic sites

Fig. 3 illustrates the location of the major Mesolithic and Neolithic finds. Rhombs represent Early Mesolithic, triangles the Late Mesolithic and asterisk the Early Neolithic.

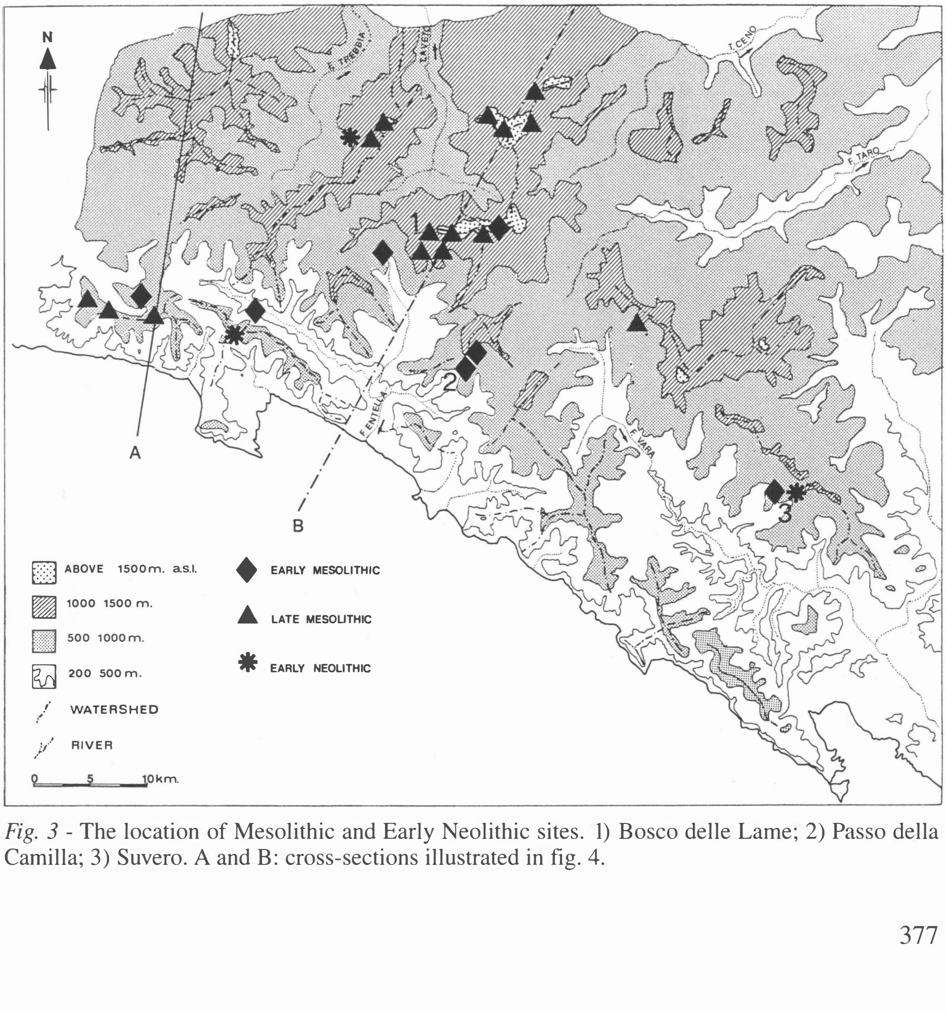

Fig. 3 - The location of Mesolithic and Early Neolithic sites. 1) Bosco delle Lame; 2) Passo della Camilla; 3) Suvero. A and B: cross-sections illustrated in fig. 4.

Only two of the Mesolithic sites, both of them situated in valley bottom, have been excavated so far; all the others are known thanks to surface collections. No radiocarbon dates are available, nor are faunal remains preserved. The chipped assemblages are attributable either to the Sauveterrian or the Castelnovian lithic traditions on a typological base (Biagi & Maggi, 1983). As is well known, radiocarbon chronology of both the eastern alpine chain and the northern Tuscany Apennines, indicate that the Sauveterrian aspects initiated shortly after 10,000 BP, that the transition to the Castelnovian industry took place around 7,800-7,600 BP, and that the latter aspect endured in some areas until around 6,500 BP (Alessio *et alii,* 1983).

The continuous and the dotted-and-dashed lines mark two cross-sections, whose profiles (fig. 4) can be assumed to be representative of an ideal Apennine cross-section.

The pericoastal submarine profile is drawn according to bathimetric maps. It shows that at the beginning of the Holocene the coastal slopes were more gentle. It can be argued that this aspect, in addition to the climatic factor, provided favourable conditions for human settlement and subsistence during the Mesolithic; however, as already noted, the Early-Holocene coastal archaeology is probably lost due to the rise of sea level (Fanucci, 1987; Shackleton & Van Andel, 1985).

The highest mountain of this area and the main watershed are situated at a very short distance from the coast, that is around 25-30 kms. The coastal hills situated in be-

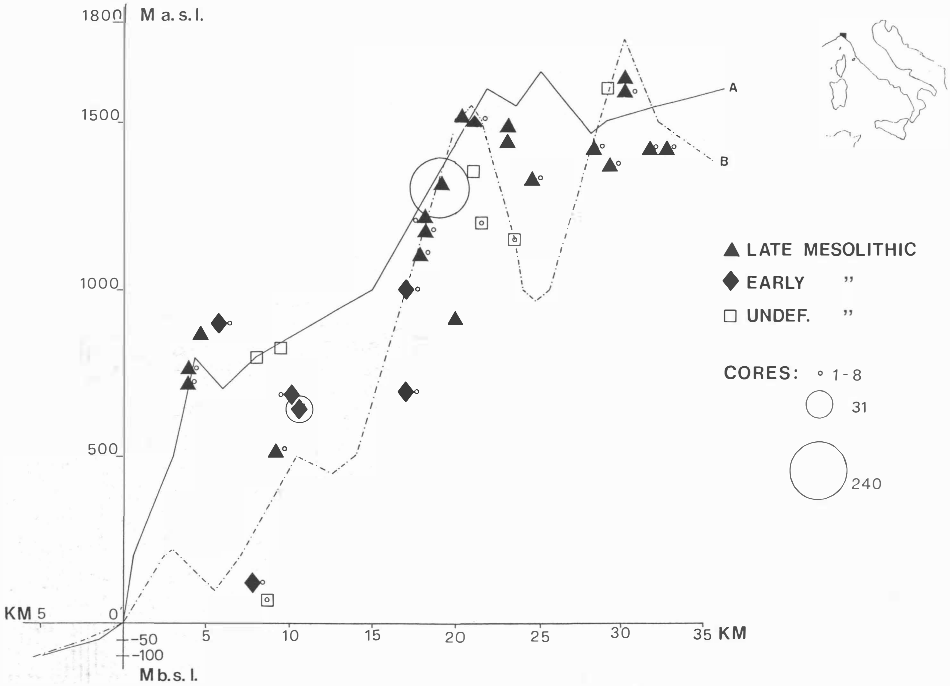

Fig. 4 - The location of Mesolithic sites in relation to distance from the sea and height above sea level. A and B: cross-sections of the apenninic chain.

tween, generally follow a direction parallel to the coast (see fig. 3). As shown by cross-section A, they can be very steep, reaching an elevation of some 7-800 m a.s.l. within 5 kms or so.

The proximity of relatively high mountains to the sea, can also be interpreted as a factor favourable to a Mesolithic economy, since maritime/coastal and mountain resources laid within a very short distance, that is, a few hours from the coast to the top of the closest hills, and 1-2 walking days to the major mountains. In fact evidence of Mesolithic occupation is quite relevant. The location of finds are plotted in fig. 4 according to height (in metres) and to the distance from the sea (in kms.), against the profile of the two cross-section marked in fig. 3. It can be observed that the mountain Sauveterrian finds cluster in an area that does not exceed 1,000 m a.s.l. and is situated between 6 to 18 kms from the sea. Castelnovian sites are markedly more numerous. They are present on the top of the highest coastal hills, but most of them cluster at higher altitude on the reliefs of the main Apenninic watershed, between 1,100 to 1,650 m a.s.l. and at 16 to 33 kms from the sea.

As discussed elsewhere (Maggi & Garibaldi, 1986; Biagi *et alii,* 1987) Mesolithic communities of eastern Liguria exploited local jasper and flint for chipping their artefacts. Jasper and flint outcrops are widespread not far away from many of the Mesolithic sites. Thus, raw material for chipped artefacts was of relatively easy access, either as slabs directly from the outcrop, or as pebbles from rivers and beaches.

In fig. 4, the number of cores recovered from each site is also plotted. Most of the locations yielded less than 8 cores each or none. A larger number of such items have been found only in two localities.

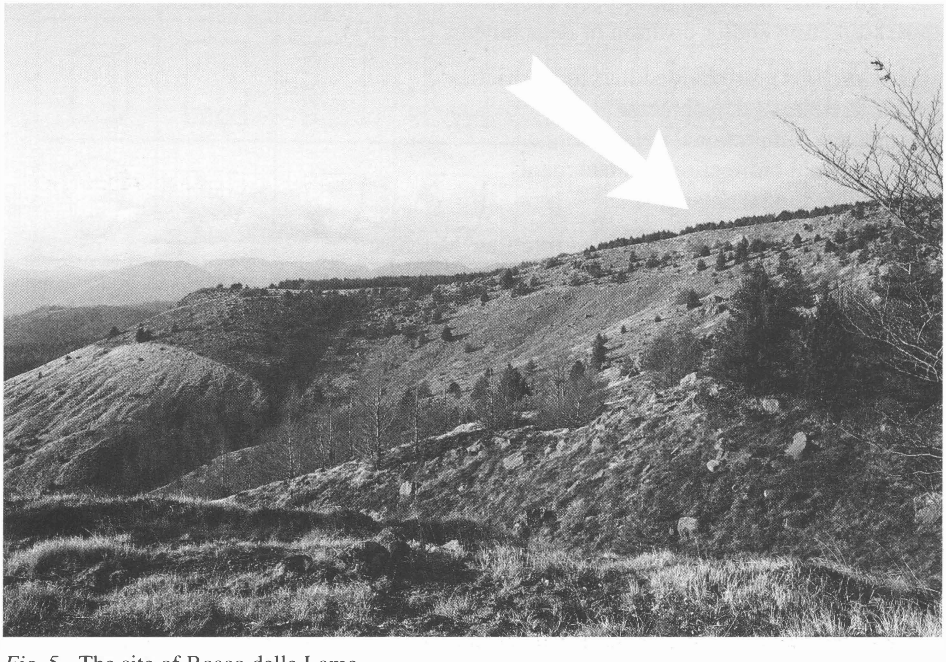

Fig. 5 - The site of Bosco delle Lame.

One is Passo della Camilla, located near a pass at 720 m a.s.l. The industry comprises 31 cores and about five hundred artefacts mainly belonging to the Sauveterrian lithic tradition (Biagi & Maggi, 1983). The other is Bosco delle Lame, located on a crest at about 1,350 m a.s.l., with 240 cores out of about 1,800 artefacts mainly belonging to the Castelnovian.

To the knowledge of the authors, the one of Bosco delle Lame is the largest collection of cores known so far in the italian Mesolithic. The location in the mountains at some 1,350 m of height a.s.l., within a group of high altitude Castelnovian sites is also worth noting (fig. 5).

Similarly, Passo della Camilla is situated within the mountain area exploited by the Early Mesolithic communities. It has also to be stressed that neither Passo della Camilla, nor Bosco delle Lame lie in the proximity of a flint or jasper outcrop.

3. Analyses of the cores collected at Bosco delle Lame and Passo della Camilla

3.1. Modes of classification

The present approach to the classification of the core assemblages of Passo della Camilla and Bosco delle Lame employ some of the criteria introduced by Broglio & Kozlowski (1983) in their study of the cores from the Mesolithic site of Romagnano III (Trento - N.E. Italy). In addition, because of some particularities of our collections, a few further variables have been adopted, having in mind also the work of Braconi *et alii* (1986, p. 22) concerning the Palaeolithic cores of Forchione.

Cores and precores have been classified within categories according to: 1) shape, and 2) direction and/or position of detachments (fig. 6/1).

- *prismatic* (PR), subdivided into four varieties:
A) unidirectional detachments
B) opposite bidirectional detachments
C) orthogonal bidirectional detachments
D) polydirectional detachments

- *pyramidal* (PY), again subdivided into four varieties:
A) unidirectional detachments
B) opposite bidirectional detachments
C) orthogonal bidirectional detachments
D) polydirectional detachments

- *oval* (OV), subdivided into five varieties:
A) planoconvex with detachments located on the plane surface
B) planoconvex with detachments located on the convex surface
C) planoconvex with bifacial detachments
D) biconvex with detachments on one single surface
E) biconvex with bifacial detachments

- *globular* (GL)

- *irregular* (IR)

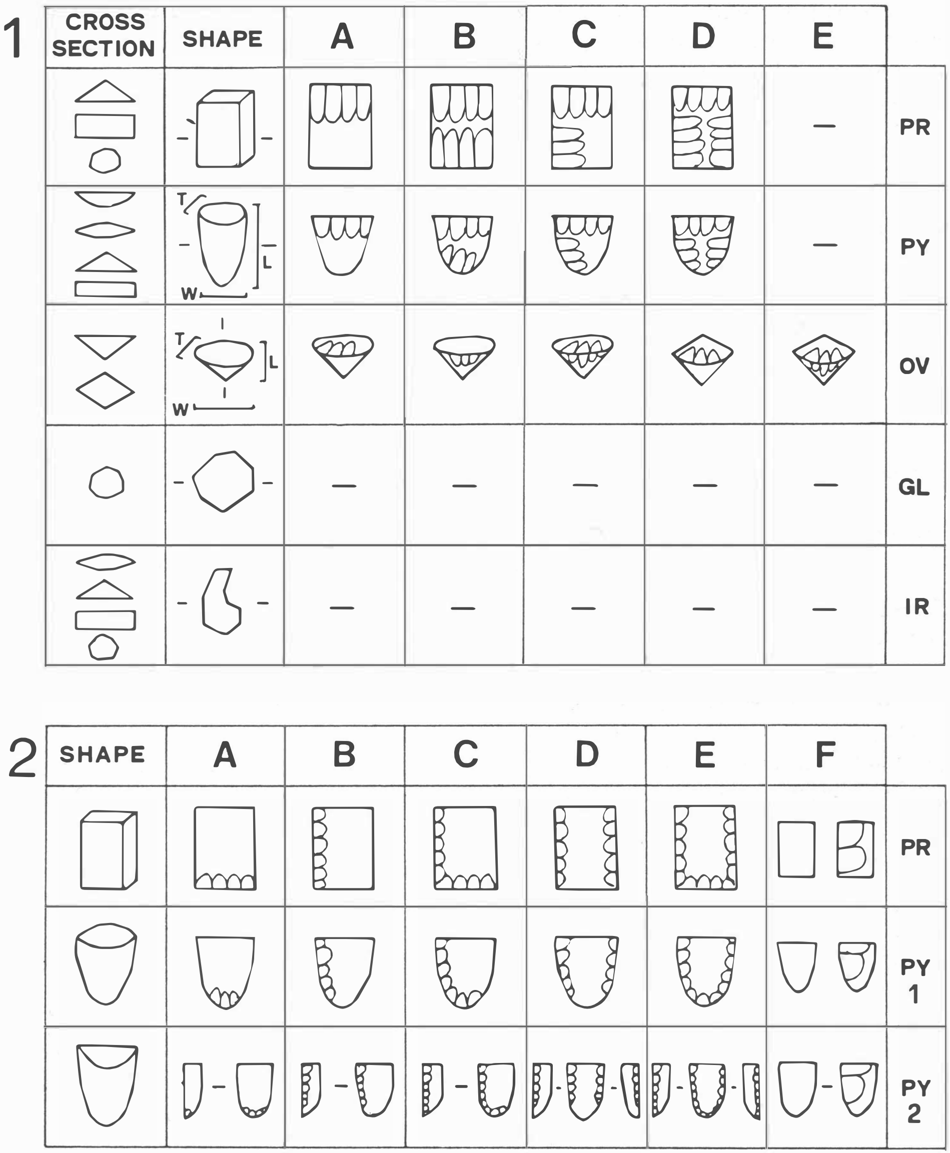

Fig. 6 - 6/1: Scheme of cores categories. See chapter 3.1 for explanation. 6/2: scheme of modes of preparation. See chapter 3.3.

3.2. Criteria for the description

For the description, prismatic, globular and irregular cores are positioned according to the axis of major length, with the largest surface in front of the operator. Pyramidal and oval cores are oriented with the convex surface facing down.

The distinction between pyramidal and oval planoconvex is defined by the ratio between the parameters of thickness and length (fig. 6/1):
thickness / length < 1.2 = pyramidal
thickness / length = > 1.2 = oval planoconvex

Furthermore, the following analytical features have been investigated (fig. 6, tables 1 and 2):

- *section:*

biconvex	(BC)
planoconvex	(PC)
triangular	(TR)
quadrangular	(QU)
polyhedral	(PO)

The profile of the section considered is the transversal one for prismatic, pyramidal, globular and irregular cores, and the longitudinal one for oval cores.

- *striking platform:*

faceted	(F)
plain	(P)
natural	(N)

- *flakes/blades production:*

flakes only	(F)
more flakes than blades	(FB)
more blades than flakes	(BF)
blades only	(B)

- *direction (1), location (2) of detachments and (if bidirectional) their orientation (3):*
1 - unidirectional (U), bidirectional (B), polydirectional (P)
2 - unifacial (U), bifacial (B), polyfacial (P)
3 - bidirectional opposite (OP), bidirectional orthogonal (OR)

- *blank:*

slab	(L)
pebble	(P)
undeterminable	(U)

It is obvious that the kind of blank can be determined only if the original cortex is partially preserved. Cortex of a slab, directly supplied from the rock outcrop, is generally recognizable from the weathered surface of a pebble gathered from a river bank or from a beach. Pseudo-cortexes sometimes occur; they are due to quartzose veins occurring in the jasper and were often utilized as natural striking platforms.

- *raw material:*

dark red jasper	(RJ)
green jasper (sometimes with grey/yellow touches)	(GJ)
undefined siliceous material, coarse grain, orange colour	(OSM)
flint	(F)

- *dimensions*

- *weight*

Table 1 - Cores from Passo della Camilla.

Record	TYPE	SHAPE	SECTION	CATEGORY	PREPAR_	STRIK_PLA_	PRINT_DET_	DI_LO_OR_	BLANK	RAW_MATER_	LENGTH	WIDTH	THICKNESS	WEIGHT	NUMBER
1	C	PR	QU	A	-	P	F	U-U	U	RJ	24	23	17	9	12
2	C	PR	QU	A	B	P	BF	U-U	U	RJ	15	14	13	4	22
3	C	PR	QU	A	-	N	FB	U-U	L	F	27	25	11	5	14
4	C	PR	QU	A	-	N	BF	U-B	L	RJ	62	42	31	92	1
5	C	PR	QU	A	-	P	BF	U-U	U	RJ	22	19	10	5	16
6	C	PR	QU	A	A	N	FB	U-B	L	RJ	28	29	15	14	6
7	C	PR	QU	B	-	N	FB	B-P-OP	U	RJ	24	14	11	5	26
8	C	PR	PO	B	-	FP	FB	B-P-OP	L	RJ	19	18	14	7	28
9	C	PR	QU	D	-	FP	FB	P-P	L	RJ	26	25	15	11	25
10	C	PY	BC	A	B	P	F	U-U	U	RJ	27	18	10	5	17
11	C	PY	BC	A	-	P	F	U-B	L	RJ	22	35	25	17	11
12	C	PY	BC	A	-	FP	BF	U-B	U	RJ	13	20	15	4	31
13	C	PY	TR	A	B	P	FB	U-B	U	GJ	16	17	14	4	21
14	C	PY	TR	A	-	N	F	U-B	L	RJ	27	28	23	17	10
15	C	PY	QU	A	F	-	B	U-U	L	RJ	25	23	11	7	24
16	C	PY	QU	A	-	N	FB	U-B	L	RJ	17	21	17	7	30
17	C	PY	QU	A	A	P	BF	U-U	L	RJ	22	21	13	5	18
18	C	OV	PC	B	-	FP	F	B-U-OR	P	RJ	30	23	11	8	19
19	C	OV	PC	B	-	FP	F	B-U-OP	P	RJ	23	60	33	41	2
20	C	OV	PC	B	-	P	FB	P-U	U	RJ	13	26	22	6	29
21	C	OV	PC	B	-	FP	F	U-U	U	RJ	12	21	17	3	23
22	C	OV	PC	C	-	FP	F	P-B	L	RJ	13	21	20	5	15
23	C	OV	PC	C	-	FP	F	P-B	U	RJ	14	25	19	7	13
24	C	OV	PC	C	-	FP	FB	P-B	L	RJ	9	17	17	3	27
25	C	OV	BC	D	-	FP	FB	B-U-OP	U	RJ	14	20	20	5	20
26	C	OV	BC	E	-	FP	F	B-B-OP	L	RJ	12	31	27	12	9
27	C	OV	BC	E	-	FP	FB	P-B	L	RJ	16	31	25	10	8
28	C	OV	BC	E	-	FP	F	B-B-OR	L	RJ	18	29	27	17	7
29	C	OV	BC	E	-	FP	F	P-B	P	RJ	15	35	27	17	5
30	C	OV	BC	E	-	FP	F	P-B	P	RJ	15	35	34	14	4
31	C	IR	QU	-	-	P	F	U-U	L	RJ	45	34	15	19	3

Keys:
- TYPE: pre-core (P), core (C);
- SHAPE: prismatic (PR), pyramidal (PY), oval (OV), globular (GL), irregular (IR);
- SECTION: biconvex (BC), planoconvex (PC), triangular (TR), quadrangular (QU), polyedral (PO);
- CATEGORY: see chapter 3.1 and fig.6/1;
- MODES OF PREPARATION (PREPAR_): see chapter 3.3 and fig.6/2;
- STRIKING PLATFORM (STRIK_PLA_): faceted (F), plain (P), natural (N);
- PRINTS OF DETACHMENTS (PRINT_DET_): flakes only (F), more flakes than blades (FB), more blades than flakes (BF), blades only (B);
- DIRECTION (1), LOCATION (2) OF DETACHMENTS AND, IF BIDIRECTIONAL, THEIR ORIENTATION (3) (DI_LO_OR_):
  1 - unidirectional (U), bidirectional B), polydirectional (P)
  2 - unifacial (U), bifacial (B), polyfacial (P)
  3 - bidirectional opposite (OP), bidirectional orthogonal (OR)
- BLANK: list (L), pebble (P), undeterminate (U);
- RAW MATERIAL (RAW_MATER_): dark red jasper (RJ), green jasper (GJ), orange coarse grain chert (OSM);
- LENGTH, WIDTH, THICKNESS: in millimetres;
- WEIGHT: in grams;
- NUMBER: inventory number.

Table 2 - Cores from Bosco delle Lame. Keys: see table 1.

Record	TYPE	SHAPE	SECTION	CATEGORY	PREPAR_	STRIK_PLA_	PRINT_DE T_	DI_L O_OR_	BLANK	RAW_MATER_	LENGTH	WIDTH	THICKNESS	WEIGHT	NUMBER
1	P	PR	TR	-	E	-	-	-	L	RJ	31	24	14	11	48
2	P	PR	QU	-	B	-	-	-	L	RJ	25	20	15	10	159
3	P	PR	QU	-	C	-	-	-	L	RJ	29	20	12	9	222
4	P	PR	PO	-	E	-	-	-	L	RJ	35	31	18	18	54
5	P	PY	BC	-	E	-	-	-	U	GJ	24	25	16	9	165
6	P	PY	BC	-	F	-	-	-	P	F	15	20	15	4	127
7	P	PY	BC	-	E	-	-	-	U	RJ	23	20	12	5	61
8	P	PY	BC	-	E	-	-	-	L	GJ	29	37	12	13	79
9	C	PR	PO	A	B	P	F	U-P	U	RJ	30	27	17	15	124
10	C	PR	PO	A	A	N	F	U-U	U	RJ	24	19	18	10	133
11	C	PR	PO	A	-	N	FB	U-U	L	RJ	34	32	30	40	26
12	C	PR	QU	A	-	P	FB	U-U	U	RJ	19	13	10	3	237
13	C	PR	PO	A	-	F	F	U-U	L	RJ	72	59	44	237	2
14	C	PR	PO	A	-	N	B	U-U	P	RJ	60	39	33	95	28
15	C	PR	PO	A	-	P	FB	U-B	P	RJ	22	21	19	11	144
16	C	PR	QU	A	-	P	BF	U-U	L	RJ	35	30	26	36	52
17	C	PR	PO	A	-	FP	FB	U-P	L	RJ	20	19	18	8	206
18	C	PR	PO	A	-	N	FB	U-P	L	RJ	21	18	15	7	154
19	C	PR	QU	A	-	P	BF	U-B	L	RJ	33	25	23	34	18
20	C	PR	TR	A	E	P	FB	U-U	U	RJ	22	20	11	5	219
21	C	PR	QU	A	-	FP	FB	U-B	L	RJ	26	24	15	12	155
22	C	PR	PO	A	-	FN	BF	U-B	L	RJ	30	28	25	27	121
23	C	PR	QU	A	-	N	FB	U-B	L	RJ	35	32	31	49	97
24	C	PR	QU	A	-	P	BF	U-B	L	RJ	21	18	15	7	66
25	C	PR	TR	A	B	P	FB	U-U	U	GJ	37	29	25	18	174
26	C	PR	QU	A	-	N	F	U-U	L	RJ	26	17	13	7	163
27	C	PR	QU	A	-	N	F	U-U	L	RJ	42	34	23	47	42
28	C	PR	QU	A	-	P	BF	U-B	P	RJ	23	14	10	3	231
29	C	PR	QU	A	-	N	FB	U-P	L	RJ	31	30	29	32	25
30	C	PR	QU	A	-	FN	FB	U-B	U	RJ	16	13	11	2	239
31	C	PR	QU	A	F	F	BF	U-U	L	RJ	39	27	20	27	100
32	C	PR	QU	A	-	P	F	U-U	L	RJ	30	23	18	18	83
33	C	PR	QU	A	B	FP	F	U-P	P	GJ	22	22	20	11	96
34	C	PR	QU	A	-	FP	FB	U-P	U	RJ	22	17	12	6	226
35	C	PR	QU	A	-	N	BF	U-U	L	RJ	35	31	25	32	51
36	C	PR	QU	A	A	P	B	U-P	U	RJ	50	30	23	38	149
37	C	PR	TR	A	A	N	BF	U-U	L	RJ	47	40	28	62	35
38	C	PR	QU	A	-	FP	FB	U-B	L	RJ	33	29	21	29	7
39	C	PR	QU	A	-	FP	FB	U-U	L	RJ	21	20	17	8	166
40	C	PR	QU	A	-	F	F	U-U	L	GJ	38	30	27	50	34
41	C	PR	QU	A	-	F	B	U-U	U	RJ	22	16	11	3	233
42	C	PR	QU	A	-	P	BF	U-B	L	RJ	37	28	28	43	8
43	C	PR	QU	A	-	N	FB	U-U	L	RJ	82	70	42	237	1
44	C	PR	QU	A	-	N	F	U-U	L	RJ	55	44	32	105	31
45	C	PR	QU	A	-	N	F	U-U	L	RJ	46	46	28	64	6
46	C	PR	QU	A	-	F	F	U-U	L	RJ	55	44	31	113	27
47	C	PR	QU	A	B	P	BF	U-B	L	RJ	37	30	20	25	17
48	C	PR	QU	A	A	FP	BF	U-P	U	RJ	27	19	13	10	189
49	C	PR	QU	A	A	F	F	U-U	L	RJ	35	35	31	48	43
50	C	PR	QU	A	-	FP	FB	U-B	L	RJ	29	24	17	14	104
51	C	PR	TR	A	-	N	F	U-U	U	RJ	26	25	14	11	126
52	C	PR	QU	A	B	N	F	U-U	P	RJ	43	34	21	41	46
53	C	PR	QU	A	-	P	B	U-B	L	RJ	35	26	20	24	14
54	C	PR	QU	A	C	P	FB	U-U	L	RJ	36	20	15	12	187
55	C	PR	TR	A	-	FP	F	U-U	L	RJ	36	25	20	17	158
56	C	PR	TR	A	D	FN	BF	U-U	U	RJ	29	27	15	15	131
57	C	PR	TR	A	-	P	B	U-U	P	GJ	26	24	19	12	114
58	C	PR	QU	A	-	P	B	U-U	L	RJ	35	18	18	11	112
59	C	PR	TR	A	-	N	FB	U-U	P	RJ	29	22	10	7	168
60	C	PR	TR	A	E	F	BF	U-U	L	RJ	33	31	26	32	74
61	C	PR	TR	A	-	P	FB	U-U	L	RJ	30	26	17	14	90

Record	TYPE	SHAPE	SECTION	CATEGORY	PREPAR_	STRIK_PLA_	PRINT_DET_	DI_LO_OR_	BLANK	RAW_MATER_	LENGTH	WIDTH	THICKNESS	WEIGHT	NUMBER
62	C	PR	TR	A	-	P	F	U-U	U	RJ	20	18	16	6	151
63	C	PR	QU	B	C	P	BF	B-B-OP	L	RJ	20	19	15	7	130
64	C	PR	QU	B	F	FP	FB	B-U-OP	U	RJ	25	22	14	7	117
65	C	PR	PO	B	A	PN	BF	B-P-OP	L	RJ	48	45	40	118	32
66	C	PR	QU	B	-	FPN	BF	B-P-OP	L	RJ	22	17	15	7	57
67	C	PR	QU	B	-	PN	F	B-B-OP	L	RJ	35	25	17	20	87
68	C	PR	QU	B	-	FP	BF	B-B-OP	L	RJ	31	30	24	31	135
69	C	PR	QU	B	-	P	FB	B-B-OP	U	RJ	20	15	12	4	198
70	C	PR	QU	B	-	P	BF	B-B-OP	L	RJ	65	39	34	145	3
71	C	PR	QU	B	B	FP	B	B-U-OP	U	RJ	17	15	7	2	228
72	C	PR	QU	B	C	PN	FB	B-P-OP	L	GJ	37	31	23	24	40
73	C	PR	QU	B	-	PN	F	B-U-OP	L	RJ	37	26	20	20	12
74	C	PR	QU	B	-	N	FB	B-B-OP	L	RJ	34	33	20	29	53
75	C	PR	TR	B	-	P	FB	B-P-OP	L	RJ	30	21	20	14	145
76	C	PR	TR	B	-	P	FB	B-P-OP	U	RJ	23	20	16	8	225
77	C	PR	QU	B	C	FN	BF	B-B-OP	L	GJ	29	26	13	10	47
78	C	PR	TR	B	-	PN	F	B-U-OP	L	RJ	23	21	19	10	85
79	C	PR	QU	B	A	P	BF	B-P-OP	L	RJ	29	23	16	14	86
80	C	PR	QU	B	-	F	BF	B-U-OP	L	RJ	30	29	22	29	78
81	C	PR	QU	C	-	PN	F	B-B-OR	L	RJ	27	19	16	9	108
82	C	PR	TR	C	-	FP	F	B-B-OR	P	RJ	20	17	16	5	167
83	C	PR	TR	C	-	FPN	F	B-B-OR	U	RJ	19	19	13	5	229
84	C	PR	QU	C	B	PN	FB	B-U-OR	L	RJ	29	20	16	11	177
85	C	PR	QU	C	-	P	F	B-B-OR	L	RJ	21	18	12	6	67
86	C	PR	QU	C	-	PN	F	B-B-OR	L	RJ	65	60	40	182	29
87	C	PR	QU	C	-	FPN	BF	B-B-OR	U	RJ	17	16	14	3	161
88	C	PR	QU	C	A	P	FB	B-B-OR	U	GJ	27	20	13	9	115
89	C	PR	QU	C	-	FPN	F	B-B-OR	L	RJ	28	19	14	7	205
90	C	PR	QU	C	-	P	F	B-P-OR	U	RJ	19	19	14	6	150
91	C	PR	QU	D	-	FP	BF	P-P	U	RJ	20	14	12	3	227
92	C	PR	QU	D	-	FP	FB	P-P	U	RJ	25	19	16	10	180
93	C	PR	QU	D	-	FP	FB	P-P	U	RJ	19	18	15	6	147
94	C	PR	QU	D	A	FP	FB	P-P	U	RJ	25	22	16	10	136
95	C	PR	PO	D	-	PN	F	P-B	L	RJ	57	51	36	119	5
96	C	PR	PO	D	-	P	F	P-P	L	RJ	32	26	25	22	36
97	C	PR	QU	D	-	P	F	P-P	P	RJ	36	29	22	31	120
98	C	PR	QU	D	-	FP	F	P-P	L	GJ	32	25	17	16	181
99	C	PR	QU	D	-	FP	F	P-P	U	RJ	17	16	11	4	232
100	C	PR	QU	D	-	FPN	F	P-P	L	RJ	24	16	16	9	188
101	C	PR	QU	D	-	P	FB	P-P	U	RJ	20	17	11	5	201
102	C	PY	BC	A	-	N	FB	U-B	L	RJ	18	25	19	7	196
103	C	PY	BC	A	F	PN	FB	U-U	L	RJ	30	36	23	23	22
104	C	PY	BC	A	-	N	BF	U-B	L	RJ	22	29	21	13	45
105	C	PY	BC	A	A	P	FB	U-U	P	RJ	20	21	18	7	76
106	C	PY	BC	A	-	N	FB	U-B	L	RJ	22	32	20	16	171
107	C	PY	BC	A	A	P	BF	U-U	U	RJ	20	14	9	3	220
108	C	PY	BC	A	-	P	F	U-U	L	RJ	22	26	13	8	50
109	C	PY	BC	A	A	P	BF	U-U	U	RJ	24	25	20	14	20
110	C	PY	BC	A	-	P	FB	U-U	P	GJ	21	22	17	8	190
111	C	PY	BC	A	-	F	FB	U-B	L	RJ	30	42	34	34	11
112	C	PY	BC	A	-	F	FB	U-U	L	RJ	29	24	14	8	65
113	C	PY	BC	A	E	P	BF	U-U	U	RJ	28	28	15	12	193
114	C	PY	BC	A	-	FP	F	U-B	U	RJ	18	23	20	6	164
115	C	PY	BC	A	-	PN	FB	U-B	P	RJ	33	42	23	29	122
116	C	PY	BC	A	-	FP	F	U-B	L	RJ	24	15	13	5	216
117	C	PY	BC	A	D	PN	FB	U-U	L	RJ	27	24	15	8	21
118	C	PY	BC	A	C	FP	BF	U-U	U	RJ	18	19	13	5	211
119	C	PY	BC	A	C	FP	FB	U-U	L	RJ	23	33	17	15	162
120	C	PY	BC	A	B	P	BF	U-U	U	RJ	22	16	15	4	200
121	C	PY	BC	A	-	P	FB	U-B	L	RJ	22	26	15	8	142
122	C	PY	PC	A	C	P	F	U-U	U	RJ	30	24	18	9	186
123	C	PY	TR	A	-	P	FB	U-U	L	RJ	29	28	24	12	56
124	C	PY	BC	A	B	P	F	U-U	P	GJ	25	27	16	10	58

Record	TYPE	SHAPE	SECTION	CATEGORY	PREPAR_	STRIK_PLA_	PRINT_DET_	DI_LO_OR_	BLANK	RAW_MATER_	LENGTH	WIDTH	THICKNESS	WEIGHT	NUMBER
125	C	PY	QU	A	-	P	BF	U-B	P	RJ	30	27	21	23	132
126	C	PY	BC	A	B	FP	BF	U-B	U	RJ	26	33	27	22	24
127	C	PY	BC	A	-	F	FB	U-U	U	RJ	19	25	20	8	102
128	C	PY	PC	A	C	FP	B	U-U	U	GJ	28	23	13	7	182
129	C	PY	BC	A	-	P	F	U-B	L	RJ	22	35	25	18	107
130	C	PY	PC	A	A	P	FB	U-U	U	RJ	15	17	9	2	73
131	C	PY	PC	A	-	FP	FB	U-U	L	RJ	14	22	15	4	209
132	C	PY	QU	A	-	FP	FB	U-P	U	RJ	22	21	20	12	91
133	C	PY	TR	A	-	P	F	U-U	L	RJ	26	18	10	5	223
134	C	PY	PC	A	C	F	BF	U-B	L	RJ	19	18	16	7	70
135	C	PY	PC	A	A	F	BF	U-U	L	RJ	28	29	20	16	69
136	C	PY	PC	A	C	P	BF	U-U	U	RJ	21	16	14	4	82
137	C	PY	QU	A	-	P	BF	U-U	L	RJ	35	51	38	84	4
138	C	PY	PC	A	A	FP	FB	U-U	U	RJ	23	15	10	4	55
139	C	PY	PC	A	F	P	B	U-U	U	GJ	26	20	16	6	88
140	C	PY	TR	A	A	N	B	U-B	U	RJ	20	16	11	4	230
141	C	PY	BC	A	B	P	B	U-U	U	RJ	15	18	12	3	68
142	C	PY	QU	A	A	P	BF	U-U	L	RJ	45	52	40	99	30
143	C	PY	QU	A	A	FP	F	U-B	U	RJ	22	16	13	4	238
144	C	PY	TR	A	-	PN	BF	U-B	L	RJ	24	21	19	6	101
145	C	PY	BC	A	B	F	BF	U-U	L	RJ	26	27	15	11	64
146	C	PY	PC	A	C	N	BF	U-B	U	RJ	19	18	14	5	169
147	C	PY	QU	B	-	FP	BF	B-U-OP	U	GJ	27	25	13	9	146
148	C	PY	BC	B	-	PN	F	B-B-OP	U	GJ	24	21	13	8	179
149	C	PY	QU	D	A	FP	FB	P-P	U	RJ	20	21	17	7	81
150	C	PY	BC	D	-	FP	FB	P-B	U	RJ	15	20	16	5	207
151	C	PY	BC	D	C	FP	FB	P-B	U	RJ	16	22	13	5	71
152	C	OV	PC	A	-	P	F	B-U-OR	U	RJ	21	31	30	18	92
153	C	OV	PC	B	-	FP	FB	B-B-OR	L	RJ	14	26	20	6	111
154	C	OV	PC	B	-	P	F	B-B	U	RJ	15	23	19	5	113
155	C	OV	PC	B	-	P	F	P-U	P	GJ	12	26	20	6	172
156	C	OV	PC	B	-	P	F	P-U	U	RJ	10	24	22	5	153
157	C	OV	PC	B	-	PN	F	P-U	L	GJ	5	25	19	2	185
158	C	OV	PC	B	-	FP	BF	P-U	L	GJ	17	27	23	11	72
159	C	OV	PC	B	-	P	F	B-U	U	RJ	17	32	24	11	183
160	C	OV	PC	B	-	FP	BF	P-B	U	RJ	15	22	19	5	105
161	C	OV	PC	B	-	P	F	B-U-OR	L	RJ	14	25	18	4	59
162	C	OV	PC	B	-	N	F	B-U-OP	L	RJ	35	62	57	122	33
163	C	OV	PC	B	-	P	FB	P-U	U	RJ	12	20	16	4	234
164	C	OV	PC	B	-	P	F	P-U	U	GJ	11	35	29	8	148
165	C	OV	PC	B	-	FP	BF	P-U	U	RJ	14	21	18	5	199
166	C	OV	PC	B	-	P	F	U-U	U	RJ	12	22	18	5	103
167	C	OV	PC	B	-	FP	F	P-U	L	RJ	18	38	27	21	13
168	C	OV	PC	C	-	P	F	B-B-OR	L	RJ	11	28	28	8	23
169	C	OV	PC	C	-	FP	FB	P-B	L	GJ	14	23	20	5	77
170	C	OV	PC	C	-	FP	F	P-B	P	RJ	14	26	24	9	62
171	C	OV	PC	C	-	FP	F	P-B	U	RJ	8	26	21	4	236
172	C	OV	PC	C	-	FP	FB	P-B	U	GJ	15	23	22	6	221
173	C	OV	PC	C	-	FP	F	P-B	U	RJ	11	30	28	11	125
174	C	OV	PC	C	-	FP	F	P-P	U	RJ	14	20	18	6	218
175	C	OV	PC	C	-	FP	F	P-B	U	RJ	12	21	19	5	213
176	C	OV	PC	C	-	P	F	P-B	L	RJ	28	42	40	50	15
177	C	OV	PC	C	-	FP	FB	P-B	L	RJ	12	25	21	8	194
178	C	OV	PC	C	-	FP	F	P-B	U	RJ	12	17	17	4	224
179	C	OV	PC	C	-	PN	FB	P-B	U	RJ	12	21	21	4	217
180	C	OV	PC	C	-	PN	FB	P-B	U	RJ	10	23	21	5	137
181	C	OV	PC	C	-	P	F	P-B	U	RJ	15	30	30	13	110
182	C	OV	PC	C	-	FPN	F	P-B	L	RJ	14	33	29	12	98
183	C	OV	PC	C	-	FP	F	P-B	U	RJ	14	25	21	6	140
184	C	OV	PC	C	-	FP	FB	P-B	U	RJ	13	24	19	5	134
185	C	OV	BC	D	-	FP	FB	U-B	L	GJ	20	40	35	17	89
186	C	OV	BC	D	-	PN	F	P-U	U	RJ	12	21	16	4	160
187	C	OV	BC	D	-	P	F	B-U-OR	U	RJ	14	31	29	14	119

Record	TYPE	SHAPE	SECTION	CATEGORY	PREPAR_	STRIK_PLA_	PRINT_DET_	DI_LO_OR_	BLANK	RAW_MATER_	LENGTH	WIDTH	THICKNESS	WEIGHT	NUMBER
188	C	OV	BC	D	-	PN	FB	P-U	U	RJ	15	20	25	6	204
189	C	OV	BC	D	-	FP	F	U-U	U	RJ	14	26	22	7	170
190	C	OV	BC	D	-	PN	F	B-U-OP	L	RJ	12	20	16	4	106
191	C	OV	BC	D	-	FP	FB	B-U-OR	L	RJ	14	28	21	9	60
192	C	OV	BC	E	-	FP	FB	P-B	U	F	7	28	22	5	80
193	C	OV	BC	E	-	FP	F	B-B-OP	U	RJ	12	19	16	4	214
194	C	OV	BC	E	-	FP	F	P-B	U	RJ	16	25	22	7	129
195	C	OV	BC	E	-	FP	F	B-B-OP	U	RJ	12	18	17	3	143
196	C	OV	BC	E	-	FP	F	P-B	U	GJ	13	22	22	6	157
197	C	OV	BC	E	-	FP	F	P-B	U	RJ	17	26	25	9	141
198	C	OV	BC	E	-	FPN	F	P-B	U	RJ	11	24	20	5	95
199	C	OV	BC	E	-	FP	FB	P-B	P	RJ	16	32	21	12	109
200	C	OV	BC	E	-	PN	F	B-B-OR	P	RJ	11	30	24	9	44
201	C	OV	BC	E	-	FP	F	B-B-OR	U	RJ	14	29	24	7	173
202	C	OV	BC	E	-	FP	F	P-B	U	RJ	13	21	20	5	152
203	C	OV	BC	E	-	FPN	F	P-B	U	GJ	10	21	15	3	191
204	C	OV	BC	E	-	FP	F	P-B	U	RJ	13	23	18	6	128
205	C	OV	BC	E	-	FP	F	P-B	U	RJ	11	21	18	4	84
206	C	OV	BC	E	-	FP	FB	P-B	U	GJ	18	25	25	11	156
207	C	OV	BC	E	-	PN	F	P-B	L	F	10	15	14	2	210
208	C	OV	BC	E	-	PN	F	B-B-OP	L	RJ	14	29	22	8	195
209	C	OV	BC	E	-	P	BF	B-B-OR	U	RJ	9	25	20	4	197
210	C	OV	BC	E	-	FP	FB	B-B-OR	U	RJ	13	19	16	3	208
211	C	OV	BC	E	-	FP	FB	P-B	U	RJ	15	23	23	6	116
212	C	OV	BC	E	-	FP	F	P-B	U	RJ	20	34	30	19	63
213	C	OV	BC	E	-	FP	FB	P-B	U	RJ	11	21	21	5	118
214	C	OV	BC	E	-	FP	FB	P-B	L	RJ	10	26	21	4	75
215	C	OV	PC	E	-	FP	F	P-B	U	RJ	9	28	21	7	175
216	C	OV	BC	E	-	FP	FB	P-B	U	RJ	14	24	20	6	202
217	C	OV	BC	E	-	FP	FB	P-B	U	RJ	13	28	21	8	192
218	C	GL	PO	-	-	P	F	P-P	L	RJ	24	20	19	9	93
219	C	GL	PO	-	-	FPN	F	P-P	L	RJ	32	30	28	31	49
220	C	GL	PO	-	-	P	F	P-P	L	RJ	44	32	27	37	16
221	C	GL	PO	-	-	PN	F	P-P	L	RJ	22	20	17	8	203
222	C	GL	PO	-	-	P	F	P-P	U	RJ	17	17	16	6	19
223	C	GL	PO	-	-	PN	F	P-P	P	OSM	29	27	20	17	41
224	C	GL	PO	-	-	FP	F	P-P	U	RJ	18	15	12	3	240
225	C	GL	PO	-	-	P	F	P-P	L	RJ	54	47	40	115	10
226	C	GL	PO	-	-	FP	F	P-P	U	RJ	22	20	18	8	215
227	C	GL	PO	-	-	FP	F	P-P	U	GJ	26	24	20	10	178
228	C	IR	PO	-	-	P	F	U-U	L	RJ	53	30	25	40	138
229	C	IR	PO	-	-	P	F	P-P	U	RJ	44	25	22	21	139
230	C	IR	BC	-	-	FP	F	U-B	P	RJ	34	26	17	16	99
231	C	IR	PO	-	-	P	F	U-U	L	RJ	47	45	31	53	9
232	C	IR	PO	-	-	PN	F	U-U	L	RJ	28	18	20	5	94
233	C	IR	PO	-	-	P	F	B-B-OP	P	OSM	38	30	16	19	39
234	C	IR	PO	-	-	P	FB	U-U	L	RJ	25	15	12	5	212
235	C	IR	PO	-	-	PN	F	B-B-OP	L	GJ	48	42	21	36	38
236	C	IR	QU	-	-	FP	F	U-U	L	GJ	54	45	21	43	123
237	C	IR	QU	-	-	N	F	U-U	P	GJ	31	26	12	8	176
238	C	IR	QU	-	-	P	F	U-B	L	RJ	37	20	20	18	184
239	C	IR	QU	-	-	P	F	B-B-OR	L	RJ	61	42	21	69	37
240	C	IR	TR	-	-	PN	F	B-U-OP	U	RJ	25	15	7	2	235

3.3. Pre-cores and core preparation

Eight specimens from Bosco delle Lame have been recognised as pre-cores because of the occurrence of only a few *sommaire*-to-flat flakings. They are pyramidal or prismatic in shape. Similar *sommaire*-to-flat chipping evidence also occur on «true» cores of the correspondent categories, thus we can argue that the eight specimens isolated so far, really represent the initial stage of chipping process.

Concerning the oval cores, we are not able to make a distinction between an oval core with only flake detachments, from its pre-precore, since the flaking technique is the same.

Different modes of core preparation can be recognized (figs. 6/2 and 7/4):
A) basal chipping
B) lateral chipping
C) basal and lateral chipping
D) bilateral chipping
E) basal and bilateral chipping
F) large flaking on the surface opposite to that exploited

The most frequent modes of preparation are that with basal flaking (A) and that with lateral flaking (B) (fig. 7/4). The former gives some of the cores an «end-scraper» shape. The latter implies sometimes the adoption of the so-called «technique du nucleus a crete» (Tixier *et alii,* 1980, pp. 82-83), as confirmed by the finding of a few of bladelets and microbladelets with triangular «a crete» section.

3.4. Cores

As already pointed out the Castelnovian site of Bosco delle Lame yielded 240 cores (including 8 pre-cores), while 31 were gathered from the Sauveterrian site of Passo della Camilla. They are listed on tables 1 and 2, following the criteria for description outlined above.

At Bosco delle Lame 40% of the cores are prismatic; pyramidal and oval count around 25%; globular and irregular are below 10% (fig. 7/1). As shown by fig. 7/2 the categories of pyramidal and of prismatic with unidirectional detachments (PY-A, PR-A) are the most common, followed by the oval biconvex with bifacial detachments (OV-E).

Due to the low number of specimens, statistical analysis of Passo della Camilla is less reliable; however, it is worth noting that frequencies are generally comparable to those of Bosco delle Lame.

The most common striking-platform type is plain, usually prepared by removing large flakes (fig. 7/3). The measurements of unretouched artefacts indicate that the production of blades was more common at Bosco delle Lame than at Passo della Camilla (fig. 8). This is also reflected by the scarce leftovers on the cores (fig. 7/5). Cores were mainly obtained from slabs, those from pebbles are less common, about 40% are undetermined (fig. 7/6).

The raw material confirm the evidence from the assemblages discussed elsewhere (Biagi & Maggi, 1983; Biagi *et alii,* 1987; Maggi & Garibaldi, 1986): dark-red jasper is by far the most common lithotype exploited so far. The orange coarse-grain chert is present only at Bosco delle Lame. Due to its poor quality, it is probably a local resource, very close to the site. Flint is very scarce. It is considered to be «apenninic», that is, local in a regional sense (fig 7/8).

Most of the cores are markedly small: between 5 to 10 grams in weight at Bosco delle Lame, and between 3 to 5 at Passo della Camilla (fig. 7/7).

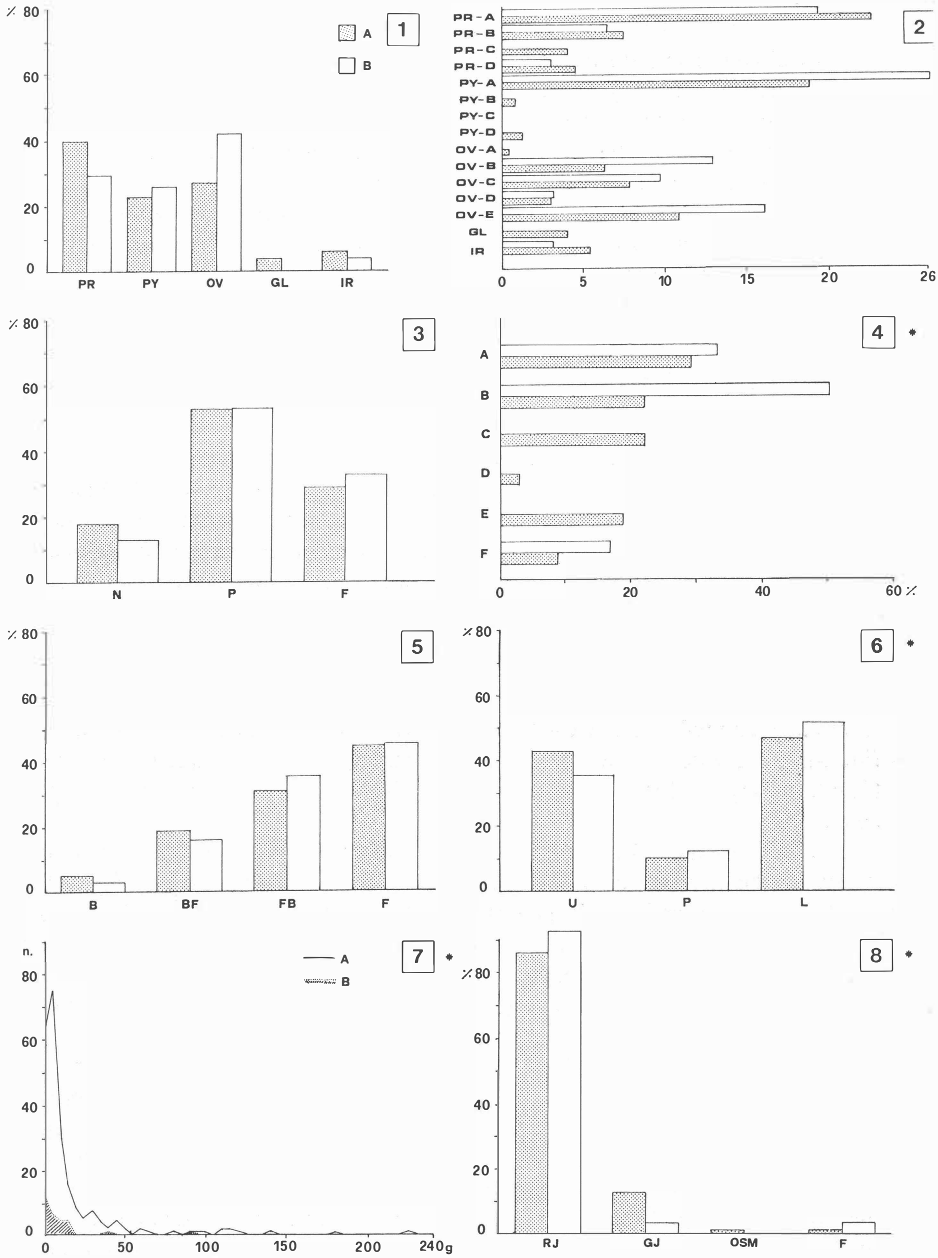

Fig. 7 - dotted = Bosco delle Lame; white = Passo della Camilla. 7/1: percentage of cores according to shape. 7/2: percentage of cores categories (see chapter 3.1 and fig. 6/1). 7/3: types of striking platform; N = natural, P = plain; F = faceted. 7/4: modes of cores preparation (see chapter 3.3 and fig. 6/2). 7/5: percentages of different kinds of scars; B = blades, BF = more blade than flakes; FB = more flakes than blades; F = flakes. 7/6: type of blanks; L = slab; P = pebble; U = undeterminable. 7/7: weight of cores; dashed area = Passo della Camilla. 7/8: percentages of raw material; RJ = dark red jasper; GJ = green jasper; OSM = orange coarse grain chert; F = flint. * = precores also counted.

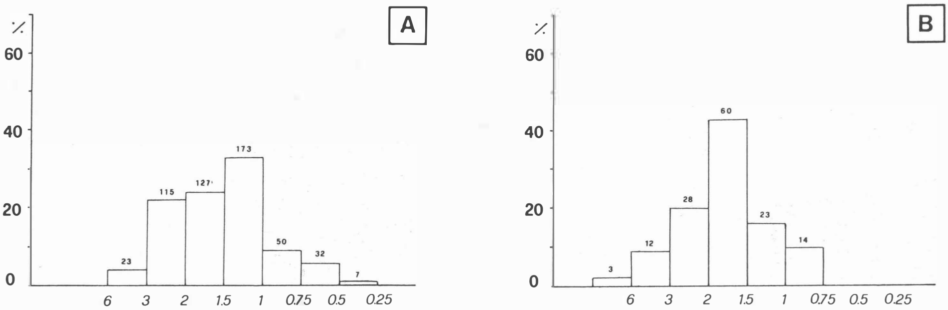

Fig. 8 - Lenght/width diagram of unretouched artefacts from Bosco della Lame (A) and Passo della Camilla (B).

3.5. Discussion

Passo della Camilla

The analyses of the cores confirm the attribution of the site to the Sauveterrian lithic tradition of the Early Mesolithic (BAFFICO *et alii,* 1983; BIAGI & MAGGI, 1983). The prevalence of oval cores compares to the Sauveterrian layers of the series of Romagnano III (BROGLIO & KOZLOWSKI, 1983). One further analogy is offered by a prismatic core (table 1, n. 14) and by two pyramidals (table 1, nn. 17 and 24 [fig. 9/12]) which, because of thinness and their lateral detachments, are comparable to the Sauveterrian «burin looking-like» cores from Romagnano III (BROGLIO & KOZLOWSKI, 1983, pp. 96, 98 n. 9).

Earlier aspects are perhaps indicated by the scratched cortex of the core illustrated in fig. 9/11, a feature consistent with Epigravettian contexts (LEONARDI, 1984), as well as a backed tool, also attributable to the Epigravettian because of its dimensions.

Bosco delle Lame

Bosco delle Lame has by far the largest Mesolithic assemblage known so far in eastern Liguria, not only because of the cores, but also because of the total amount of artefacts. The retouched artefacts clearly belong to the Castelnovian lithic tradition of the Late Mesolithic, with the exception of an Early-Neolithic-type trapeze (BAFFICO *et alii,* 1983; BIAGI & MAGGI, 1983). The results of the analysis of the cores are consistent with such statement: i.e. see the prevalence of blade scars over flake scars.

In addition, two of the cores show evidence of the pressure-flaking technique (fig. 9/1,2) (TIXIER, 1984, pag. 66). Such a technique is known in some Late Mesolithic contexts: i.e. the site of Font des Pingeons, *Bouche du Rhone* (BINDER, 1987). It is also well known in several Early Neolithic assemblages of northern Italy belonging to the lithic tradition of the Vho Group, like Vho itself in the Po Plain (BIAGI & VOYTEK, 1992, pp. 265-267) or Case Gazza in the Trebbia Valley on the northern side of the Apennines (BERNABÒ BREA *et alii,* 1986, p. 27). In Liguria, such a technique is also attested at the Early Neolithic site of Suvero (MAGGI, 1984), located in the Apennine only about 35 kms to the east of Bosco Lame (figs. 2 and 9/13).

Whether the few pressure-flaked cores of Bosco delle Lame originated independently within the Castelnovian tradition, or are due to a minor Early Neolithic settlement that occurred shortly after the disappearance of the major Mesolithic occupation, or reflect contacts between the latest Mesolithic groups and the Early Neolithic ones settled on the coasts, is an open question.

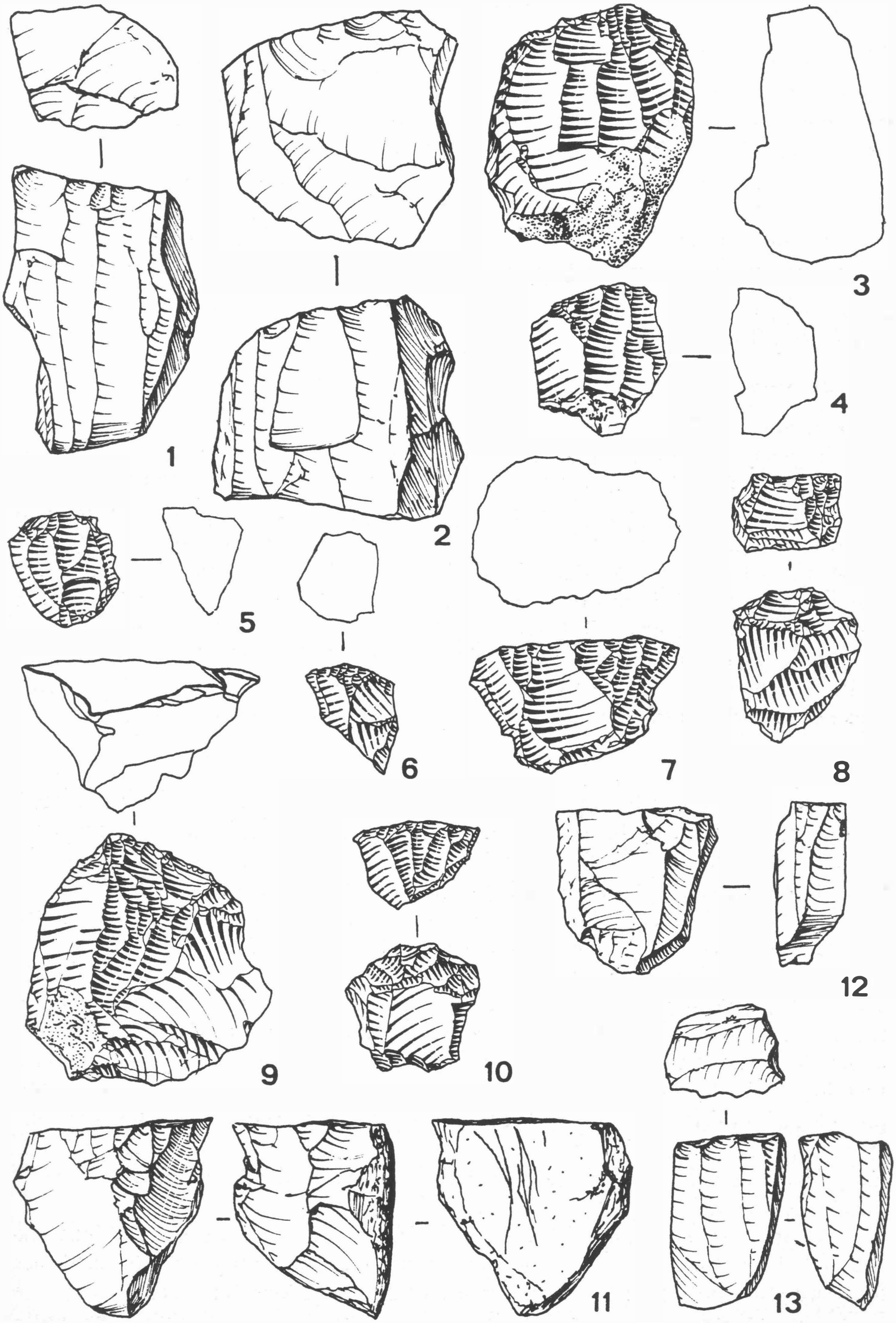

Fig. 9 - Cores from Bosco delle Lame (1-10), Passo della Camilla (11,12) and Suvero (13). 1, 2, 13 = prismatic cores with pression flaking technique; 3, 4 = prismatic cores; 5, 6, 12 = pyramidal cores; 11 = pyramidal core with scratched cortex; 7, 8, 9, 10 = oval cores.

4. Remarks

The core techno-complexes of Passo della Camilla and of Bosco delle Lame envisage aspects of uniformity concerning the preparation and exploitation of the cores, suggesting technical continuity between the Early and the Late Mesolithic communities. A similar conclusion has been inferred by Broglio and Kozlowski after their study of the cores from Romagnano III (Broglio & Kozlowski, 1983, p. 119).

The exclusive use of local (= from eastern Liguria) raw material can also be emphasised, since Alpine flint reached sites located not very far away on the northern side of the Apennine chain which faces the Po Plain (Cremaschi, in Biagi *et alii,* 1980; Ghiretti & Guerreschi, 1990).

The emerging picture is that of fairly self-supporting communities, living in the territory between the coast and the nearby mountains.

The Late Mesolithic groups apparently increased the exploitation of the highest mountains of the main watershed. This might be related either to a possible increase in population, and/or to changes in the distribution of resources such as the increase of the forest covering on the mountains, the rise of the upper tree line and changes in the composition of the woodland (Cremaschi, 1990; Lowe *et alii,* 1994).

It can also be argued that both the Early and the Late Mesolithic communities organised the exploitation of mountains in a similar way, since in both cases the emerging picture is based on one larger site, where on-site substantial primary and differentiated chipping activity is witnessed by the presence of precores and of several diversified categories of cores. Such sites are surrounded by several other smaller sites, where cores are scarce and yet chipping activity is attested by the occurrence of flakes and chips.

Fig. 10 shows the indices of the structure of the industry of the eight main assemblages, according to Laplace (1964). Industries from different sites have homogeneous structures, independent of chronological factors and regardless of the abundance or the scarcity of cores. They are largely dominated by the *substratum* (points [P] + side-scrapers [L,R] + undifferentiated pieces with abrupt retouch [A] + denticulates [D]) which maintains values between 60 to 79 %. This is followed by tools such as burins [B], end-scrapers [G], truncations [T] and borers [Bc]. Armatures [Gm] are always scarce, as well as the residuals of their construction («microburins») [Mb].

Thus the main differentiation among the chipped stone assemblages of the high altitude Mesolithic sites of the eastern Ligurian Apennine seems to be the quantity of cores.

North-East Italy, particularly the Dolomites mountains and the Trento basin, is the best studied area of Mesolithic Italy. According to Lanzinger (1985, 1987), Broglio & Lanzinger (1990) and Bagolini & Dalmeri (1987), the exploitation strategies of this area were organized with base camps in the lowlands (i.e. valley bottom), secondary camps with differentiated activities and specialized hunting camps at high altitude, between 1,900 and 2,300 m a.s.l. In the two latter categories armatures are always abundant; in fact camps for «maintenance tasks» are those where the «common instruments» are no less than 30%; while in the «hunting camps» armatures are usually more than 70 % (Lanzinger, 1987; Broglio & Lanzinger, 1990).

If «common instruments» indicate maintenance activities and armatures indicate hunting activity (and this is the case suggested by the Dolomites and Trento area), thus the economy of highland exploitation of eastern Liguria was fairly different. Bosco delle

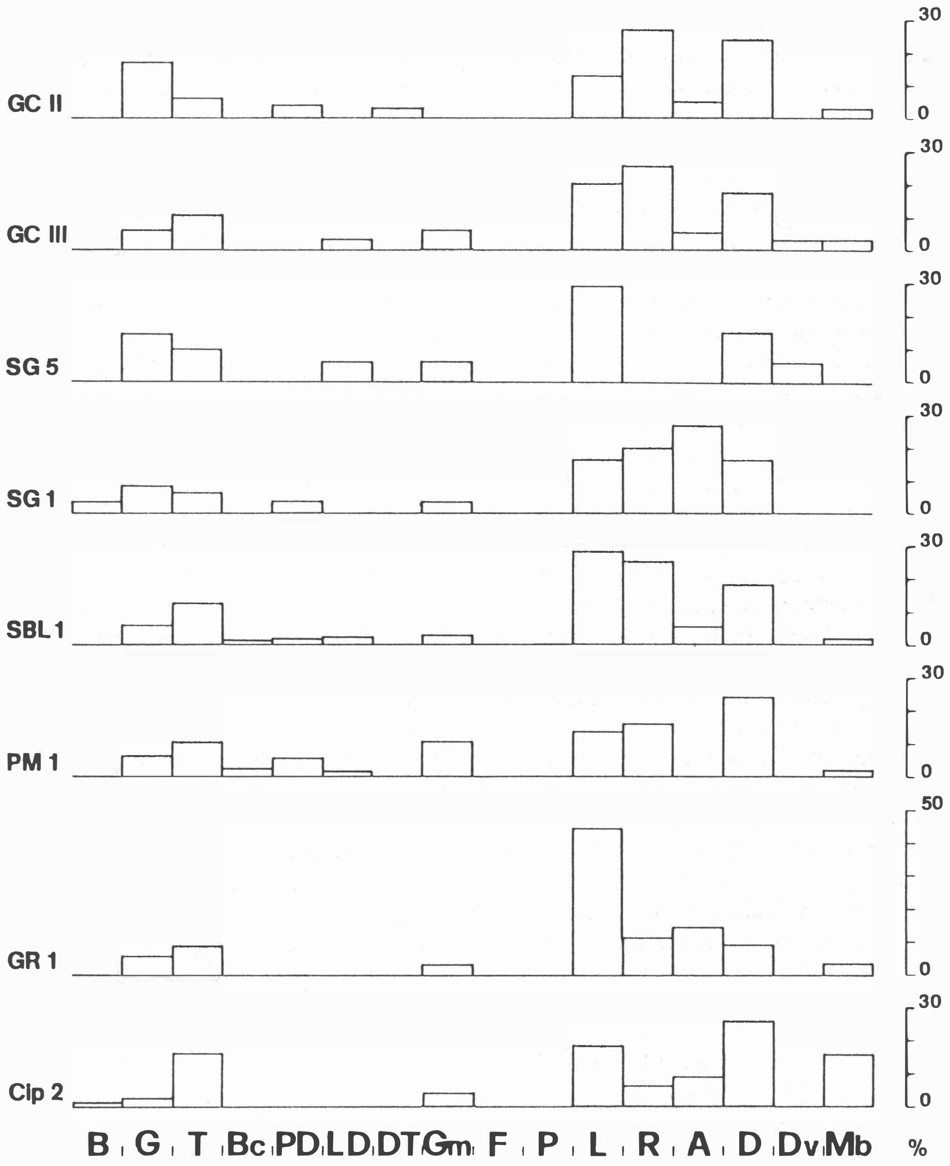

Fig. 10 - Structure of Mesolithic industries of eastern Liguria (after Biagi & Maggi, 1983).
B = burins, G = end scrapers, T = truncations, Bc = borers, PD = backed points, LD = backed blades, DT = truncations with backed side, Gm = geometrics, F = flat-retouched tools (*Foliacés*), P = points, L = long side-scrapers, R = short side-scrapers, A = undifferentiated pieces with abrupt retouch, D = denticulates, Dv = various, Mb = microburins.
GCII = Passo della Camilla; GCIII = Nido del Merlo; SG5 = Malga Perlezzi; SG1 = Colmo Rondio; SBL1 = Bosco delle Lame; PM1 = Prato Mollo; GR1 = Groppo Rosso; Cip2 = Prato della Cipolla.

Lame could be interpreted as a summer base camp (or, at least, a more permanent and long-term camp) located at mid-high altitude. On the other hand, evidence for «classic» (using arrows tipped with geometric microliths) hunting activity is elusive also in the sites with few cores, since the maximum percentage of armatures is about 12% at Prato Mollo [PM1] (1,500 m a.s.l.) and the maximum of microburins is 16% at Prato della Cipolla [Cip2] (1,650 m a.s.l.).

At the beginning of the Atlantic, even the highest elevations of the Ligurian Apennines were far below the upper tree line. This suggests that upper mountain grasslands were extremely restricted, if any; consequently grazing animals played a minor role in the composition of game. The structure of the Mesolithic highland industries may reflect the importance of gathering activities, perhaps in association with different hunting techniques than armatures.

Archaeological data are still too few, however we can at least observe that the highland exploitation carried out by the Mesolithic communities of eastern Liguria was adapted to the biological resources of the local environment, and thus consistently different from the model established for the well studied areas of the eastern Alpine chain.

RIASSUNTO

La Liguria può definirsi una regione di montagna confinante col mare. La forma ad arco col vertice rivolto verso nord ripara dai venti freddi settentrionali contribuisce a conferire ai versanti prospicenti il mare un clima particolarmente mite, con un regime di piogge primaverili ed autunnali. Condizioni adatte ad una folta copertura forestale. Nella Liguria Orientale, lo spartiacque appenninico corre molto vicino alla costa, raggiungendo distanze minime dell'ordine dei 25 km.

Si prospettano condizioni favorevoli alle economie mesolitiche, dal momento che le risorse di ambienti marittimo-costieri e di ambienti montani venivano a trovarsi a distanze massime di una-due giornate di cammino, necessarie per raggiungere i monti più alti partendo dalla costa.

Attualmente nulla si conosce degli insediamenti costieri dell'Olocene antico, che si ritiene siano stati sommersi dalla risalita postglaciale del mare.

Ricerche di superficie hanno localizzato un buon numero di siti sui rilievi, i quali, in assenza di scavi, vengono attribuiti al Sauveterriano od al Castelnoviano su base tipologica. L'analisi della loro distribuzione spaziale in rapporto alla quota assoluta ed alla distanza dal mare mostra che i siti d'altura sauveterriani si raggruppano sui monti più vicini alla costa, a distanze non superiori ai 18 km da essa ed a quote non superiori ai 1.000 metri. I siti Castelnoviani, oltre ad essere di maggior numero, mostrano propensione ad insediare le quote piu alte dello spartiacque principale, fra i 1000 ed i 1650 metri, a distanze dalla costa attuale comprese fra 16 e 33 km.

Caratteristica peculiare di tutte le industrie è la forte dominanza del substrato, con speculare scarsità di armature. Anche i nuclei sono in genere pochi, con due eccezioni. Di particolare rilevanza è il sito Castelnoviano di Bosco delle Lame, geograficamente inserito a 1350 metri di quota nel gruppo dei siti d'altura del periodo, dove sono stati raccolti ben 240 nuclei. Una situazione simile, sia pure meno accentuata, sembra sussistere anche in epoca sauveterriana, con il sito di Passo della Camilla (720 m) ed i suoi 31 nuclei.

Le due collezioni vengono analizzate dettagliatamente e confrontate fra di loro, rilevando aspetti di continuità nelle tecniche di preparazione. Tenendo presente che durante il Boreale ed all'inzio dell'Atlantico il limite superiore del bosco si ritiene fosse più alto degli stessi maggiori rilievi (masimo 1799 m), non sorprende che gli adattamenti mesolitici agli ambienti d'altura, letti attraverso le analisi delle industrie litiche e della distribuzione dei siti, offrano un quadro sensibilmente diverso da quello ben noto stabilito per le Alpi Nord-Orientali.

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