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Mesolithic settlement of the Central Alps and the use of the mountain sectors

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ABSTRACT - Two mid-range mountain sites will be analysed: the first in the Alps and the second one in the Jura. On the basis of the results we have come to the conclusion that the sites were seasonal mountain camps, where different activities took place, comparable to the ones practised in the settlements of the plains.

Key words: Mesolithic, Switzerland, Alps, Jura, Mountain camps, Economy
Parole chiave: Mesolitico, Svizzera, Alpi, Giura, Accampamenti di montagna, Economia

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1. INTRODUCTION

The data available on the modalities of occupation in mountain areas in our region is very limited. In absence of systematic surveys, only a few sites have been discovered and the excavations carried out are even fewer. Nevertheless, it is possible to give further consideration to the reflections proposed at the meeting on "Human Adaptations in the mountain environment in the Upper Palaeolithic and Mesolithic", which was held in Trento in 1992 (CROTTI & PIGNAT, 1992), as well at the International Congress "Epipaléolithique et Mésolithique en Europe" held in Grenoble in 1995 (PIGNAT & WINIGER, 1999).

To explain the incentives of these researches, we have to go back to summer 1983, when we had the pleasure of meeting the late Professor Bernardino Bagolini during the Tavola Rotonda (Round Table) meeting "Mesolithic settlement in the Alps", which he personally organized (*Preistoria Alpina* 19, 1983). In fact, it was his enthusiasm, generosity and his curiosity that stimulated and motivated us to carry out this research.

2. THE STATE OF MESOLITHIC SETTLEMENT

The Swiss territory presents contrasting geographic characteristics, with important mountain components. The Plateau, which is the central part of the country, is surrounded by the chain of the Jura mountains to the north-west side and by the massif of the Alps towards south. In each of these three areas there are mesolithic settlements, which differ distinctly with regard to their distribution, density, settlement characteristic and state of preservation (WYSS, 1968; CROTTI & PIGNAT, 1988; NIELSEN, 1991; CROTTI, 1993; PIGNAT & WINIGER, 1998). In the following pages the mesolithic settlement is presented in a global manner, without bearing in mind the chronological series of the sites which come under the Preboreal, the Boreal and the Early Atlantic, roughly between 9500 and 6500 BP, according to non calibrated radiocarbon dating (Fig.1).

Mesolithic settlement in the Plateau is distinguished by open air sites, normally situated on the edge of lakes and swamps, or otherwise on fluvial terraces. Unfortunately, very few systematic excavations have been carried out and generally only surface remains are available. Due to the sedimentary conditions, in most of the cases, only lithic artefacts were preserved, apart from a rare exception at Schötz 7 (WYSS, 1979), where more than 90% of the fauna was red deer, or at Ogens, the only rock shelter site on the Plateau with a varied and rich fauna, which provided large game (deer, wild boars, etc.) and small carnivores used for furs (CHAIX, 1993).

In the Jura, some settlements are situated in rock shelters, among which mid-range mountain settlements, like the Col des Roches (940m) (CUPILLARD, 1984) or the Col du Mollendruz (1090m) (CROTTI & PIGNAT, 1986), which will be dealt with later on. In the majority of the cases the stratigraphic sequence of the sites

indicate that the settlements were repeatedly used. The faunal remains indicate a wide use of animal resources, mainly of red deer, followed by wild boar and roe-deer (Chaix, 1993).

On the northern slopes of the central Alps, where the valleys generally face South-East/North-West leading to the Swiss Plateau, evidence of mesolithic occupation of the massif are limited to medium altitudes settlements, along the axes of the valleys. These are open-air sites, without any preserved bone remains, such as at Einsiedeln-Langrüti (900m) (Leuzinger-Piccand, 1996), on the outskirts of Lake Sihl, and at Lungern-Brand (770m) (Primas *et al.*, 1992), or rock shelters such as Château-d'Œx (1180m), which will be dealt with later on, and Zweisimmen-Riedli Balm (950m), in the Simmental, where lithic material, including Later Mesolithic armatures, was found in a secondary position on the embankment of the shelter. In this region of the Bernese Prealps (Andrist *et al.*, 1964; Bandi, 1984), other caves and shelters were found, some of which were at altitudes c.1800m. Few lithic indications were found, possibly mesolithic but probably dating to the Epipalaeolithic. Ibex bones were found in the Oeyenriedschopf (1180m) settlement.

The interalpine area is formed by the large valleys of the Rhone and Rhine rivers. On the one hand, the mesolithic presence is partly limited to the plains or mid-mountains. On the other hand it is confined to the periphery areas both westwards - the Collombey-Vionnaz plain site (390m) where a mixed economy associates fishing with hunting in forests and swamps (Crotti & Pignat, 1983, 1985) - and Wartau-Dietrichsberg Moos (920m) and Werdenberg (450m) eastwards.

Even though the interalpine area would appear to have been colonized in a marginal way during the Mesolithic, it is impossible to confirm if this evidence represents a prehistoric reality: in fact, the high mountain sectors have not yet been explored thoroughly and the discovery of mesolithic settlements on the plains is uncertain due to the high level of sedimentation during the Holocene.

The recent discovery of a mesolithic level at the foot of the Matterhorn, in Zermatt-Alp Hermettji, 2600m in altitude, does not appear to contradict the pattern of mesolithic settlement in the central Alps. In this shelter, the mesolithic evidence - scarce crystal rock industry together with some hearths datable to around 8600 BP - are probably traces of seasonal incursions of groups coming from the southern slopes of the Alps. In fact, access to the Matterhorn region is much easier from south, from Valtournenche (Val d'Aosta) (Curdy & Leuzinger-Piccand, 1997). These conclusions have to be confirmed and the question of mesolithic settlement of the Central and High Vallese remains open.

On the southern slopes of the central Alps, characterised by quite long valleys generally facing North-South and with low valley-bottoms, a deep penetration in the massifs is observed, such as in Mesocco-Tec Nev (720m) (Della Casa, 1997), as well as a frequentation of high altitude zones, which are shown, in the present Italian territory, in the open air settlements of Madesimo-Piano dei Cavalli (2200m) (Fedele, 1992) or of Cianciàvero (1750m), on the Veglia Alps (Gambari *et al.*, 1989). Even though there is very little information available, this layout clearly shows the use of areas at high altitudes, probably in accordance with the pattern highlighted in the Trentino, with the presence of hunting stations and mountain residential sites (Lanzinger, 1996), as at Cianciàvero.

2. THE FEATURES OF MOUNTAIN SETTLEMENTS

In trying to understand the specific role that the different altitudes had within the mesolithic economy, it is essential to explain the purpose of mountain settlements. We are restricted to analysing only two sites situated in mid-mountains - relative to the northern slope of the Alps and the Jura - as they are the only two cases that we can base our study on, due to data available in our Region.

2.1. *In the Alps: Château-d'Œx*

This small rock shelter (10m large), discovered in 1989, is situated at about 1200m, in a high valley in the northern Alps (Crotti & Pignat, 1993, 1995) (Fig.2). Up till now the excavations carried out are limited and the data available is still incomplete.

Characterised by a high density of stratified traces and by abundant well preserved bones - an element which is often missing in high altitude settlements - this site is particularly pertinent to the issues regarding this study, that is, the purpose of mountain settlements (Fig.3).

An exploratory excavation of about three square metres, has made it possible to analyse the shelter's in-fill at a depth of about one metre, without reaching the substrata. The sequence includes a Later Mesolithic level, some remains of Early Mesolithic occupations, that are not very well distinguished from a stratigraphic point of view, as well as a level attributed to the Final Epipalaeolithic, with a C14 dating of around 10000 BP.

2.1.1. *The occupations in the Later Mesolithic*

The most recent level, found a few centimetres below the present soil, is about 20cm thick. The only radiocarbon date available at the present time, which was carried out on bones, appears reliable and is attributable to the Early Atlantic, around 7200 BP. A sample of fauna analysed by Louis Chaix (344 bone remains, 162 of which were determinable), show that red deer predominated (44%), followed by chamois (22%). The other species present were ibex (8%), wild boars (2%), aurochs (3%), badgers (15%), foxes (1%), alpine hares (1%), as well as different birds (2%). The few available indications of seasonality, show that the site was used from the middle of July to the middle of November, or even possibly from the end of April to the end of December.

These first results show that the hunting activities were not specialized, as can be seen from the exploitation of animal resources, in which the distribution of "alpine" species, is well represented, but not dominant.

The lithic assemblage includes a large range of artefacts including microlithic armatures and a significant quantity of common tools, among which retouched flakes or blades and scrapers are found. Therefore, the lithic industry points to a large range of activities, without specialisation in the production, the preparation or the repairing of the artefacts directly related to hunting purposes. From the results of both the faunal analysis and the study of the lithic assemblage, it is possible to consider that the Château-d'Œx site was used during the Later Mesolithic, as a multifonctionnal mountain camp. It was occupied during the summer and autumn months, perhaps in spring, on a stable basis for long or short periods.

2.2. *In the Jura: Mollendruz*

The Mollendruz rock shelter, situated in the high chain of the Jura mountains at an altitude of 1090m, fits into a mid-mountain context (Fig.4). The study of this site has been completed (Pignat & Winiger, 1998).

To give an outline on some of the results obtained on the Mollendruz site, we will often refer to the data available to Vionnaz, a low-altitude rock shelter (390m), situated in the alluvial plains of the Rhone valley. The comparison between these two sites is quite relevant since their mesolithic sequences are chronologically very near and culturally similar.

2.2.1. *Stratigraphy and occupations*

The stratigraphic sequence, 3m of which was explored, presents an accumulation of large blocks of fallen stones at the base, together with dense cryoclastic rocks, which confirms the very cold climate of the Late Glacial phase. From the Preboreal through to the Boreal and the Early Atlantic, the notable global warming results in the reduction of thermoclastic sedimentation and a yellowish carbonate concretion deposit. Up to the second part of the Atlantic, the cryoclastic activity will once again become more distinct.

Traces of human occupation are very scarce during the Late Glacial phase - a few remains of fauna (reindeer, horses, alpine hares) dated around 12000 BP along with a few flint artefacts - but become more frequent during the Mesolithic. The settlements are distributed over a period of about two millennia and are divided into three phases, two of which are in the Early Mesolithic and one in the Later Mesolithic (Fig.5).

The oldest phase (layers 4e and 5ab), radiocarbon-dated between 9500 and 9000 BP, has provided a small assemblage of lithic artefacts, including 38 common tools and 42 microlithic armatures (backed points, segments, truncated points, backed bladelets and a few triangles) as well as 16 microburins.

The middle phase (layer 4d), dated around 8000 BP to the end of the Early Mesolithic, has revealed an important series of materials: 243 common tools, 378 microlithic armatures. Backed or double-backed points, scalenes and backed bladelets dominate and are characterised by a high level of miniaturisation and the absence of microburins. This techno-complex is linked to the Sauveterrian of western Switzerland.

The more recent phase (layer 4b), dated around 7200 BP, has revealed only 20 common tools, 12 microlithic armatures (trapezes associated with a few "ancient" types, triangles and points) and 7 microburins.

Even though a remarkable continuity in the settlement during the Mesolithic has been observed, it is important to distinguish each of the three phases in order to highlight possible differences in the modalities of occupation. Considering the significant amount of objects, the dispersion of the remains and their state of preservation, as well as the number and complexity of the settlement structures, the thorough analysis of the anthropic levels (Pignat & Winiger 1998) distinguishes two types of occupation of the shelter: a series of sporadic occupations during the early and recent phases, and numerous and repetitive occupations during the middle phase.

2.2.2. *Raw materials and industries*

The result of petrographic analysis on siliceous raw materials brought to light significant parallels between the three mesolithic complexes. Among the 16 flint types reviewed, 9 of the varieties are found in all

the three series, while three others are only present in two of the series. Furthermore, even though there are a limited amount of findings, supplies of raw materials remain stable and the use of local Cretaceous flint prevails with a frequency of 51% to 64%.

The analysis of the management of raw materials (Pignat & Winiger, 1998) show that, apart from the local flint of which all the production stages are evident on the site, materials are brought into the settlement in different forms (blocks, cores, blanks, tools) and are exploited on the site, or elsewhere. Furthermore, there is no evidence of the use of selected materials based on their qualities.

At Vionnaz, most of the raw material is local: the flint, available in a radius of 5 km from the settlement, are brought to the site either in forms of small slabs which come directly from the outcrops or from morainic or alluvial eroded pebbles, gathered in secondary position. A small quantity of exogenous flints is imported in forms such as cores or blocks of raw material, which are no different in form, quality or exploitation method than those of the local materials.

As in the Mollendruz site, the acquisition of raw materials follows an "opportunistic" strategy, that is to say it is integrated in other activities which imply moving from one place to another.

With regard to the lithic assemblages we will only define the relation between microlithic armatures and common tools as an index often used to oppose hunting stations and residential sites (Lanzinger, 1985; Bagolini & Dalmeri, 1987). Regarding this, we would like to specify that among the tools the "*pièces à enlèvements irréguliers*" have been integrated according to D. Binder's definition (Binder, 1987), also called "*outils a posteriori*" (Bordes, 1970). In considering this category of artefacts, the structure of the lithic assemblages are obviously modificated, with the increase of the proportion of common tools compared to microlithic armatures.

If we concentrate on the Mollendruz series of the Early Mesolithic, we can see that the proportions are more or less the same (53% and 61%) in the first phase of the sequence, contemporary to the Preboreal and in the second phase that is datable to the end of the Boreal. These results are very similar if compared to the Vionnaz site, where there is a also a slight increase of microlithic armatures during the Early Mesolithic.

The homogeneous aspect of the series along with the relative importance of the common tools certainly indicate a vast range of parallel activities in the mountain settlement of Mollendruz and in the Vionnaz valley-bottom settlement.

It is obvious that if we just compare the microlithic armatures/common tools ratio in order to determine the type of activity practised on the site, we can only obtain general indications. Nevertheless, it is sufficient in order to achieve the objectives we aimed at in this article. Further analysis would surely highlight structural differences between the lithic assemblages of the different levels of Mollendruz, as for example the complete absence of scrapers in the first phase of the Early Mesolithic, during which the majority of common tools are almost exclusively represented by "*pièces à enlèvements irréguliers*" (Pignat & Winiger, 1998).

2.2.3. *Hunting economy*

Even though there are scarce, very fragmented and badly preserved bone material, the study of fauna allows us identify hunting diversities: red deer, wild boars, roe deer, bears, badgers, martens and foxes (Chaix & Fischer, 1998). The age of the animals killed shows that the site was used in spring and summer.

These results, indicating absence of specialization in the hunting activities, have been integrated with those of Vionnaz as well as the preliminary data obtained from Château-d'Œx in an archaeozoological regional study on the faunal series from Jura and the Northern French Alps (Chaix & Bridault, 1992; Bridault & Chaix, 1999). The result of this analysis shows that, during the Mesolithic, the absence of systematic contrasts, between the plain and the mountain sites, as well as the coincidence of hunting seasons in the sites on the plains and in the mountains contradict the concept of seasonal complementary of the different sectors of altitude.

2.2.4. *Function of the site*

The Mollendruz example shows the continuity of subsistence strategies for about two millennia during the Mesolithic. In fact, there have not been any important changes in the use of flint, neither in the areas of flint sources, nor in the strategies of acquisition. Furthermore, the archaeozoological results confirm that the site was not specialized.

The structure of the lithic assemblages, in which microlithic armatures certainly predominate, but with a relative high proportion of common tools, leads us to consider the mesolithic occupations of Mollendruz site as being settlements used for multiple activities, comparable in all aspects to those on the plains, like Vionnaz. According to archaezoology, these mountain camps are used in the hot season, in spring and summer.

Similar to the lithic assemblages structures and apart from these general observations, there are a few more points to be examined thoroughly, for example: how can the divergent occupation modalities during the mesolithic sequence of Mollendruz be interpreted: sometimes as sporadic or repeated occupations?

3. CONSIDERATIONS

The first conclusion to be made from the rapid analysis of the medium altitude mountain sites of Château-d'Œx and Mollendruz, is the rather unspecific and almost banal character, of these high altitude camps when compared to lowland sites. Seasonal settlements certainly, yet places of varied activities and non-specialised, allowing mesolithic groups to integrate mountainous areas into their economic territory.

The results of the numerous researches carried out in Trentino (Bagolini *et al.*, 1983; Broglio, 1992; Lanzinger, 1996), a "pioneer region" in the alpine Mesolithic study, have equally uncovered such sites considered as mountain residential sites. There they are found at high altitude between 1900 and 2300m, in rock shelters such as Plan de Frea (Broglio *et al.*, 1983; Alessio *et al.*, 1994; Angelucci, 1996), or on the edge of small lakes such as Colbricon I (Bagolini, 1972; Bagolini & Dalmeri, 1987, 1992). The lithic series of these sites are characterised by a balanced assemblage comparable to those observed from sites on the valley bottoms in the Adige valley. Apart from these mountain residential sites, genuine hunting camps exist at high altitude, usually set in dominant locations, on crests and sometimes as in the case of Colbricon 6 & 8, near a residential site. In these hunting camps, the presence of almost exclusively armatures or other by-products of their fabrication have been observed. In our region, there is a lack of these sites or they still have not been discovered yet. In our study territory, once the unspecific character in the exploitation of animal resources in mountainous contexts has been established then questions arise on Trentino, in view of the rarity of the conserved fauna remains in this alpine context. The early tendencies from Mondeval de Sora, at 2150m, show a hunting strategy axed principally on red deer and secondly on ibex for the levels contemporary with the Boreal (Guerreschi, 1992). At Plan de Frea, at 1930m in the Dolomites, the sauveterian levels of the Preboreal and the Boreal show a predominance of red deer and ibex, in association with other species, in particular alpine hare (Angelucci *et al*, 1999). These results, which remain in the preliminary stage, do they differ in a fundamental manner than those obtained from sites on valley bottoms (Boscato & Sala, 1980), where the predominance of ibex in the Preboreal and red deer in the Boreal are observed?.

This is a general consideration and it can be questioned whether the use of the mountain areas by the mesolithic groups of the southern and northern part of the Alps, is in fact fundamentally different (Crotti & Pignat, 1992), apart from the choice of the sectors, regarding the high and medium altitude sites. Actually, in both cases, there is no evidence of specific exploitation strategies based on the economic resources closely connected to these territories. Consequently, the complementary function of these sites situated at high and medium altitudes, cannot be considered. On the contrary, it can be ascertained that there is a similarity between settlements on the plains and the mountain camps, both being places of various and non-specialized activities.

Finally, in light of the Mollendruz sequence, it is remarkable to notice the permanency of subsistence strategies during the whole of the Mesolithic without any notable changes during the two millenia.

Study of the lower levels in the Château-d'Œx rock shelter offers us the opportunity to follow up on this notion: does such continuity belong to the Mesolithic or does it have deeper roots in the past, such as the Epipalaeolithic? This opportunity is appealing because archaeological levels of the Final Epipalaeolithic are rare.

In relation to this, the recent discovery in eastern Switzerland of the site of Altwasserhöhle I in the Säntis massif, in medium altitude mountains (1410m), need to be discussed. The early results of the excavations in this cave allow it to be identified as a hunting camp (of ibex and chamois), dated to around 10000 BP (Jagher *et al.*, 1997).

For the Epipalaeolithic, are we heading towards a pattern of an exploitation of zones of altitudes, consisting exclusively of hunting camps, as in the case of Altwässerhöhle, or also of mountain residential camps where diverse activities are carried out, which may or may not be revealed in the future results of the Château-d'Œx excavations?

In other words, in our region of study, do the cultural changes marking the beginning of the Mesolithic develop in parallel with changes in the economic and territorial behaviour of hunter-gatherer groups?

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SUMMARY - In the Swiss territory, where the mountain component is very important, it is fundamental to distinguish what mountain camps were used for, to try to determine the specific role that the different altitudes had within the mesolithic economic territories. After having taken into consideration the data available on mesolithic population in Switzerland, two mid-mountain sites will be analysed. The first site is in the Alps and the second one in the Jura. On the basis of the results we have come to the conclusion that the sites were seasonal mountain camps, where different activities took place, comparable to the ones practised in the settlements of the plains.

RIASSUNTO - Anche se i dati disponibili sono attualmente limitati, questo articolo tenta di caratterizzare, dal punto di vista funzionale ed economico, l'uso dei siti d'altitudine nelle Alpi centrali da parte dei gruppi mesolitici. Una rapida occhiata al popolamento mesolitico della Svizzera permette di notare numerosi siti all'aria aperta sull'Altipiano e in ripari sotto roccia nel Giura, di cui taluni di media montagna. Gli insediamenti sul versante nordalpino sono limitati ai settori di media montagna, mentre sul lato sud delle Alpi sembra che le modalità d'occupazione siano simili a quelle riscontrate nelle Alpi orientali (Trentino), con l'uso cioè di siti di alta montagna. La zona interalpina appare invece frequentata in maniera marginale. L'assenza di siti nelle parti alte delle valli del Rodano e del Reno potrebbe però essere dovuta a una mancanza di ricerche e prospezioni sistematiche e, soprattutto, a un contesto di sedimentazione che rende aleatorie le scoperte fatte sul fondovalle. L'analisi rapida di due ripari di media montagna, quello di Château-d'Œx sul versante settentrionale delle Alpi e quello del Mollendruz, nel Giura, sfocia su risultati concordanti. Sulla base della composizione dei resti di fauna, che indicano un largo sfruttamento delle risorse animali, e della struttura delle industrie litiche (entro le quali gli strumenti comuni sono ben rappresentati), si può constatare il carattere poco specifico, per così dire banale, di questi accampamenti in altitudine rispetto a quelli di pianura. Insediamenti stagionali, sicuramente, ma luoghi d'attività varie e non specializzate, che permettono ai gruppi mesolitici di integrare gli spazi di montagna ai territori frequentati e utilizzati abitualmente. Questo tipo di insediamento può essere paragonato ai *campi base* evidenziati in alta quota nel Trentino, come a Pian de Frea o al Colbricon.

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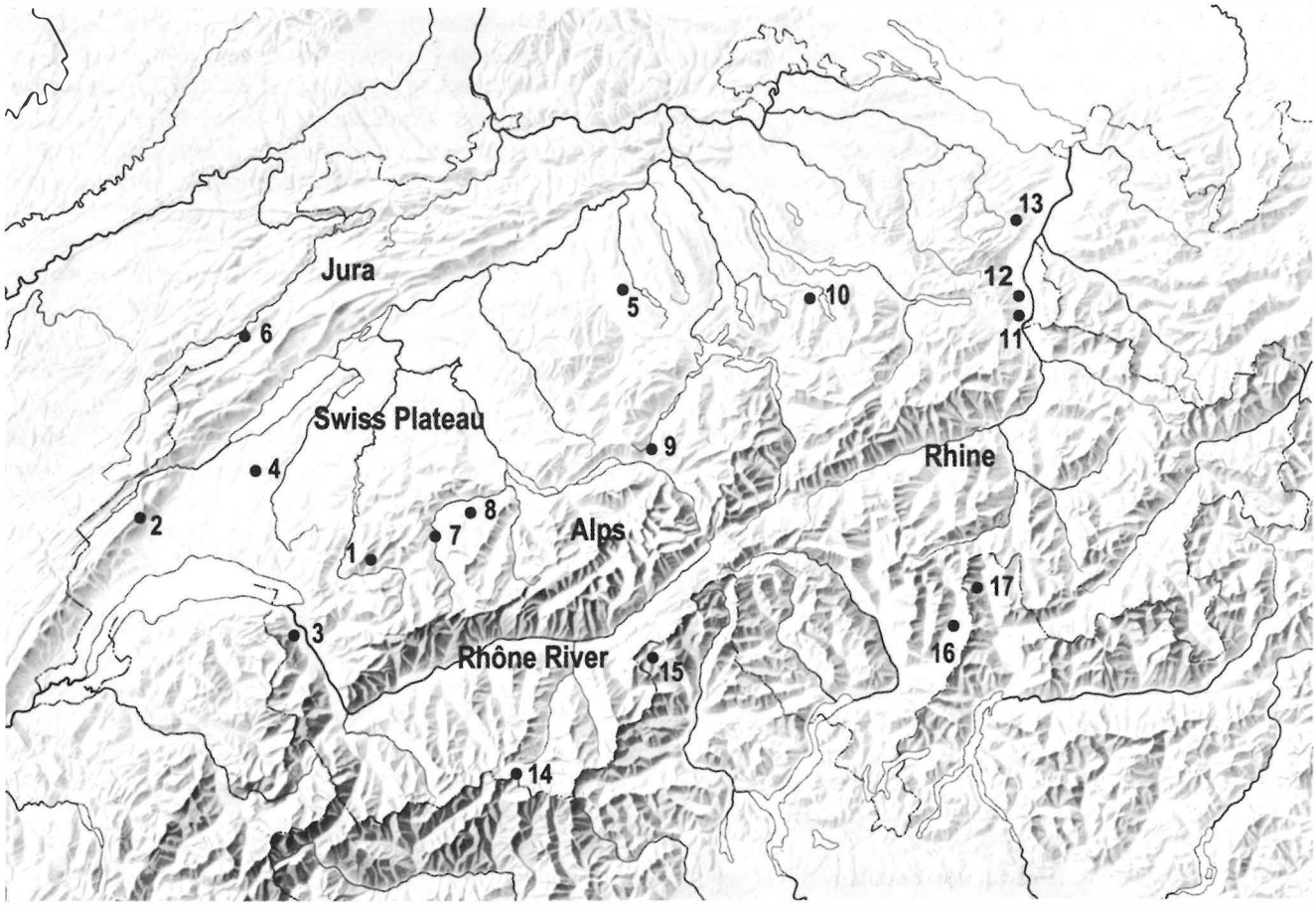

Fig. 1 - Map of Switzerland: the location of the sites mentioned in the text.
1. Château-d'Œx (VD) (c.1200m)
2. Mont-la-Ville (VD), Mollendruz Rockshelter (1090m)
3. Collombey-Muraz (VS), Vionnaz Rockshelter (390m)
4. Ogens (VD), The Baume d'Ogens (670m)
5. Schötz (LU), Schötz 7 (500m)
6. Le Locle (NE), Col des Roches (940m)
7. Zweisimmen (BE), Riedli-Balm (950m)
8. Diemtigen (BE), Oeyenriedschopf (1180m)
9. Lungern (OW), Brand (770m)
10. Einsiedeln (SZ), Langrüti (900m)
11. Wartau (SG), Dietrichsberg Moos (920m)
12. Werdenberg (SG) (450m)
13. Rüte (AI), Altwasser-Höhle 1 (1410m)
14. Zermatt (VS), Alp-Hermettji (c.2600m)
15. Varzo (VB-Italy), Alpe Veglia, Cianciàvero (1750m)
16. Mesocco (TI), Tec Nev (720m)
17. Madèsimo (SO-Italy), Piano dei Cavalli (c.2200m)

Fig. 2 - The rock shelter of Château-d'Œx, in the Vaud Prealps (Switzerland)

Fig. 3 - The Château-d'Œx rock shelter: Later Mesolithic level with well preserved faunal remains (dated about 7200 BP).

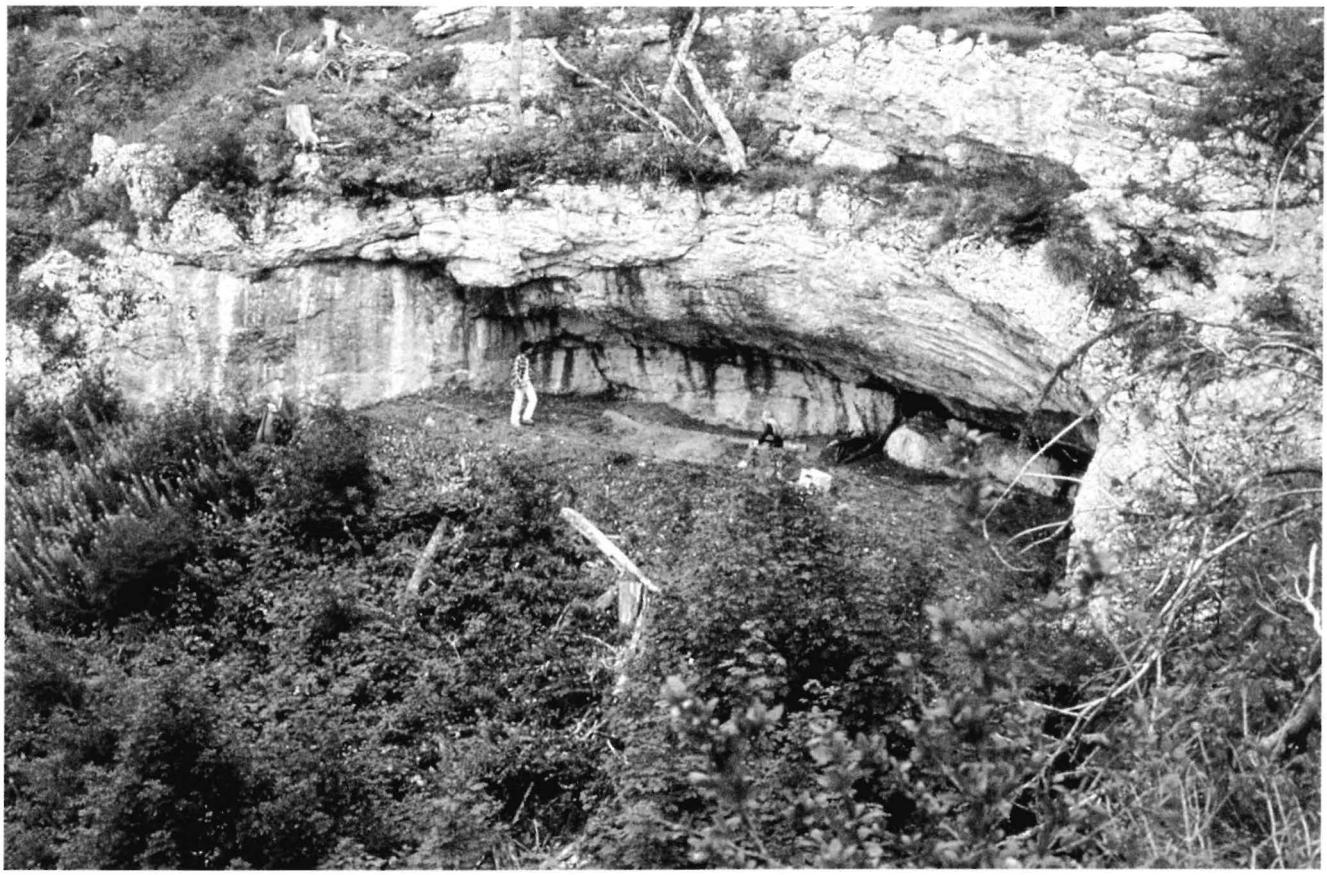

Fig. 4 - The Mollendruz rock shelter in the Vaud Jura (Switzerland).

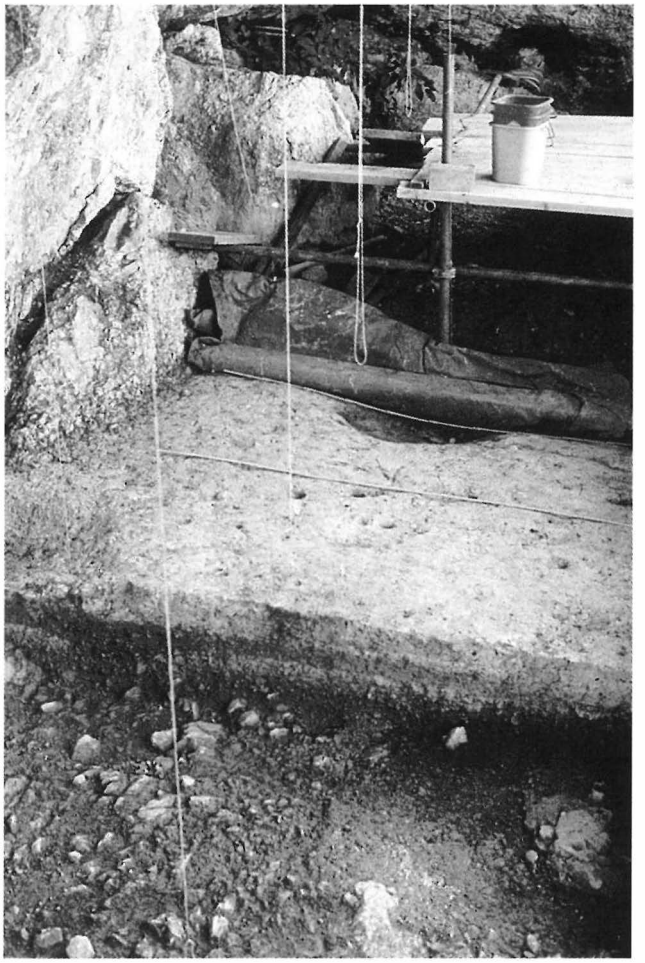

Fig. 5 - Mesolithic stratigraphic sequence of Mollendruz rock shelter. In the foreground, beginning of the Early Mesolithic level (9500-9000 BP), in section, strata of the late Early Mesolithic (about 8000 BP); in the background Later Mesolithic level (about 7200 BP).