

# The Medieval Settlement in the Middle Mountains of Cantal and Sancy (Massif Central, France)

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**Abstract:** Since 2000, we have taken interest in the medieval peopling of the low mountain ranges in the Auvergne region of France. We selected two zones of studies: the first in the south of the Cantal Department where we conducted the largest part of our research and the second in the south of the Sancy Massif, beginning in 2013. Our work consists of survey, cataloging, testing, and paleoenvironmental analyses. Two broad categories of structures were recorded. The first corresponds to large elongated structures with stone walls. Our research indicates that these occur either as isolated farms or grouped in small hamlets, occupied most probably year-round within a framework of agro-pastoral exploitation of the landscape. These structures were semi-subterranean and carefully protected against the cold. They date to the period between the end of the 10<sup>th</sup> and the 12<sup>th</sup> centuries. From the 13<sup>th</sup> century, the local economy saw a profound transformation, with generalized seasonal cattle breeding. Permanent occupation ceases and the big stone structures are replaced by small square structures which were used as shelters and shepherds' sheds. These sheds were transformed and improved during modern era.

**Keywords:** Medieval Settlement, Auvergne, Massif Central, Hamlet, Croft

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## 1. Introduction

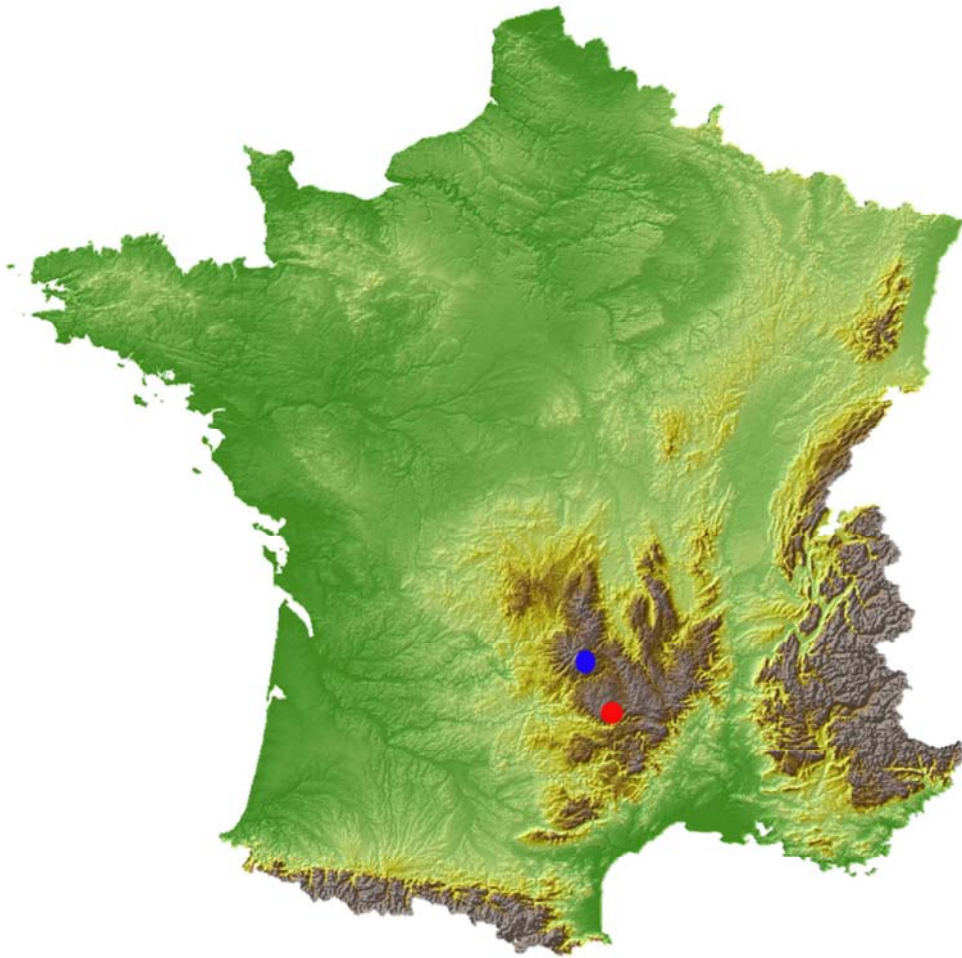
Within the frame of multi-disciplinarian and diachronic research projects, concerning the history of human occupation in these areas, we have taken an interest, since the year 2000, in the medieval population of the low mountain range of the "Auvergne".

Between 2000 to 2011, we worked in a geographic frame of 70 km<sup>2</sup> measured from the extreme south of the Cantal mountains. Since 2012, we focused our field work on a few municipalities in the Sancy mountains and in particular one in the Compains.

## 2. Geographical Frame

We explored two distinct geographic areas of the lower mountain range of Auvergne (figure 1). The first aimed at the planèze (a basaltic plateau specific to the Cantal) south of the "Plomb du Cantal", a vast triangular plateau originated from the last active phases of Cantal's strata volcano,

approximately 3.5 my ago. A strong, relatively regular, north-south incline, with an altitude of 1600 m at the northern end and 1000 m at the southern end can be observed. The global aspect is one of a large planèze (plateau) with an irregular surface, deeply rent by valleys (figure 2). We aimed our research at the mountain territory of five main municipalities: Pailherols, Saint-Clément, Lacapelle-Barrès, Malbo, and Brezons, with a few "incursions" into the municipalities of Saint-Jacques-des-Blats, Cézens, Thiézac, and Paulhac. The climate is particularly harsh in the entire area, with low temperatures and abundant rain and snow (above 2 m a year). The water supply is therefore plentiful, in the form of small rivers, brooks, and peat bogs. The annual average temperature is 4°C (at 6 am) at an altitude of 1100 m and 2.5°C at 1350 m. Excepting stone blocks used for construction, the area does not offer a very desirable mineral supply and no exploitable ore. In spite of the harsh climate, the lower part of the area seems fertile and therefore appropriate for agricultural use of the soil.



**Figure 1.** General location of the two study areas. © E. Langlois, CERAMAC.



**Figure 2.** View of the south «planeze of the Plomb du Cantal». © F. Surmely.

We deem important to underline that even if it is an undeniable geological entity, the planèze of the “*sud du Plomb*”, it is by no means a homogenous environment.

Due to its strong north-south declivity, valleys and varied sun exposure, the area shows a great variety of biotopes, even though some particularities were erased by more recent human activity.

In 2012 we began research in the Sancy, concentrating on a few areas situated in different points of the mountain range

(municipalities of the Mont-Dore, Saulzet-le-Froid and Compains). The relief here is more important due to more recent volcanic activity and its character (figure 3). In Compains, the Montchal/Pavin/Montcineyre eruptions only dating from 7000 BP [1], caused the accumulation of volcanic fallout. The climate however is identical to that in the Cantal, cold and damp.



**Figure 3.** View of the volcanic lake of la Godivelle, surrounded by two medieval hamlets. © F. Surmely.

Finally it has to be said that the lower mountain range

environment engenders specific preservation conditions.

The absence of major rearrangements or profound changes due to ploughing following the medieval period has allowed the preservation of archaeological sites and sometimes plot shapes. Unfortunately, the lower mountain range of the Auvergne area is also known for the strength of its erosion and physico-chemical factors, which have altered the sites, especially by causing the disappearance of all the organic markers except for charcoal and burnt seeds. No bone or ligneous (not burned) remains have therefore been found.

### 3. Methodology

As stated above, research on the medieval period was carried out within a study program on the general history of populations living at altitude and landscape evolution. The research was a collective and multidisciplinary scheme combining several different chronological specialists, historians, geologists, and environmental paleontologists (Palynologists, Anthracologists, Carpologists).

Our work began by systematic pedestrian survey and complemented by aerial surveys to detect relief abnormalities due to human activity. We also conducted general surface collections. The entirety of the sites and site clues found were recorded in a file comprising all descriptive information enabling us to process the data using a geographic information systems program (GIS).

More than 800 entities dating from varied periods, going as far back as the late Mesolithic were recorded [2]. Following this, we tested the more significant sites. Between 2005 and 2015 we tested eight medieval period sites, including six in the Cantal and two in the Sancy. At each site our work covered large areas averaging 35 m<sup>2</sup>. This enabled a relatively complete examination of the architectural structures. At one of these sites, Les Yvérats in the Sancy, we conducted a four year (2014 – 2017) excavation.

Mechanical means were used for the first site clearings, followed up by manual work. Site surveys were followed by detailed topographical mapping (using a variety of methods, such as laser range scanner), detailed studies, and carbon dating.

Alongside we carried out some archival research (particularly for the Cantal area), although they covered mainly the modern and contemporary times rather than the medieval period.

## 4. Structure Configurations

### 4.1. Rectangular Buildings Made with Stone Walls

Our research revealed a polymorphic pattern in the scattered habitat in which isolated houses and crofts gathered in small hamlets shared the same territory. This habitat is situated below an altitude of 1285m, which appears to be the cultivable limit.

The buildings are surrounded by developments linked to agricultural activity: paths, terraces, gardens, and ditches

(figures 4, 5 and 6). In most cases, one notices that the inhabitants looked for spots sheltered from the wind on plots with little slope but giving an overall view of their surroundings. In this rainy environment water seems to have been of secondary importance at least in everyday domestic activities. However in one case, the proximity of a well was undeniable.

The clusters were known before our own research by studies carried out in different points of the Auvergne, since the beginning of the 20<sup>th</sup> century [3-6]. They were called “deserted villages”, like the Anglo-Saxon model [7]. Following modern British researchers, we prefer to qualify them as hamlets due to their small concentration of buildings (a maximum of 30 units) but lacking any building identifiable as a place of power or religion (figures 7 and 8). The shape and size of the buildings vary, and we return to this point below. In both our study areas, the major part of the clusters were not fortified or enclosed by walls. However, in other areas, fortified clusters exist (figures 9 and 10). Sadly to this day, they have not been studied so the differentiation between simple fortified hamlets and real fortified mounds remains uncertain.

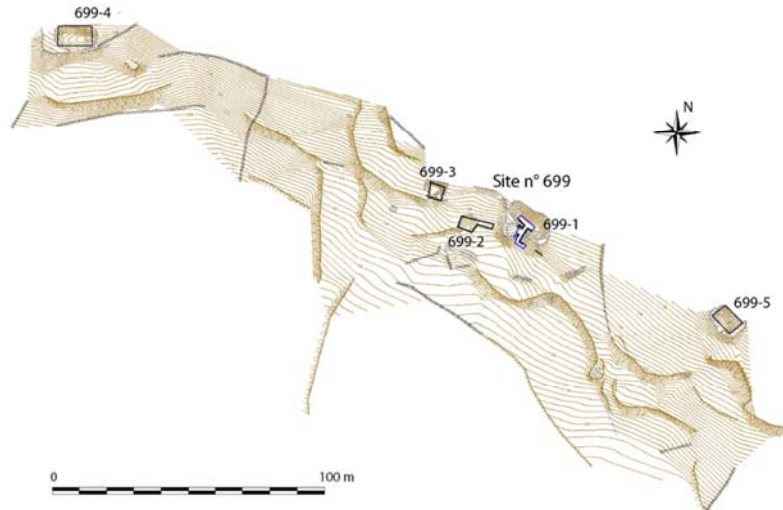


*Figure 4. Aerial photograph of the medieval hamlet of Le Trincou (Veze, Cantal). © F. Surmely.*

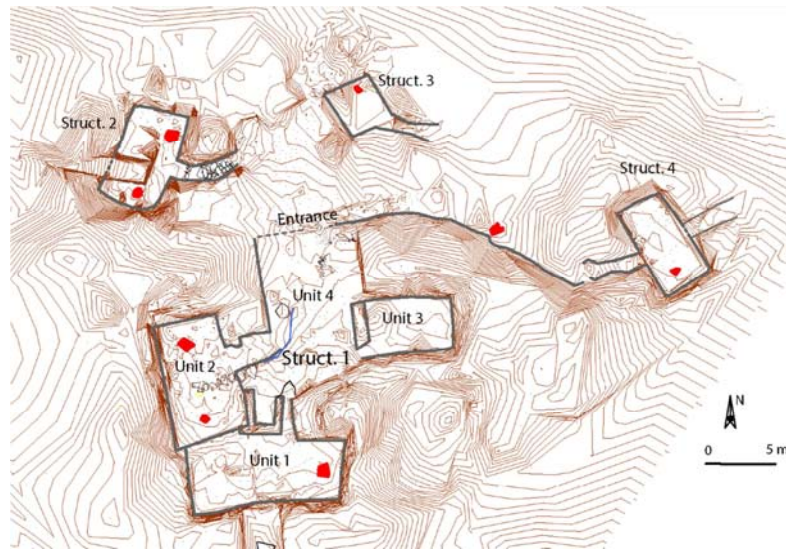


*Figure 5. Aerial photograph of the medieval hamlet n° 39 (Pailherols, Cantal). © F. Surmely.*





**Figure 6.** General map of the medieval hamlet 699 (Malbo, Cantal; polls F. Surmely 2009 and 2010). © P. Boudon.



**Figure 7.** Map of the central part of the medieval hamlet of Les Yvérats (Compains, Puy-de-Dôme; investigated by F. Surmely et J. Franklin, 2013-2017). © F.-A. Auxerre-Géron, J.-B. Chalin and F. Surmely.



**Figure 8.** General map of the medieval hamlet of La Taillade (Compains, Puy-de-Dôme; testing F. Surmely 2015). © J.-B. Chalin and F. Surmely.



**Figure 9.** Aerial photograph of the site « Le Camp des Anglais » (Saint-Saturnin, Cantal). © F. Surmely.



**Figure 10.** Aerial photograph of the castral motte of Brion (Compains, Puy-de-Dôme). © F. Surmely.



**Figure 11.** Partial view of the isolated croft n° 99 (Lacapelle-Barrès, Cantal; testing F. Surmely, 2011), showing the paved floor and the dry stones walls © F. Surmely.

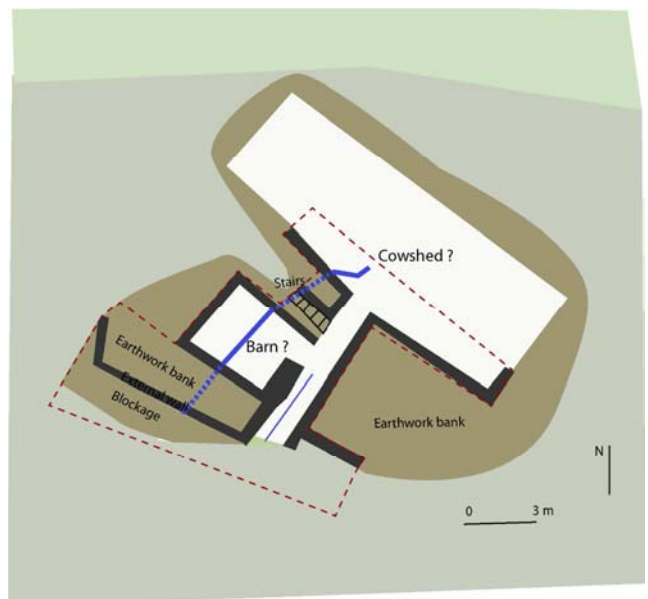
Our work revealed the existence of isolated crofts with one or two buildings. We conducted archaeological testing at two sites, Site 99 (Lacapelle-Barrès, Cantal; figure 11) and Site

1277 (Pailherols, Cantal).

#### 4.1.1. Architectural Layout of Structures

Buildings that date from medieval times show shared characteristics: the foundations are partially below ground level. Reproducing a prevailing model (including in modern times, but using different methods), the ground of the structures was excavated removing superficial deposits, hence leveling the rocky substratum.

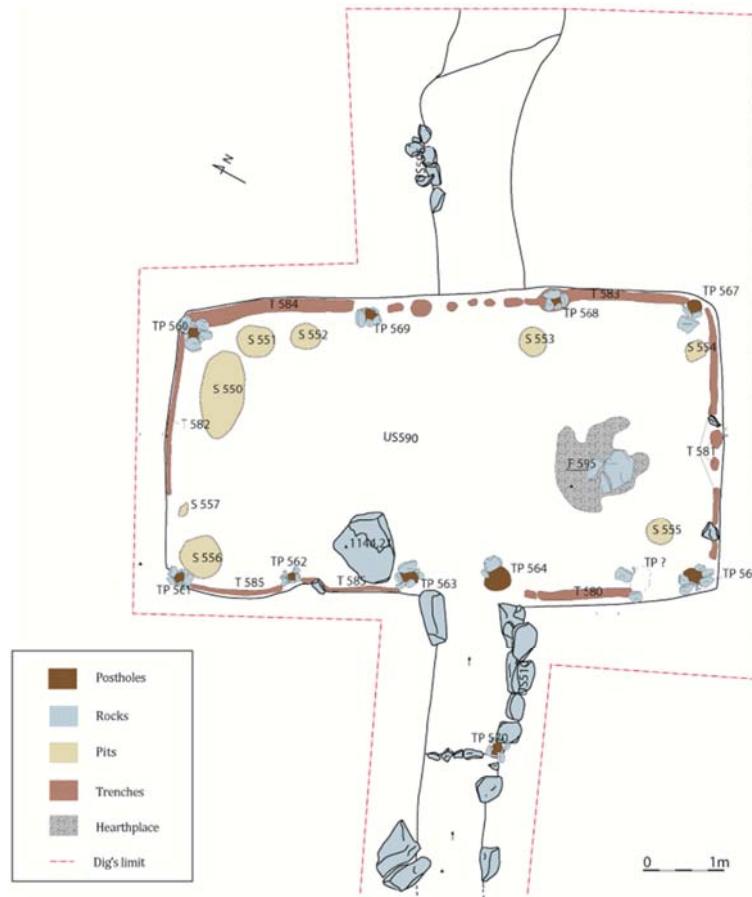
The excavations are always deeper than 1m and can occasionally reach 1.5m. This made for flat and even ground. More specifically, this method improved insulation and reinforced the structure. The walls rested directly on the rock, thus ensuring a sound base and avoiding the need to build foundations. The ensuing rubble was stacked lengthways outside in an earthwork bank leaning against the building in order to strengthen the main wall and to improve the building insulation. One has to note that the creation of these earthwork banks marks the originality of the Massif Central buildings because the partially buried buildings of other French plains areas do not have this peculiarity [8 -11] unless erosion has destroyed all traces. This type of construction can only be found in the Blackhouses of northern Britain [12]. The earthwork banks are generally surrounded by an external wall. On site 699 (Malbo, Cantal), this external unsteady wall was reinforced on its outer side by a stack of large blocks (figure 12).



**Figure 12.** Map of Building 699-1 (Malbo, Cantal; testing F. Surmely, 2009 et 2010). © F. Surmely.

In all cases but one, the walls were built of dry stone, simply assembled with clay and without mortar. They were always thick, 80 cm in average, and solid. Some of the stones used weighed more than 300 kg. The builders had no trouble finding building materials on these volcanic soils. One can be led to think that the use of stones for building helped towards clearing the fields of them.





**Figure 13.** Structure 4 of the Les Yvérats medieval hamlet, constructed of wood, but with the same shape than the dry stones walls houses of the same site. © F. Surmely.

At the site of Les Yvérats, we identified seven structures. Six were constructed of dry stone blocks, and one was constructed of wood. The frame of the wooden structure consisted of evenly spaced wooden wall posts connected by small discontinuous wall trenches (figure 13). The outer walls likely consisted of boards joined by tongue and groove construction or of boards that were simply piled up. The wooden structure was of the same conception as the six stone structures. All possessed at least one access corridor, rectangular shape, internal hearths, and semi-subterranean basins. The construction and use of the wooden structure were certainly contemporaneous with the six stone structures.



**Figure 15.** Overhead view of Structure 699-2 (Malbo, Cantal; testing F. Surmely, 2010), during testing (2010). The actual plot or suspected walls of buildings was represented by a red line. Note the presence of long, straight access corridor. © F. Surmely.



**Figure 14.** The structure 2 of the Les Yvérats medieval hamlet and its curved access corridor. The corridor was originally covered © F. Surmely.

Regarding the internal dimensions, one can observe a great variety of lengths, ranging from 4 to 14m, whereas the widths were remarkably standardized (from 3.5 to 4.5 m). This can probably be explained by the preferred wood supply used for the tie beams. The tie beams used as roof or truss supports were of a standardized length. The rooms show internal dimensions of 13 to 49m<sup>2</sup>, with an average of 31m<sup>2</sup>.

The shape of the buildings also varies, though the most common model is of an elongated quadrilateral shape, in the style of a longhouse. It is not uncommon to also find L-shaped buildings with lateral extensions. Most cells are

limited to one building, but more complex groups comprised two or more units (covered buildings) and open areas (yards). The cell 699-1 comprised two distinct buildings, linked by two shared entrances (one of which has stairs) and both were protected by the same earthwork bank (figure 12). Structure 1 at the site of “Les Yvérats”, in the Sancy, include three batiments (units 1, 2 and 3) around a central courtyard (unit 4) (figure 7). This structure is in the centre of a group of five other isolated buildings. These groups (multi-part cells) are present on the Cotteuges (Trizac, Cantal; 5) site.

In our research areas, there was no evidence of internal partitions within the buildings, whereas the use of a separation wall was found on the Cantal site of Cotteuges [5]. One can evidently not reject the possibility of the existence of such separations built out of perishable material, which would have left no trace, as on the site of Brugheas in northern Auvergne [12], where blunt edged pillars were set directly on the floor without being set in the ground or braced.

The buildings were orthogonally orientated to the ground's incline.

All edifices had a reduced amount of openings, one or two at the most. The main access is always opened in a gutter wall. The entrance was sometimes preceded by a long corridor, straight or curved, whose length could go beyond 7 m (figures 14 and 15). Such corridors were found on other high altitude sites of the Massif Central and in the Aubrac [13].



**Figure 16.** Photograph of the frame of a datable pastoral structure in the mountains of Cantal, nineteenth century. © F. Surmely.



**Figure 17.** View of the drain passage in the west wall of Room 1 of Structure

n° 699-1 (Malbo, Cantal). © F. Surmely.

Of the 17 huts that make up the hamlet of Cotteuges (Trizac, Cantal), at least three of them (2, 6, and 8) bore an entrance preceded by a curved access corridor [6]. The function of this addition, most definitely built and covered in the same manner as the rest of the building, was assuredly to enhance the buildings' insulation in the manner of Inuit winter houses [14] but also to allow a level access to the building through the earthwork bank.

It is harder to reconstruct elevations because the edifices are found in ruined condition. We believe the walls were higher than 2m considering the large amount of stones we found inside the structures, with gables made of stone. We did not observe any excavation or pillars inside or outside the architectural units. Neither did we find any anchoring device on the walls, of which we only found the lower remains. The most likely hypothesis for all medieval and modern buildings of the two study areas are saddle roofs whose framework rests on a main beam set on the apex of the walls joined together by tie beams. This is the common pattern for the popular low range mountain edifices still standing (dating from the 18<sup>th</sup>/19<sup>th</sup> century; figure 16). On these buildings, one can see numerous differences, even within the same building, such as struts or collar-beams. The shape of the timber frame is unknown to us. In the case of burnt buildings we find large pieces of wood matching the collapsed and calcinated woodwork. In a vast majority of cases a form of vegetation was used as roofing material, rye straw, Already or gorse. But in Malbo (site No 699), the roof was consolidated by large stone slabs found nearby, on a mixed roofing pattern, witnessed by the 17<sup>th</sup> century writings in the Auvergne. May we bring back to mind that the positioning of heavy stone slabs, following the traditional encorbelling technique, does not require piercing as would be necessary for slate. The amount of slabs found show that it was definitely a mixed roofing technique and not only covering the gable ends.



**Figure 18.** Overhead view of Room 2 of Structure n° 699-1 (Malbo, Cantal), showing passage of the drain in the basement of the room. This drain served Room 1, interpreted as a stable © F. Surmely.

These tokens show activities outside the building, outdoors



or under light shelters.

#### 4.1.2. Inside Fittings (Drains, Hearth, Floor Tiling)

The floor of most buildings was covered with large flat tiles haphazardly laid out (figure 11). A wooden floor may have covered this fixture in order to keep the occupants away from dampness and facilitate their comings and goings.

The water Infiltration were evidently abundant in these rudimentary semi-subterranean buildings as they were often cut into a slope. In spite of this, No draining device was found. One can suppose the water naturally ran out, on the lower side, by ways of infiltration. A draining ditch was built in Building 699, which comprised two unequally sized rooms. We were able to study it in its entirety. It was designed to drain the liquids of room 1, which we interpreted to be a stabling area. It begins as a drain dug in the substratum meandering its way in the open in room 1 (figure 17). An exit was incased into the buildings of the wall to allow Passage through the room's west end wall. The drain runs through room 2 in the shape of a trench of a width of 0.3 to 0.5m to a depth of 0.25m, which was cut into the rock, covered by small joining tiles propped up by small blocks. In room 2, the drain was covered by a thin layer of compacted clay averaging 3cm thick making it perfectly watertight (figure 18). The trench runs through the western wall of room 2, the external earthwork bank, the surrounding wall, and ends outside. The exit is in the way of three slabs positioned in an inverted U-shape, its roof consisting of the supporting pile of rubble stacked against the outside of the surrounding wall. The global slant of the drain is slight and regular, from the centre (room 1) to the surrounding wall. The construction of the drain was carried out before the creation of the building; it is therefore constitutive to the construction of the edifice and also proves the contemporaneous nature of the two-roomed building. We noticed the placing of hearth stones, with the maximum of 2 in the same building (figures 19 and 20).



**Figure 19.** Basalt Hearth plate formed in the medieval hamlet of La Taillade (Compains). © F. Surmely.



**Figure 20.** Basalt Hearth plate formed in the medieval hamlet of Les Yvérats (Compains). © F. Surmely.

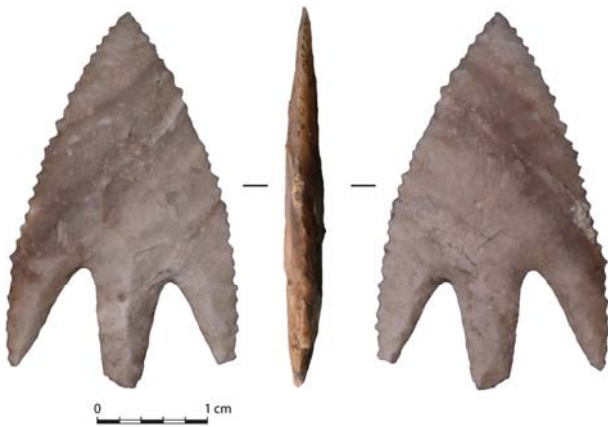


**Figure 21.** Stone mortar discovered in the medieval hamlet of La Taillade (Compains). © F. Surmely.



**Figure 22.** Pot found in Room 2 of Structure n° 699-1 (Malbo, Cantal). The object has been restored. © F. Surmely.





**Figure 23.** Neolithic or Early Bronze Age arrowhead discovered in the access hallway of Structure n° 1277 (Pailherols, Cantal), testing F. Surmely 2009 © F. Surmely.

There is no more evidence of internal particularities having left a trace on the sites. There are no thresholds or door sockets at the doors, nor any nooks in the walls.

**4.1.3. Outdoor Fittings**

Our test excavations were not particularly aimed at the areas outside the buildings; therefore, the external layout remains unknown. An examination of the north and south borders of building n° 699-2 brought to light areas of activity, one of which seems to have caused a reddening of the soil, although we were not able to determine whether these were open air or covered areas.

**4.1.4. Artifacts**

The rudimentary nature of the recovered artifacts is a

consistent on all rural sites of this period. Metal items are rare, limited to some knife blades, horseshoes, needles, keys and iron rings (site n° 1277). No coins were discovered. One stone mortar (figure 21) was recovered at the site of la Taillade (Compains).

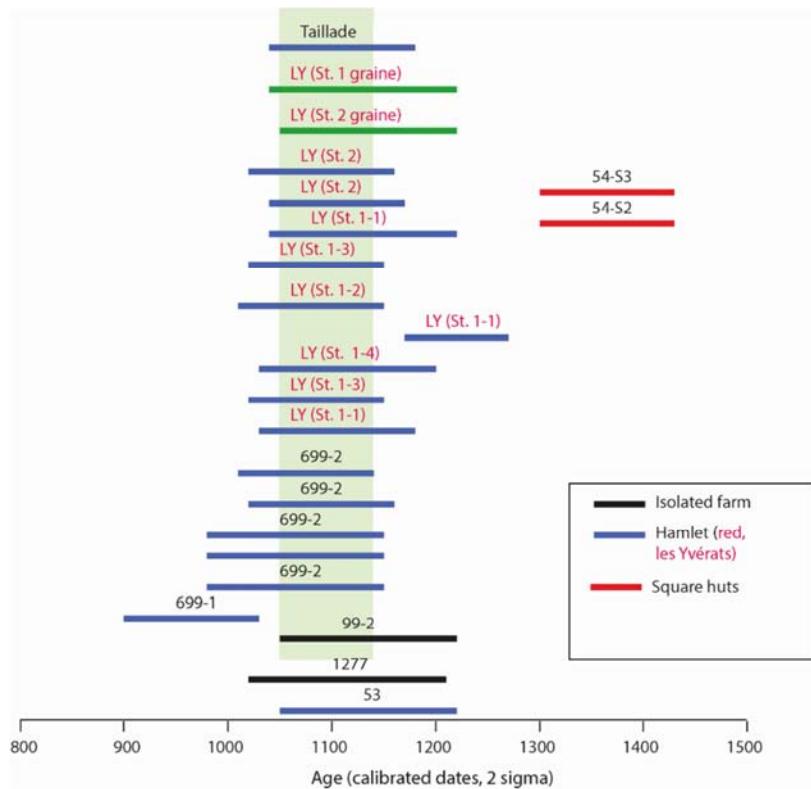
The ceramic artifacts were found in larger quantities, though limited to domestic furnishings and bobbins (figure 22).

The sites revealed similar furnishings, principally non wheel-turned ceramics, baked in a reducing atmosphere. Amongst the artifacts we recovered are cauldrons, pitchers with pouring funnels, and jugs. These three shapes are typically linked to consumption; as a matter of fact, many ceramic fragments showed signs of soot and burned residual matter (caramel). We identified different types (not of our designation); it seems that the degreaser and the technique enhance the homogeneous appearance of the lot. Based on the features of type 6 and according to local statements, we believe the making of these to be local or domestic.

Finally, in the corridor of building 1277, we also recovered a prehistoric (early Bronze Age probably) arrowhead showing no traces of use (figure 23). It was likely kept as an amulet or curio, discovered and lost by the local medieval dwellers [15].

**4.1.5. Chronology**

With the exception of site 699, which could be a little bit more ancient, all sites are radiocarbon dated to the Xth-XIth centuries (figure 24).



**Figure 24.** Table of radiocarbon dates obtained on medieval sites of Cantal and Sancy © F. Surmely.

#### 4.1.6. Archaeobotanical Analysis

Palynological, carpological, and anthracological analysis were carried out in isolated farms or grouped in hamlets.

The Palynology shows the weak frequency of taxa due to the presence of cattle in all the buildings that had been studied, except one.

The study of the burnt grain shows the same result. Cereal is predominant in quantity on site 1277 with rye the most abundant (figure 25). Ninety-three carbonized rye caryopses were found (*Secale cereale*) in only four liters of sediment taken from the habitation level of this structure. The predominance of rye is surely due to its resistance to frost and acidic soils. Local cereal cultivation is characterized by the presence, on the same site of six taxa of adventices, from rye plantations: corn – cockle (*Agrostemma githago*), yellow bugle (*Ajuga chamaepitys*), rye brome (*Bromus secalinus*), cornflower (*Centaurea cyanus*), wild buckwheat (*Fallopia convolvulus*) and field sorrel (*Rumex acetosella*). The other cultivated plants found in building 1277, oats (*Avena Sativa*), peas (*Pisum sativum*), were probably for consumption. The cultivation of peas is widespread in middle age leguminous farming [16].



**Figure 25.** Rye grains found in Structure No. 1277 (Pailherols, Cantal). Identification and study: Mr. Cabanis. Picture: F. Surmely.



**Figure 26.** Fragment of a cereal wafer, discovered in Structure n° 1277 (Pailherols, Cantal). Identification and study: M. Cabanis. Photo: F. Surmely.



**Figure 27.** Aerial view of walls interpreted as the remains of a medieval plot, around the site n° 39 (La Montagne de Caillac, Pailherols, Cantal). © F. Surmely.

In the upper structure 699-2, we found two other kinds of cereal in addition to rye, wheat (*tritium sp*) and barley (*Hordeum vulgare*). The practice of general mixed farming was therefore present in the area. Barley is a fall crop. It adapts itself to a wide variety of soils (rich or poor) and can resist drought and frost. The nutritional value of barley makes it a very popular human and animal food. The morsels of carbonized flat cake, the larger one found on site 1277 (figure 26), and the two pieces found in a pot on site 699-1 indicate *de facto* consumption.

#### 4.1.7. The Fragmentation of Land

Due to its early agricultural use and the absence of urban sprawl the soil has kept the same qualities as in medieval times.

Of course it is often very difficult or impossible to date the earth work (ditches, paths, walls) with precision. We believe we have identified remains of medieval plot division in a hamlet in the Cantal on site 39 (Lacapelle-Barrès, Cantal; figure 27). On the small plateau overlooking the hamlet, one can find small walls surrounding plots of land.

The parallel length-wise shapes of these is quite different from the present plotting which can be traced to the original land register of 1831.

Seeing their proximity to the medieval hamlet, it is quite plausible to date them to the medieval period.

#### 4.1.8. Determination of Building Function

Most buildings subjected to study were destined to house humans (dwelling or workshop). We draw this conclusion by crossing the following criteria: a hearthstone, varied furniture, the presence of carbonised grain flat cakes, and stairs or long corridor.

In certain cases (room 1 of site 699-1; figure 12), we hypothesize the space was used for animal stabling, due to its large size (14 m long), the lack of furniture, and the existence of a drain. The door is relatively narrow, but it matches the agronomical manuals of the 18<sup>th</sup> century [17]. It indicates the presence of large livestock. At this stage of our research it is evidently impossible to tell if they were horses or cattle. As a note of interest, this area set aside for animals was not directly linked to the abode but was an



independent building. In the structure 1 of Les Yvérats, the building unit 3 was probably used for animal stabling or storage, because there were no hearth or ceramic sherd inside (figure 7).

## 4.2. Square Buildings

### 4.2.1. Location, Disposition and Architectural Layout

We also isolated another category of buildings, as yet not described by researchers, small square huts with very

standard dimensions, of 4 to 4.5m in length and breadth. These structures can be isolated or found in groups of two or more (up to 13). The global layout of these buildings is more splayed out than the oblong structures. The huts are found at elevations as high as 1515 m [18].

On site 54 (figure 28) there are 13 such structures, all appearing identical. Eight, set out in a triangle, with a centre area of several square meters, are situated on the edge of a plateau, a difference in level of approximately 10m exists between the higher western end and the lower eastern end.

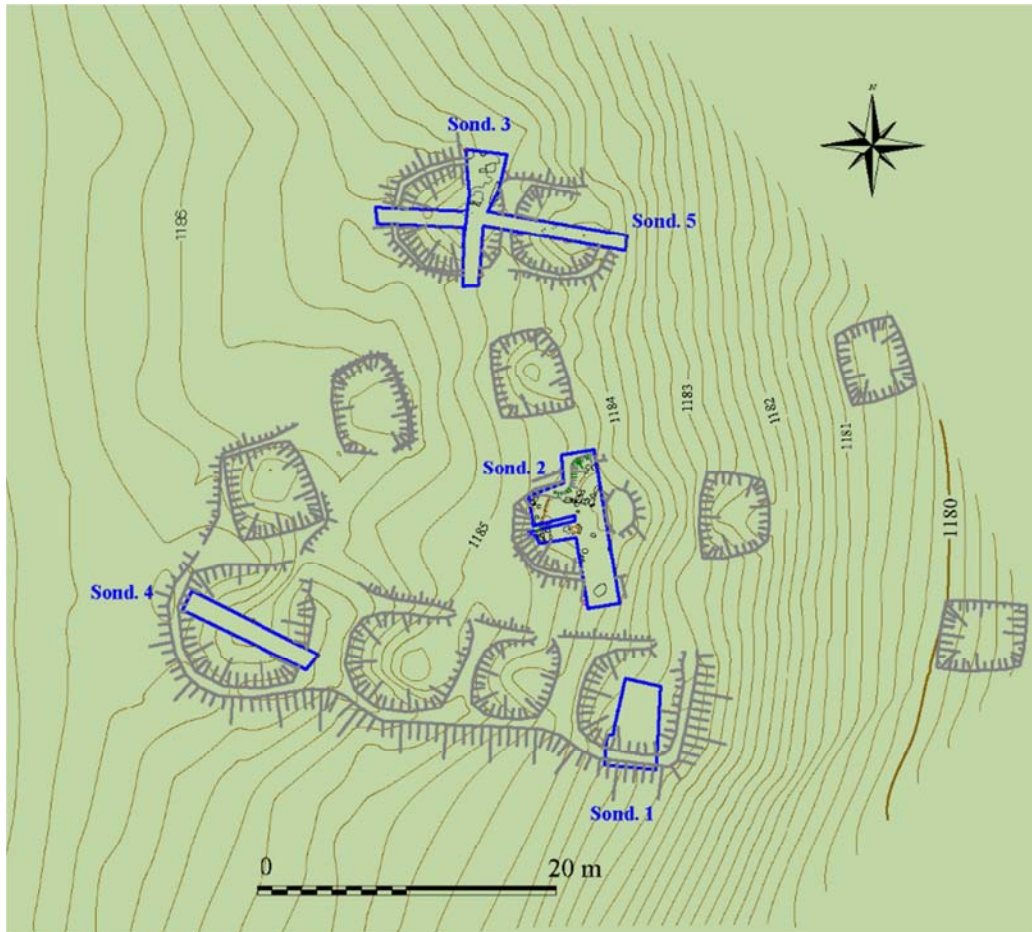


Figure 28. General plan Map of Site No. 54 (Pailherols, Cantal), with an indication of the areas tested © P. Boudon and F. Surmely.

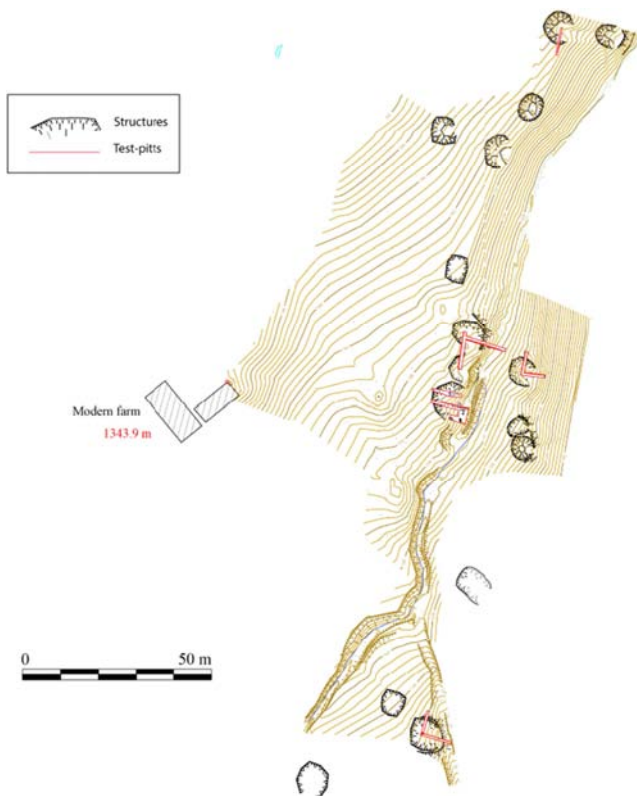


Figure 29. General overview of Site No. 54 © F. Surmely.

This type of construction is known in the Cantal. In the Sancy, one can also find such buildings but as their dating remains unsure, they could be more recent (*see below*).

Mention has already been made as to the standardization of their dimension approximately  $4 \times 4$  m. Their other resemblance lies in their rudimentary construction. The ground was only slightly excavated (from 0.5 to 0.70 m in depth) and the rubble stacked in a much smaller earthwork bank than the one found with the oblong buildings. There are no stones present. The wooden separations upheld a framework made of perishable material (thatch or squares of turf). A pillar hole was found in some buildings, its probable purpose being the central roof support. The absence of stone flooring or drainage was noted. On site 54, a hearth stone was found in one of the structures. In all other structures of

this site no fittings of any sort were discovered.



**Figure 30.** General map of Site 240 (Malbo, Cantal), with at least 15 square huts located in 3 “groups”. Testing V. Nicolas, 2010. © P. Boudon and F. Surmely.

#### 4.2.2. Furniture

On site 54, which represents the only group of small square buildings we tested, two scenarios were observed. One of the dwellings (n° 2) revealed abundant ceramic furnishings, composed mainly of fragments of closed shaped receptacles (pots and pitchers) used for cooking and service. This building also contained a basaltic slab of 80cm<sup>2</sup> used as a hearth stone. In the three other buildings we tested, no improvement was found, the furnishings, totally absent in two of the structures, was limited to a few fragments in the last one.

#### 4.2.3. Chronology (Figure 24)

Site n° 54, building 3 (US 25): 1300–1430 cal AD (Poz-26643).

Site n° 54, building 2 (US 40): 1300–1430 cal AD (Poz-26645).

#### 4.2.4. Interpretations

The case of these buildings appears complex. Some completely lacked any remnants of furniture or any form of permanent fixtures. One must therefore guess their purpose was one of animal shelters, or forage/tool storage. Modern day writings mention the systematic existence of buildings destined to protect young calves from bad weather and predators (e.g., wolves; [19]). A few buildings disclosed items and fixtures (hearth stone) proving their use as human

dwellings. Despite their small size, the nature of furnishings found an the extreme simplicity of their architecture corroborate their use as seasonal shelters, frequented by a limited number of individuals.

## 5. Discussion

### 5.1. Qualification of the Buildings Function

The question of finding the function of the living spaces (buildings or part of buildings) remains one of the Butjor research questions of all researchers studying rural population [19]. The lack of conservation of organic (except charcoal) remains is still a complicated problem in the Massive Central. We are not convinced that the criteria put forward by several researchers [5, 13] are reliable. The crux is in the systematic association of tiled inside areas with a stabling areas. Regarding medieval and modern sites, we were able to show that the paving was destined to be human living areas, whereas they are not in place [20] in storage areas (like cellars of 16<sup>th</sup>-17<sup>th</sup> century smallholdings). In the “burons” (pastoral byres, used for rough dwelling, stabling, and cheese manufacture in the summer season) of the 19<sup>th</sup> century, whose exact utility was laid down on the original land register, the tiling is found indiscriminately in the living and the stabling areas. The existence of a hearth does not seem to be a determining factor because small hearths have often been present in stables for use by servants to guard the heard and help Harding calving [20]. We privilege other criteria such as the existence of a central hearth stone (which indicates a human living area), or the afore mentioned drain. Most of all we deem the use of only one Policyon to Diagnosis a theory rather daring. Therefore the presence of only burned rye grain in a building could ensue from Largeage on the ground or in a granary situated above a living area, of use on the spot, corn ears used for thatching... which leads to the possibility of a wide range of uses for the building. We believe only a combination of clues permits a reliable interpretation.

Within the frame of the research scheme, we chose to cross our purely archeological data with the findings of the paleo-environmentalists which bring valued information in this field.

The nature of the vegetal remains in particular areas gives us reliable arguments to determine their use. So, in the case of building 1277, the archaeological clues (narrow doorway preceded by a curved corridor, the existence of varied pieces of furniture inside) added to the ones gathered by paleobiologists (rye grains and fragments of burned flat cakes, a small proportion of grass pollens) suggest that the building was used as a human dwelling.

We plan to carry out chemical research which could give interesting results [20] and genetics [21].

### 5.2. Desertion and Modern Day Transformations

We were in all cases able to physically date the rectangular



stone houses. Their desertion is dated before the 13<sup>th</sup> century. We did not notice a discrepancy between hamlets or isolated buildings, although our analysis remains limited due to the lack of precision of carbon dating. Therefore, we cannot link their desertion to the Hundred Years' War or the 1348 plague as did previous researchers. British historians and archaeologists came to the same conclusion [7]. None of these buildings gave indications as to their use by more than one inhabitant (generation or building episode) or of alterations. One must therefore believe that their occupation time span was relatively short, which appears to have been the case of many medieval buildings throughout Europe.

The most plausible hypothesis for their desertion remaining is the economical transformation of land use. The landscape shifted from a diversified pastoral farming setting to specialized summer pastures within the frame of speculative farming. The Cantal [22] and the Sancy [23] Archives corroborate this phenomenon. It is also visible through the pollen analysis we made on peat bogs. In the Cantal area we were able to proceed with nine core drillings on five peat bogs ranging between an altitude of 1000 and 1450m (Caillac, Parent, Vèze, Vixouze and Clos). We deem the intrinsic variety and the gradient of these marshy areas a reliable way of characterizing the countryside's evolution in the research areas. The analysis is not totally finalized; carbon dating results are still to be added. As a general rule, deforestation became more important between the 3<sup>rd</sup> and 4<sup>th</sup> century. The anthropogenic pressures remain strong up to the last century. The Vèze site shows a new environmental opening period around the 12<sup>th</sup> century [20, 26]. The pollen makers show diversified agricultural and pastoral activity for that period with evidence of cereal farming in the lower part of the area and grazing more widespread in the highland zone.

It may be linked to the degradation of its climate during the Little Ice Age (LIA), which seems to begin around that period in France.

The consequence of this transformation would have been the retraction of permanent dwelling, the desertion of farms and hamlets, and the construction of shelters uniquely destined to serve as seasonal dwellings for shepherds and cheese manufacture. The shelters christened in texts as "cabanes" assuredly match the square buildings (figures 28 and 29) described above.

Their construction as well as their use have survived till the early modern period, to be replaced by larger and more solid buildings, incorporating stone walls, as from the 16<sup>th</sup> century. The palynological analysis shows the spreading of pastureland between the 14<sup>th</sup> and the 16<sup>th</sup> century in a completely open environment with small woodland islands [24].

The seasonal grazing system has survived till today even if human dwelling stopped after World War II due to technical changes. A hamlet deserted at the end of the 17<sup>th</sup> century, found in the Sancy, leads us to believe that this region's pattern of evolution was different, from the one observed in the Cantal, with a second phase of habitat retraction situated

at the end of our modern period [25]. This variation still needs explaining.

### 5.3. The Differentiation of Medieval and Modern Structures Is a Delicate Question

In regard to methods employed, out test excavations also contribute to answering an important question, that of the characterization by simple visual examination of buildings situated in hollows. As far as we are concerned, this question is the crux of the study of the medieval low range mountain populations of the Auvergne still today.

Our research allowed us to create morphological types (isolated square huts, grouped or rows of square huts, groups of rectangular huts) and to fix them in a given period and economic context. The major remaining hindrances were the isolated rectangular huts built with stone walls which make up the major category by their quantity (155 listed in the research area).

Our testing program allowed us to go further and establish that this category covers "proto-burons" of different kinds (single room, with an inside dividing wall, with or without a cellar), built in a period ranging over at least two and a half centuries, but also medieval farms, set in a time scale from the 10<sup>th</sup> to early 13<sup>th</sup> century. One can even find such structures (not tested) represented on the land register of 1831 in the Malbo municipality, which is a testimony of their survival up to this late age.

What distinguishing criteria can be used? The wide diversity of plans and dimensions (especially lengths) prohibit research on the shape of the buildings as a truly discriminating criteria. According to L. Fau [13, p. 94 and 136] the key to enable a classification is in the situation of the access: "*the "Buron" prior to the 19<sup>th</sup> century is always of quadrilateral shape, with an opening systematically situated on the gable wall; whereas the buildings of a farm show more diversified plans and never have openings on their small side*". This interpretation in our opinion is false. As a matter of fact one of the two "burons" tested in the Aubrac research program [13, p. 168] has an opening situated... on the south side gutter wall! In fact in our area as well as in the Aubrac, they are the sole burons with a stone vault whose access is mostly Located in a gable wall [26]. Pastoral edifices prior to the 16<sup>th</sup>-18<sup>th</sup> centuries are mainly built with an entrance on a gutter wall (buildings No 1335, 1336, 1337, 1338, 335, 1365) whereas entrances on gable walls are rarer (building No 13-2) [18]. There are cases of structures showing double access, on the gutter wall and on the gable wall (building No 1799). Concerning medieval structures, at least one of them shows two entrances: one on the gable wall, the other on the frontage. Let us finally add that determining the entrance location is sometimes impossible Two to erosion or the sedimentation of a large quantity of sites.

Following our research in the Cantal, we were able to put the theory of the medieval origin of the hamlets forward [2, 18]. Then, a testing project at such a site in the municipality

of Compains, revealed that permanent hamlets were built in the highlands during the modern period (17<sup>th</sup> century).

Therefore, two distinguishing criteria seem valid. Medieval structures are generally buried deeper than later ones, with of course a larger earthwork bank. Finally, the distinction of these structures, coupled with the difference of the floor level in both types (i.e. the existence of a cellar), was only seen on pastoral buildings dated from the 16<sup>th</sup> to the 17<sup>th</sup> centuries.

As far as stone-less structures are concerned, the problem is all the more intricate. We have noted that some were definitely built at the end of the Middle Ages. Although our research has shown the use of these buildings vary much later in time and other identical ones built in early modern ages. One cannot therefore date these buildings by visual examination alone. A large number of these can be found on the mountain of Mount Dore. They are often found gathered in rows of 2-23 buildings closely built, in opposition to the Cantal region. Each of these small units is built with an entrance followed by a corridor. These rows are locally known as “*After*” and are also called “*Combs (combs)*” Two to their lay-out seen from above. These structures can be found by the hundreds in some areas. In spite of their large numbers, these sites have not been subjected to much field research. Only two sites have been partially tested since World War II. If the majority of these structures seem to be datable to modern ages, much doubt remains Two to lack of field work [27].

Therefore, one has to be very careful in chronologically placing the structures existing in the Massif central highlands as well as assigning them a specific use. Surely, a simple visual inspection previously carried out by plane or from an aerial photograph cannot suffice to specify all the sites. For this reason we dated an important part of our corpus without differentiating the “medieval/modern” ages.

#### 5.4. Cantal/Sancy Differences

Precise comparison of the two areas remains difficult. Although they are geomorphologically similar, the Cantal and the Sancy are separated by 50km of difficult terrain split by deep valleys. Similarities between the resident medieval populations of both regions can be seen. Their embedded and functioning methods are alike. Moreover, their architectural conceptions are identical. A reasonable interpretation is that this reflects a similar adaptational response to similar socioeconomic and environmental conditions. However, the presence of identical access corridors to distinct structure types in both areas suggests shared influences and interactions. This presents solid evidence contrary to old theories of isolated medieval mountain populations.

The timing of the emergence and abandonment of medieval hamlets in both areas is also alike. Comparative assessment is more delicate for the later periods of the Lower Middle Ages and the Modern Period. Data pertaining to the Sancy is generally lacking because systematic surveys have only recently been undertaken (i.e. this study). One significant difference between the two areas is observed,

though. The myriad groups of large, elongated units (“combs”) in the Sancy are nonexistent in our surveys of the southern Cantal Mountains. This unusual architectural trait of the Sancy Mountains may be explained by the particular collective grazing system employed by hamlets and villages there. This is in contrast to the individual farming system which largely characterized the northern Cantal Mountains wherein farmers rented morcels of mountain grazing land from wealthy landlords.

## 6. Research Conclusions and Perspectives

This paper rests on data gathered by a limited amount of survey and testing in spite of the large number and variety of said structures. We are aware of the fragility of the hypothesis set forward.

In spite of these reservations, certain points are already established. The structures we studied (we are referring to the rectangular buildings), are in standard with the ones already recognized in other sites of the Massif Central, north Cantal, Aubrac, and Haute Loire), as far as their architecture and layout are concerned. The chronology of their use and desertion remains the same, in spite of the lack of precision in their dating. We are therefore dealing with a general phenomenon mirrored in other European regions. Our work concerning the small square structures, believed to be seasonal shelters, shows a change from pastoral farming to seasonal and probably speculative exploitation of this mountainous area dating around the 13<sup>th</sup> century. This caused permanent dwellings to recede and an alteration of the landscape. Summer cattle grazing and cheese manufacturing assumed total hegemony in modern times.

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