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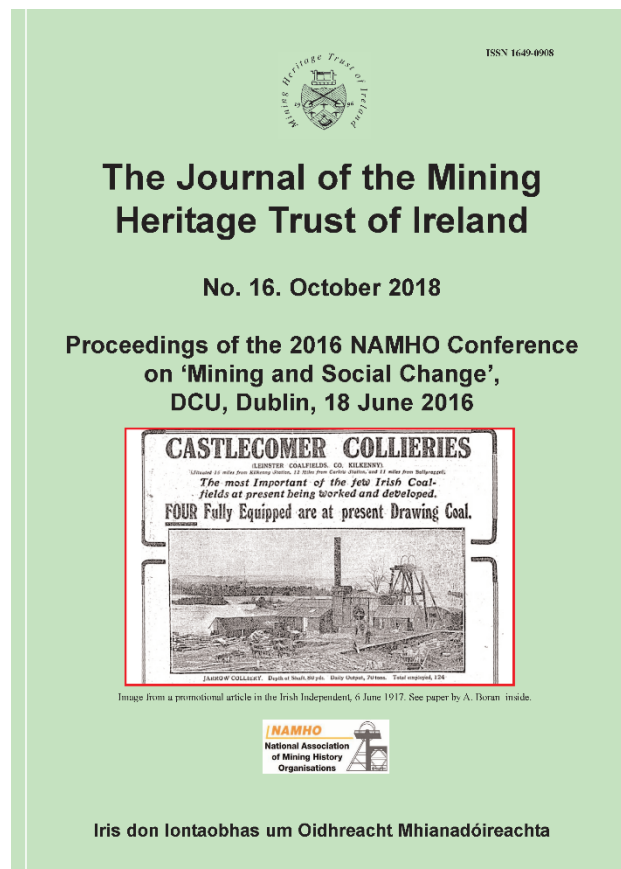
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MINING, MEMORY AND THE MOUNTAIN: IRON MINING ON THE CANIGO MASSIF (PYRÉNÉES-ORIENTALES, FRANCE)

by Sharon Jenkins Carter and Peter Claughton

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Preface: At the NAMHO conference in Dublin in 2016, Sharon Jenkins Carter took us through her work exploring how the heritage of iron mining defines the identity and culture of the local population of the communities of the Canigou in the department of Pyrénées-Orientales (France). That was two years ago, when her work was in its early stages. She did submit a paper for this publication but that has been lost and we are not in a position to recover it as Sharon has been in hospital, since the middle of March. However, her work had moved on in the last two years and the paper below does reflect the advances she had made in that time.

The paper, *Mining, Memory and the Mountain*, was published in the Yearbook of the Institute Europa Subterranea for 2018, and is included with their agreement*. Sharon and I have collaborated on the study of iron mining in Pyrénées-Orientales over the last three or four years but she is the one who has focused on identity and carried out the narrative enquiry required to determine how the memory of mining influenced the population of the area today, some thirty to forty years after the last iron mine closed. My role was to research the technology, and interpret the remains of mining and the related transport systems. So what you see below was primarily Sharon's work and reflects the investigations she has carried out in the two years since the Dublin conference. *Peter Claughton. Journal of the Mining Heritage Trust of Ireland, 16, 2018 21-32.*



Sharon at work - making enquiries with a view to interviewing (A) a recent incomer to the area, and (B) a former miner, along with his wife.



* J. Silvertant (ed) *Echoes of a Mining Past*, Yearbook of the Institute Europa Subterranea (Kelmis/Gulpen, 2018)

INTRODUCTION

The mountainous area around the Canigou massif, 50km west of Perpignan in the French department of Pyrénées-Orientales, bounded on the north by the Têt and on the south Tech valleys, has been mined for iron ore since the Roman period, if not earlier. From the late-medieval period up until the late 19th century those ores had supplied the advanced charcoal-fired bloomeries of the *Forges Catalanes* (Catalan Forge). Production of iron by this means was limited in scale. Utilising local woodland for fuel, it could not develop to supply an expanding industrial economy. And the rich ores found around the Canigou massif were too remote to justify movement untreated over any distance until improved transport techniques were developed in the mid to late 19th century.

In the 1870s the arrival of the railway at Prades, in the Têt valley, signalled a significant change in the role of the iron ore field. For the next century, to the 1980s, the mines around the Canigou were to focus on the export of ores to markets in southern and central France, and as far afield as South Wales. The mines near Taurinya, on the north side of the massif, were the first to take full advantage of the railway when a chain-operated incline tramway was erected to link them to Prades. By the end of the century the railway was extended beyond Prades to Villefranche, with a narrow gauge line continuing up the Têt valley to the west, and it was also brought into the narrow Tech valley south of the massif. This allowed remote mines such as Batère and La Pinouse, on the southern slopes, and the mines around Sahorre and Escaro, on the north-western side of the massif, to be worked on a large scale, linked to the railways by inclined planes, tramway systems and aerial ropeways.

Along with the communities which expanded to support the mines, the remains of barracks on the mines themselves, the physical evidence of the mine entrances and the transport systems are features which survive in the landscape today. But the memory of what they represent amongst the population today is mixed, responding to changes in the landscape and its uses since the closure of the mines.

The authors are in the process of carrying out a detailed appraisal of the evidence for iron mining on and around the Canigou massif over two millennia. Building on that evidence there are two strands to the current investigations - the interpretation of the physical evidence for mining and the associated transport systems which are significant features in the landscape today; and understanding how the memory of iron mining has developed since the closure of the mines. For the latter strand extensive use is being made of narrative inquiry, interviewing current residents of the area, including those who worked in or had direct links to the mines when they were active.

CULTURAL AND HISTORICAL BACKGROUND

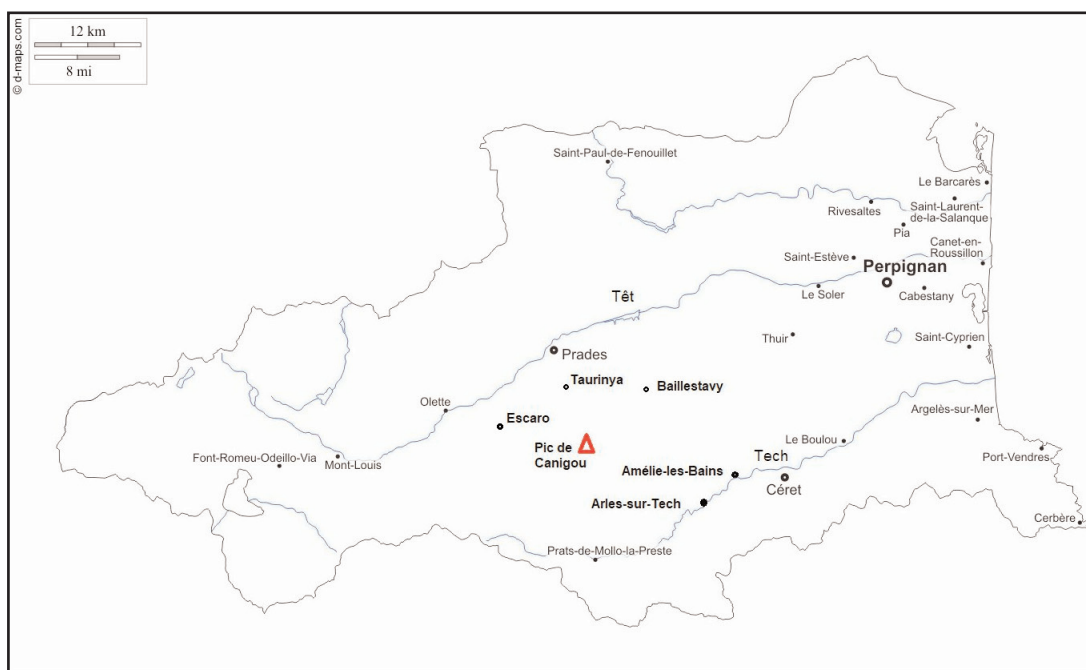
The Canigou massif, the mountain which is the geographical focus for this paper, lies at the eastern edge of the Pyrenees. The symbol of Catalonia, it is a focal point for Catalan culture and identity by those on either side of the border. The Catalan poet, Verdaguer, highlighted the beauty of the mountain in his poem *El Canigó*, which he wrote in 1886 after a visit. He saw the mountain as a symbol of unity and so wrote the poem in order to unify Catalans from both sides of the border in a culture which promoted the Catalan language.

The economic importance of the mountain was realised centuries ago when people discovered the potential of the iron ore outcrops in abundance on the slopes of the Canigou. It is not known exactly when the ore was first mined and worked on the mountain side, but certainly archaeological investigation has uncovered evidence of the Romans mining for the Canigou ore, and it is possible that they worked sites already known to them.¹

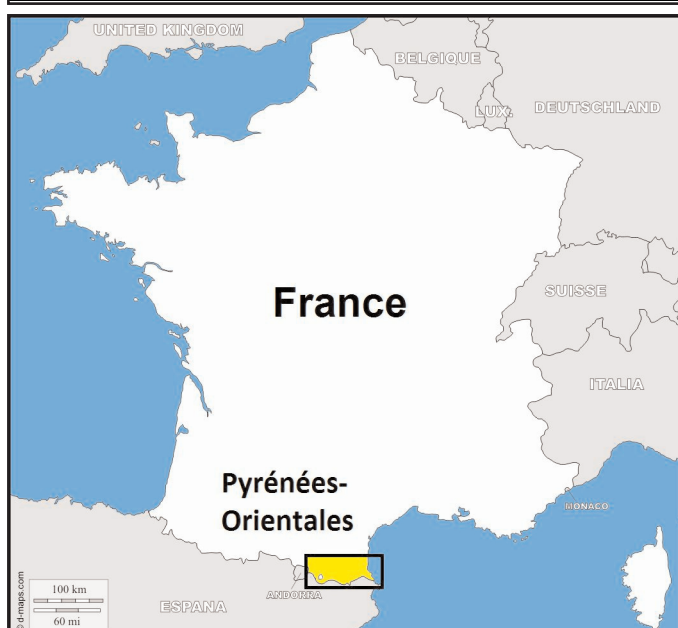
The long history of iron mining in the area is in fact an element of stability and continuity in what has been, politically and geographically, a disputed region with many changes of lordship. The iron deposits are the reason why the villages are there on the slopes of the mountain and, up to the last generation, gave structure to village life. With the closure of the mines, the organisation and structure of village life has changed. Population decline and the nature of dispersed employment have brought about a different routine to the organisation of village life and the focus of the villages has changed from an inward-looking perspective, to a constellation of outward-looking individual foci: "We would always watch the miners going to work, I would hear them first, all together, passing by" (Participant 2). "People go to work in Prades or somewhere. There is no work here now" (Participant 1). This latter perspective contrasts the diverse set of social structures in the former iron-mining communities of today, with the integrated organisation based around a single commodity in previous times.

On and around the Canigou massif, there are two dominant forms of iron ore hosted in the Cambrian limestone formations. Originally deposited as carbonate iron ores (spathose- crystallized ferric carbonate FeCO_3), some of these have been altered into brown hematite (hydrated ferric oxide Fe_2O_3). These ores also have a low phosphorous and high manganese content which produces a strong, malleable iron. From the mid-nineteenth century onwards, after the introduction of bulk steel processing, this was particularly attractive to the iron and steel industries. Hematite ores were shipped to the smelters 'as mined' but the carbonates were generally calcined on site to reduce their carbon content prior to shipping, and the furnaces, *fours de grillage*, remain as features on many mine sites (see Figure 3).

¹ Les Pyrénées-Orientales, Les mines de fer: Izad & Mut, 'Mines Forges et Charbonnières dans le massif du Canigou; Problèmes de transition entre les industries antiques et des indices du renouveau carolingien', p. 122; Taurinya, A. 'Paroles : Alain Taurinya', in *Le Fil du Fer* 13, p. 3 ; Domergue, et al., 'Mines et métallurgies en Gaule à la fin de l'âge du fer et à l'époque romaine', p. 139; Barouillet et al., 'Mines et Fonderies Antiques et Médiévals du Canigou'.



Figures 1A below left , and 1B left - Locations - principal locations mentioned in the text around the Carnigou.



The Canigou ore is of a particularly high quality, a fact which was highlighted by the majority of those taking part in the research. Most of those interviewed referred with pride to the quality of the iron of the mountain, within a few moments of talking about the mining past. It represents an affinity with the riches of their landscape. Whether or not people were aware of the geological component of the ore which produced such a richness of iron, is almost an afterthought to the untouchable status this fact receives from the local population. It has acquired an almost mythical quality in that it is unquestioned and deeply embedded in the cultural heritage of the landscape.

The development of the iron industry around the Canigou is linked to the mountainous landscape through its relationship with the forests, the transport means developed to remove the ore down to the valleys, the rivers and streams so critical for the smelting process, the Catalan Forge, and the resilience of the population who lived and worked in this terrain.



Figure 2 - Canigou - the mountain (authors' photograph).

Despite the remote location of the ore, the region was by no means isolated and archival records attest to people of other nationalities who came to work in the mines.² Documents relating to the medieval period refer to Genoese, Arabs, Portuguese, Catalans from the south, Basque and Navarrese who, in a variety of capacities ranging from miners and blacksmiths to forge owners lived and worked amongst the mining operations, for varying lengths of time. Its frontier location and its proximity to the Mediterranean allowed for connections with the wider world, and trade was also the conduit for the spread of ideas.³

The discussion concerning the exact origins of iron working generally centres on two main approaches: independent development in each location, or diffusion of ideas and techniques. Whether or not it developed independently or the process spread as a result of diffusion, is of more interest from the point of view of the extent to which it adapted to local circumstance.

² Izard, V. 'Cartographie successive des entreprises métallurgiques dans les Pyrénées nord-catalanes', p. 119

³ Hilaire-Perez & Verna, 'Dissemination of Technical Knowledge in the Middle Ages and the Early Modern Era', p.549.



Figure 3 - Four de grillage at Les Manerots (authors' photograph).

Communities are not passive, and diffusion of technique must surely be related to people's capacity to adapt and to respond to their own contingent needs. Moreover, it is the marketplace which inadvertently selects the criteria for adaption and adoption. And the merchant is the mediator with his eye for quality: "merchants not only provided goods, materials, and information, but mercantile culture itself was crucial in gathering facts, making inquiries, and comparing qualities, devices, and uses. It developed an analogical method of thinking that encouraged substitutions, adaptations, and translations of techniques".⁴ It is the spread of ideas and people's responses to these ideas which indicate the culture into which they are adopted and absorbed. They reflect a vision of a future towards which a society strives.

The history of iron has been tied to the story of the forest, right up to the modern era when the use of coke to power the blast furnaces was perfected and iron smelting in France became concentrated on the coalfields. This has implications for the landscape of the Canigou and the relationship of the population with these resources.

The earliest iron surface outcrops were known and worked by the Romans and archaeological evidence has so far dated the sites in the village of Taurinya on the northern slopes of the Canigou, the site near St Marsal on the southern flank and the site below the church at Baillestavy as the oldest known Roman workings.⁵ However, it is feasible that other early worked sites are yet to be dated. There followed a period of political instability in the region, when waves of invaders swept through the landscape. It is uncertain whether the iron mining continued during this period as there is no documentary or paleo-environmental evidence to support this, but Izard and Mut argue the case that it is unlikely that the Roman workings would have been abandoned as there was always a need for iron.⁶

However, the archives of the monastic houses of the region reveal that the monks were aware of the iron resources and were involved in the iron-mining activity as early as AD 855.⁷ Departmental archives held in Perpignan record the first written mention of the iron-smelting activity: in 1163 Alphonse of Aragon donated a moulin to the monastery at Campredon: "illas manticas meas quas ego habeo in villa de Pinu".⁸

The identification of spoil from workings on the paths to the summit of the Canigou, on the ridges above the villages of Mantet and Evol (towards 2000 metres) and in the forest above Baillestavy, which belong to the early medieval period, are evidence of a number of sites where the reduction of iron ore took place, and lend themselves to consideration of the extent and height of forestation on the mountainside.⁹ Here, place and space merge as the smelting activity moved around the forest, opening up footpaths for the transport of the ore by the local population.

During the medieval period, the mining of the iron ore continued, but with the evolution of the Catalan Forge the smelting process needed water power. Thus the relationship between forest and ore became a tripartite arrangement: forest, ore and water source. The mountain is host to numerous fast-flowing streams and rivers and these were now the important places in the landscape. They became the focal point for all activity in the processing of iron and all footpaths led to and from the forges. These forges have been recorded in the mountain villages, near the mining workings, and further down in the valley.¹⁰ Transporting the ore to the forge in the valley town of Arles-Sur-Tech would have entailed a greater degree of organisation of resources, people and donkeys, in order to cover the distance.

⁴ Hilaire-Perez & Verna, 'Dissemination of Technical Knowledge in the Middle Ages and the Early Modern Era', p.539

⁵ Izard 'Cartographie successive des entreprises métallurgiques dans les Pyrénées nord-catalanes', p 117

⁶ Izard & Mut, 'Mines Forges et Charbonnières dans le massif du Canigou' p. 127

⁷ Izard 'Cartographie successive des entreprises métallurgiques dans les Pyrénées nord-catalanes', p 117, citing Verna-Navarre, Esquisse d'une histoire des mines et de la métallurgie monastiques dans les Pyrénées (IXe-première moitié du XVIe siècle).

⁸ Izard 'Cartographie successive des entreprises métallurgiques dans les Pyrénées nord-catalanes', p 117

⁹ Op cit.

¹⁰ Ibid, pp. 117-119

THE CATALAN FORGE

As a marker of identity, the name Catalan Forge, is synonymous with iron processing in Catalonia and, as such, has given the region worldwide recognition. The Catalan Forge was a bloomery-based, direct smelting system, and water-powered, which continued to be used into the late nineteenth century. Whether or not these forges originated in Catalonia is the subject of debate and research, which enlarges to involve the discussion about the diffusion of ideas and techniques during the medieval period, but the terminology itself is part of the journey into Catalan identity.¹¹ An early conversation with a young archaeologist, on an initial visit to the area, witnessed his enthusiasm to show the authors the site and remains of such a forge in Arles-Sur Tech. However, at this stage, one must be cautious to assume, bearing in mind that he was an archaeologist and as such, the Catalan Forge figured in his vocabulary.

Never the less, the scholarship surrounding the debate over the origins of the Catalan Forge has relevance for a number of reasons. It highlights the movement of people and ideas into, and through, the region. It serves to illustrate the debate concerning whether or not techniques developed independently in other parts of Europe, or whether the Catalans themselves were the innovators. But, for the purpose of this research, the debate concerning the origin of the term and the process, highlights present day concerns with heritage as a means of affirming collective identity. It also shows the importance of language as a window onto the world: ownership of the terminology in a specific language can drive the argument so that it becomes fact, a form of false consciousness. However, the fact that the term Catalan Forge is accepted today is a reflection of the collective spirit surrounding it and its adoption into the mythology of the Catalan mining past. In a similar vein, Verna draws attention to the political situation of the Catalans, following the dictatorship of de Rivera in Spain (1923-30), and sees the Catalan forge as a rallying symbol for Catalan identity.

OWNERSHIP AND MINING CONCESSIONS

Up until to the Revolution, the Abbeys were the main landowners in the area. They had extended their lands and possessions through the patronage of the noble families such as the Kings of Aragon. For example, in 1196, Pierre II of Aragon granted mining concessions to the Abbey of Arles-Sur Tech.¹² The abbeys themselves granted mine workings and forges to the charge of individuals.

The Revolution of 1789 saw changes in the way the industry was managed. The mines were nationalised and a system of concessions granted the rights to individuals or groups to run the mining operations. The proprietor, or owner on whose land the ore is found, could work the ore but not without the grant of such a concession. Any individual, or group of individuals, could apply for a concession, allowing for deep underground working, but had to prove that they had the means to work it. Shallow working at outcrop did not require the grant of a con-

cession and a number of these 'minières' were worked around the Canigou well into the 20th century. In the case of a disputed venture, the government had the right to choose between the interested parties.¹³

The story of the concessions concerning the mine La Pinouse, above the village of Valmanya on the eastern flank of the Canigou provides an insight into this subject. In 1844, Michel Noell, who had bought the mining land in 1813, was granted the unconditional concession to work the mines of La Pinouse. This concession was handed down through the family; interestingly by the end of the nineteenth century the inheritors were women- the three daughters of Marc Noell. The eldest daughter, Elise was married to the forge master of Arles and of Corsavy, Monsieur Pons. This branch of the family acquired the whole concession until 1906 when it was granted to the Valentin brothers. These were two industrialists from Alsace; France had lost her resources in Lorraine and was in need of iron. At the same time, with the demise and closures of the forges, the Pons family had no further interest in exploiting the ore at La Pinouse. The arrival of the Valentin brothers was therefore timely and two years after obtaining the concession, they also became the proprietors. The following years saw investment in the mine: the opening up of further chambers, the construction of a small hydroelectric plant supplying electricity, and the construction of a transport system comprising two aerial ropeways and a narrow-gauge train track to take the ore to Amélie-les-Bains in the valley. In addition, they provided a number of buildings, including lodgings, a cantine and a baker's on the site, so in effect part of the population of the village of Valmanya, below the mine moved up to the mining site itself. (This was also the case in other mines such as La Batère, above Corsavy, where living accommodation provided beds for 200 men.) But, it is suggested, the brothers had over reached their finances and the concession was taken over by the Schneiders, of Le Creusot, in 1915. Despite the wealth of investment experience brought by the great iron mining family, after the war the Schneiders could not compete with the recovered mines of Lorraine. The transport costs were too high, despite the earlier efforts by the Valentin brothers to improve links. Eventually the mines at La Pinouse closed down in 1933.¹⁴

This account of the concession system highlights the instance of investors from outside the local area becoming stakeholders in the future of the villages and communities. Although the outcome would most likely have been the same, decisions were taken, distance-wise, away from the locality and made in connection with the bigger picture of the economic industry of the country as a whole. The actions and resolves of the concession holders concerning the future direction of the enterprise impacted on the landscape, although their attachment was not the parochial one of the local population. Space and place could be interpreted in a very different light; the place of work could now be seen as a place outside the familiar landscape, belonging to France, not to the village and were therefore distinct entities, the place belonging to or representing the 'other', the spaces in which people moved about, however were still theirs.

¹¹ Verna - Navarre, C. 'Forges catalanes : la question des origines'

¹² Dabosi 'La Forge a la Catalane: Magie de l'Eau et du Feu'

¹³ Walmesley, Guide to the Mining Laws of the World

¹⁴ Le Fil de Fer 13, 18-27

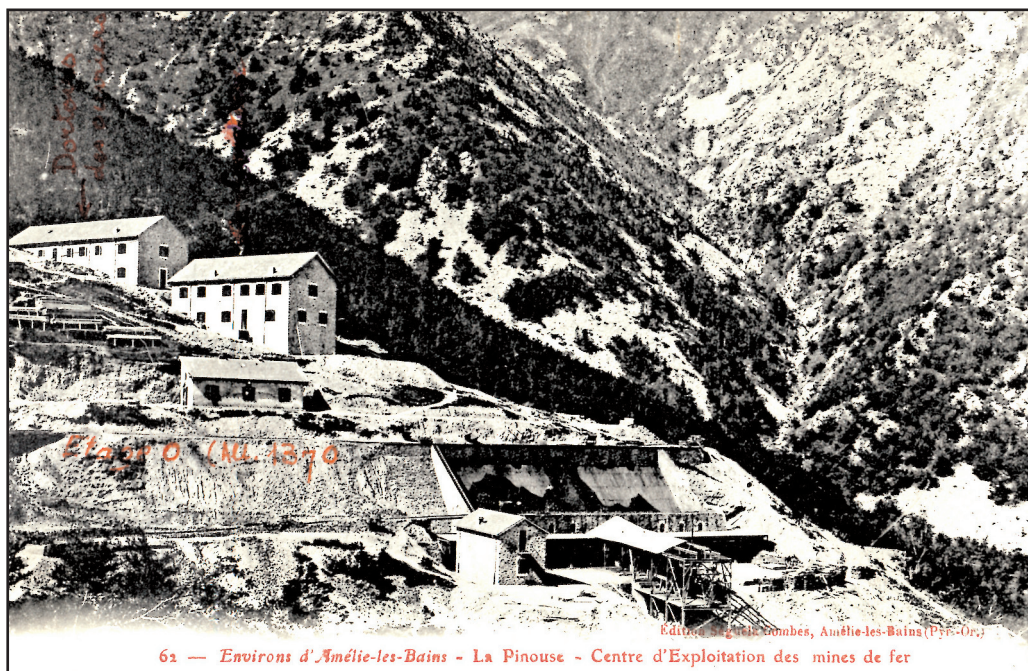


Figure 4 - La Pinouse circa 1909 - with loading station of the first aerial ropeway in the foreground (AFB 01G0563, annotated postcards illustrating features on the mines).

Figure 5 - La Pinouse today (authors' photograph).



THE MINES IN THE 20TH CENTURY

The century opened with intense activity on all sides of the massif. On the southern side investors from outside the area took over the concessions for remote mines high on the slopes of the Canigou formerly held by the Catalan forge masters, the mine at Batère was linked by aerial ropeway to the new railway at Arles sur Tech before 1900 and the construction of an elaborate system of ropeways and a high altitude steam-powered tramway, linking the mine of La Pinouse to the railway at Amélie les Bains, was under construction by 1906.¹⁵

On the northern side of the massif, the mines of the Têt valley and its southern tributaries had expanded rapidly with concessions held or controlled by iron smelting concerns across southern France. The mines there were linked either to the terminus of the mainline railway at Villefranche, west of Prades, or to the narrow gauge line running west along the narrow upper part of the Têt valley. This required a combination of circuitous tramway systems, inclined planes and aerial ropeways which, along with their counterparts on the northern slopes of the massif, can still be traced in the landscape today.

¹⁵ P. Claughton, 'Mining in the Mountains'

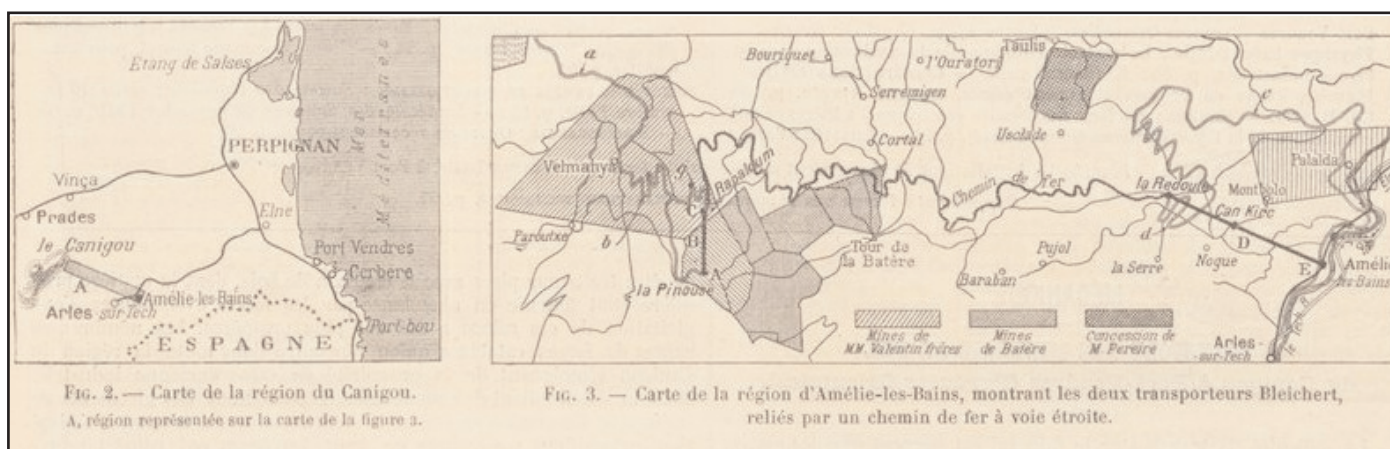


Figure 6 - Location and route of the transport system, La Pinouse - Amélie-les-Bains (after Giraud, 'Transport des Minerais de Fer du Canigou à Port-Vendres')

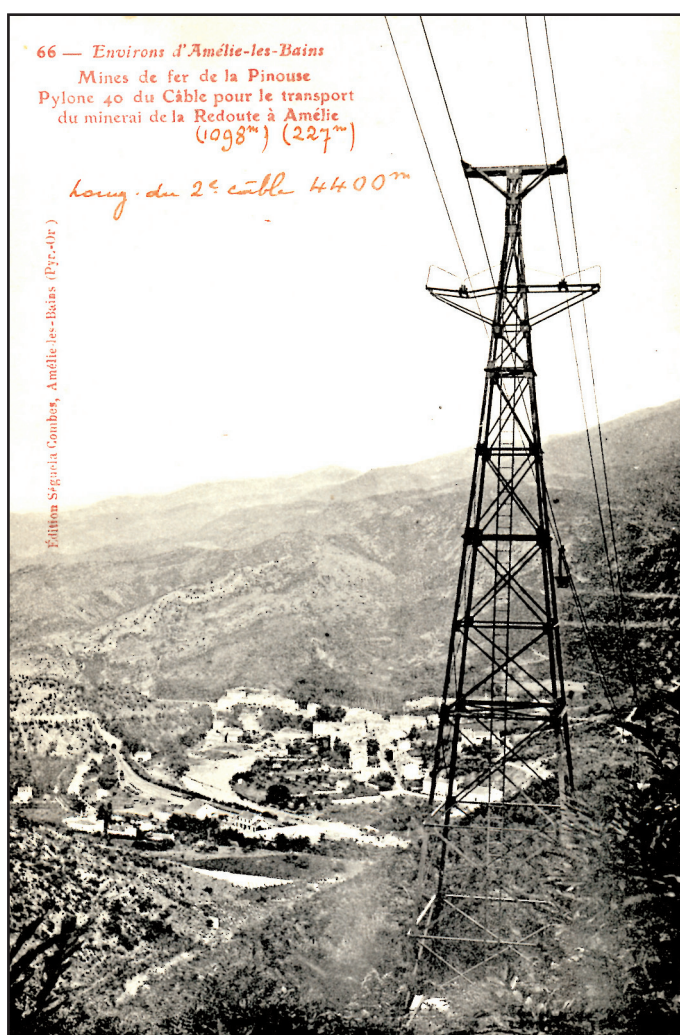


Figure 7 - The aerial ropeway from La Redoute down to Amélie-les-Bain (AFB 01G0563, annotated postcards illustrating features on the mines).

With the rapid expansion in production, illustrated in Figure 8, came industrial unrest. Miners' syndicates were established at a number of mines in the area around Prades and, in February 1906, the mines at Escaro went on strike after some miners were re-graded as labourers with a consequent reduction in

wages. The strike spread rapidly to other mines on the north side of the Canigou, focusing on salaries and working hours, and although it was eventually resolved with a compromise, in the longer term the employers maintained the upper hand.¹⁶ The socialist leanings of the miners attracted attention as far afield as Britain, where it would be linked to the political unrest generally at that period in France,¹⁷ and was to remain a feature of the workforce in the mines around Escaro right up until their closure in the 1960s.

In 1914, with the outbreak of the First World War, production of iron ore from the mines within the department fell rapidly as men were called up to defend the country. Workers were brought into the mines from outside the country and output rose to high levels for the duration of the war as the mining field was one of the few still available to the French iron and steel industry, and the major source of the non-phosphoric ores required to meet the demand for armaments, particularly shell steel. After the war production fell off significantly, and although it recovered to the mid-1920s, that was short lived, and it never returned to the levels achieved in the first two decades of the century.

During the Second World War production did increase but, once the area was occupied by the Germans, it was the relationship between the local resistance, the Maquis, and the occupying forces which made its mark on the memory of the mines. The Maquis used the abandoned mine buildings at La Pinouse, high on the mountain, as an operational base. They were assaulted but, taking advantage of the mountainous terrain, slipped through the surrounding forces with the loss of one of their leaders, whose death is commemorated with a plaque on the mine buildings (Figure 9). However, the nearby mining village of Valmanya was totally destroyed in the aftermath of the assault.

Immediately after the war, from 1945 through to 1947, production from the mines was increased with the workforce augmented by prisoners of war. This was particularly effective on the remote mines high on the southern slopes of the mountain, worked by the Société de Batère, where over one third of the

¹⁶ E. Praca, La grève des mineurs du bassin de la Tet à travers la presse en 1906

¹⁷ TNA: PRO FO 368/17/41



Figure 8 - Iron ore production for Pyrénées-Orientales, 1848-1920
(Statistique de l'industrie minière).



Figure 9 - Plaque on a wall at La Pinouse where Julien Panchot died (authors' photograph).

workforce were prisoners of war and production rose by 25% in the two years to 1947¹⁸. In the post-war period old mines in the Baillestavy area, at La Coume (La Coma) and Rabollèdes, were reopened. The former was worked from 1959 to 1967 and production justified the erection of an aerial ropeway from the mine down to road in the valley.¹⁹

In 1959, the Ecole National de l'Administration wrote to the Prefect of the Pyrénées -Orientales declaring its decision to "abandoner les industries condamnées par le progress et la vogue".²⁰ In other words, the mines were outdated and out of favour. As a result, in the early 1960s, the French government decided to invest in the coastal areas of the region in an effort to increase tourism, rather than put any more money in the

decaying mining industry.²¹ Reports of the mine closures, as they were rumoured, caused considerable concern: in a letter to the Minister for Industry in 1961, André Tourné, Conseiller général de Prades, said "Monsieur le ministre, il n'est pas possible d'accepter la fermeture des mines d'Escoums. Ce serait la morte économique de toute une contrée des Pyrénées-Orientales. L'avenir de plusieurs centaines de foyers d'ouvrier mineurs dépend (...) des mines."²² But mines were already closing - Escoums in 1961, Aytua in 1962, Taurinya in 1963. In spite of protestations, the iron industry came to a final halt when Batère closed in the 1980s and many families left the villages to look for work elsewhere.

The strikes of the twentieth century, notably 1906/1907 which affected all sectors of the community in Languedoc Roussillon, and the protests of the 1960s which were directly related to mine closures, have had a lasting impact on the older residents who talk today with pride of the resilience and determination of the roles of both the men and the women. Undoubtedly, in times of hardship the community came together in solidarity. This is the lost landscape of collective memory. However, the question for the population of today is whether or not there is a collective memory which enables them to find their roots in the social landscape. This is particularly relevant given the access individuals have via social media and the internet, to wander through various social landscapes without having any physical reference points there.

LANDSCAPE CHANGE

Whilst many features related to the mining of iron ores remain in the landscape they are changing in their uses. The tramway routes provide level footpaths which have been adopted as part

¹⁸ Statistique de l'industrie minière, 1945-1947

¹⁹ Le Fil de Fer 13 (2011), 6, 11-12

²⁰ Marty, N. 'Une désindustrialisation perpétuelle?', p. 78

²¹ Ibid, p. 79

²² Musée de la Mine d'Escaro - Fermeture d'Escoums : la lettre d'André Tourné au ministre de l'Industrie en novembre 1961 [Facebook page] URL <https://www.facebook.com/notes/mus%C3%A9-de-la-mine-descaro/fermeture-descoums-la-lettre-dand%C3%A9-tourn%C3%A9-au-ministre-de-lindustrie-en-novembre/1741594352563248/> [accessed 19 March 2018]



Figure 10 - The track bed of the narrow gauge railway between Rapaloum and Les Manerots, 2016 (authors' photograph).



Figure 11 - Water balance tank from the incline at Les Manerots (inverted with undercarriage removed), 2015 (authors' photograph).

of the regional network. This is particularly prominent with the route of the high altitude tramway from Rapaloum to La Redoute, above Amélie-les-Bains, and local historians such as Alain Taurinya used this to advantage in promoting walking routes which take into account the remnants of the mining industry.²³ In this way many walkers are led past the prominent remains at the head of the water-balanced incline linking the shallow workings (miniére) at Les Manerots with the tramway

and its associated ore hoppers (See Figures 10 and 11). In a similar manner, walkers on the coast-to-coast route along the Pyrénées, the GR10, might use the Gite d'Etape at Batère, part of the early 20th century mine accommodation, before their ascent to the Pic de Canigou. Iron-mining remains are therefore, in some cases, resilient features in a changing landscape.

However, other factors have to be considered in this change in the landscape: the forest has not been used for charcoal production for the iron-smelting process since the demise of the bloomery process, the Forge Catalan, in the nineteenth century. Population growth and the accompanying change in agro-pastoral practices also affect land use. Historically, increase in population over the centuries was accompanied by demand for wood for fuel and construction purposes, whilst there was also a need for land for cultivation and for pasture. Today, the pressure on the land has changed as many of those interviewed testify. Originally cleared for cultivation, as remembered by many interviewees, the forest, left to its own devices, has regrown over much of the pastures around the villages. For example, La Bastide, at 1000 metres altitude was surrounded by pasture fifty years ago, but is now forest. There is no visual evidence of its previous land use as nature has reclaimed the slopes and the previously cultivated terraces are overgrown.

Forest management is part of the landscape today. One interviewee explained how once a year, the inhabitants of her village were able to cut trees from the public forests. The chosen trees are marked by the village's mayor, who determines the extent of deforestation for private household use.

MEMORY

With the gradual closure of the mines during the course of the twentieth century, many villagers were forced to move down to the towns in the valleys and on the Roussillon plains to look for work. As expected, the demographics reflected this desertion although a few families did stay. In the village of Escaro, the discovery and opening up of the fluorite mine provided employment for many who were made redundant by the closure of the iron mines. However, this was the exception rather than the rule and with the general rural exodus, the mining features were left to decay on the mountainside.

A generation after the closure of the last iron mine and with the last few miners left alive, there are initiatives to preserve this heritage. The mining museum at Escaro, trails around the mines at Taurinya, the biannual ironworking festival in Arles-Sur-Tech and the annual iron smelt in Baillestavy are examples of projects instigated and run by local people who wish to keep the traditions and knowledge alive for future generations. But local, in many cases refers to people who have moved into the villages to retire or in search of a quieter lifestyle, and have no history of iron-mining members in their family. Research so far reveals that this is not a problem for most of the elderly residents who still have mining memories. The only point of contention was whether or not the relics should be moved or left in situ on the mountainside: "if you move these then you cannot see the whole picture, how the system worked, how far you had to walk" (Participant 20).

²³ Taurinya, Ballades catalanes

Whereas others remarked that if they were not moved, then they would be lost forever, covered by the vegetation over the years. Written sources and oral histories conducted with those few who are descended from the mining activity years reveal a picture of solidarity, community, hardship, and respect.

AT THE FORGE AND UNDERGROUND

The former miners talked of working together in the mines in pairs to support each other. This created a bond that existed outside of the underground work and relayed itself into community ties. Alain Taurinya recalls being told by a former forge worker, "Japo" how the relief team would arrive and it would be at that moment that both teams would work together to remove the heavy bloom from the fire and take it to be hammered:

"And you can imagine the work, these men protected by enormous leather aprons, with rags wrapped around their hands, with pincers and tongs, who carried this incandescent mass to the forge".

The young Alain Taurinya was reminded how it was like Hell, "Cela ressemblait à l'enfer".

They were well aware of the risks involved, and would listen to the creaking of the support timbers for signs that one would give way. The work was tough and they often took shortcuts in order to maximise pay. Jeannot Christofol describes how wages were linked to the amount of ore extracted. There were three categories: Chantier dur, 3 wagons of ore in 8 hours, if you filled four wagons, you were paid more; chantier demi-dur, five wagons; chantier normal, seven wagons.²⁴ However, once miners regularly filled more wagons then the bar was raised, so to speak.²⁵ One former miner related how they would deliberately not spray the working face with water as this wasted time and the dust was suffocating; evidently, there were health consequences to this. One miner in Vernet used two drills instead of one and raised so much dust that eventually his lungs were damaged irrevocably from silicose inhalation. Many young and weak miners died.

Several participants spoke of their memories of deaths occurring in the mines. One participant recalled the death of a mine worker who fell from the wagon of ore suspended on an aerial ropeway; she vividly remembers the death of a horse in the mines. She recalls being about three years old when it happened and how it marks her to this day.

FAMILY LIFE

The testimony of a former miner, Jeannot Christofol, bears witness to the world of the mining families of Fillols, near the village of Taurinya on the northern slopes of the Canigou, during the twentieth century. His narrative is rooted in the landscape, from the mines themselves, the pathways and tracks, to the high pastures and the homesteads. His detailed descriptions are an indicator of his attachment to the places, in the nuances of

everyday life. He writes about how hard life was for both women and children, and that families lived simply; with the same economy as in the days of their grandparents.

Christofol highlights the traditional dual occupancy of the miner/farmer, and records the long hours worked in the mines by his father's generation and then spent further daylight hours in the fields.²⁶ He tells how his father would work in the fields in the morning before his shift at the mine later in the day, or if he had an early shift he would be in the fields later in the afternoon. They just about produced enough food to feed their large families, there was nothing left over to sell and as Taurinya was a cul-de-sac, it was difficult to sell in the markets anyway. Life was equally hard for the women. They had to tend to the land and the family. Christofol's mother left the house in the early morning and did not return until evening "Payson-mineur, c'était dur pour tout le monde".²⁷ His father was 10 years old when he started working in the mines; Christofol recalls taking him his lunch at midday. Women also worked at the mines. Miners' widows were given employment and worked alongside the men who emptied the wagonnets of ore, pulled them off one set of rails and sent them back on another set. Before tracks were laid, allowing the movement of trucks, women carried wood up to the mines, for use in the construction of the adits and buildings. They also carried the cement and fin carbonate, used instead of sand. Christofol recalls how the smaller women were supported either side by other women, to enable them to carry the weight on their backs. Alain Taurinya²⁸ recalled the resilience of the women who carried the ore from the mines to the valley. He tells the story of his grandmother who, as a young woman, went every day from the village of Baillestavy up to the mine at La Pinouse, a two-hour journey on foot, and then carried 44 kilos of ore down to the forge in the valley at Llech. This took about six or seven hours, for twenty cents. She left at dawn and got home in the evening. But the money would go towards a new dress or clothes for the children. It was useful money.

Another participant recalls how her mother worked in the fields from sunrise to sunset, and then back at home she cooked, made and repaired all their clothes.

CHILD PERSPECTIVES

Childhood memories evoked details from everyday life: gathering strawberries blackcurrants and dandelions; helping in the fields, taking lunch up to the father in the mine.

Mining routine set the clock for village life:

"I remember hearing the miners going to work on the road outside, every morning at the same time. It was part of the rhythm of my life" (Participant 25).

"I remember every day at the same time, coming out of school in Vinca to see the wagons, pulled by horses and laden with the ore still steaming after roasting. Just imaging the noise of these three heavy carts and the horses hooves, and neighing. We

²⁴ Cathala, et al. Taurinya: Fragments de la vie d'un village du Canigou, p. 94

²⁵ Ibid, p. 93

²⁶ Ibid.

²⁷ Ibid, p. 93

²⁸ Taurinya, A. 'Paroles : Alain Taurinya', in Le Fil du Fer 13, pp. 2-6

would run down the road with our school bags and wait for them to pass."

The memory is still vivid: *"I remember to this day the sight and sound of this extraordinary convoy, which had such an impact on me as a young child that I believe it gave me this lifelong passion for iron."* (Alain Taurinya in 2011).²⁹

Although he often refers to how hard life was, Christofol remembers the fete days as being a time to celebrate the miners. All the surrounding villages held fetes: Clara, the first day of the year and Fillols, the first week in September. The families of these villages and Corneilla, Vernet, Villerach, Los Masos and Sahorre were all invited to each others' fetes but Christofol tells how the Taurinyois went no further than the one in Sahorre. They walked there and slept on the floor of friends' homes. Then in later years, the children of the miners perpetuated the tradition by inviting the next generation.

THE WAR YEARS

The War Years, 1939-1945 strengthen this sense of heritage which Christofol conveys, with the arrival of Spanish, Italian, Polish, Algerian and Germans to work the mines.

With the call to war, there was a shortage of manpower in the mines so men were requisitioned from the camps, mainly at Argeles-sur-Mer. The beaches of Canet, St Cyprien and Argeles were teeming with people who had fled over the border from the Spanish Civil War. In January and February of 1939, 500,000 people, in a desperate state, walked over the mountains from Spain. The authorities of the Pyrénées-Orientales were overwhelmed and set up camps on the beaches where the Retiradas dug into the sand in order to protect themselves from the bitter winter winds. They were contained by barbed wire, families separated and starving. Christofol recalls how the first arrivals at the mines were not familiar with the work, but that the later waves were very good miners and were welcomed by the population, and paid the same as the rest.³⁰ His father was needed in the mine and so was not conscripted. His friend's father was initially conscripted and so packed ready to escape up the mountain but the mine's director was in need of him and so went to Perpignan to argue his case. In 1940, the Germans took possession of the mine and all the ore extracted was sent to Germany. Again, Christofol records how the Germans made many improvements to the mine, and did not take any prisoners amongst the miners. The mine directors also hired about 20 miners from Algeria who arrived in Taurinya with their families during the war years, and during the 1960s, Polish workers arrived at the Fillols mine. There was a lot of respect for the Algerian families in Taurinya, and the men worked in the most difficult galleries in the mines, where there was a lot of water and mud. "Eh bien ils sont devenus les meilleurs camarades et les premiers syndiqués"³¹. Respect, camaraderie and friendship are the salient themes of the heritage of the incomers of the war years.

"Etrangers et Français, tous étaient solidaires. Même les prisonniers allemands et italiens qui travaillaient à la mine après la guerre, ou ces Polonais qu'on avait fait venir pour essayer de casser le mouvement ouvrier. C'était pareil. Des ouvriers, c'est - à- dire une grande famille".³²

One elderly miner whom one of the authors (SJC) had the honour of interviewing spoke about a young German who worked alongside him in the mine at Sahorre on the north side of the mountain. They became good friends and after the war Bernard went back to Germany to discover that his family were all dead. He immediately returned to Sahorre and married a local girl. He and the interviewee continued working together in the mines and when the first baby was due, the interviewee and his wife recalled how if it were a boy, it was going to be called Bernard, after his friend and companion. The baby was a girl.

MEMORIES FOR THE FUTURE

"We mustn't lose sight of our roots: we are more displaced these days so we lose the meaning" (Participant 25).

The memories of the past are personal but convey a sense of solidarity and community strength. It is this which the older generation are keen to pass on to the young. The knowledge and skills are important but the next generation need a different skill set to that of their grandparents. However, it is the meaning ascribed to the memory which gives one a sense of belonging, of being part of something. Although the memories were also those of danger and hardship, the overriding feelings to emerge were those of resilience and solidarity. There was also complete respect for those who worked in the mines,

"I bow my cap to them, they have my total respect" (Participant 20).

If we respect the past, then we have somewhere to go to and draw strength.



Fig. 12 Musée de la Mine d'Escaro: people from around the Canigou attended the dedication of a commemorative iron sculpture in September 2016.

²⁹ Ibid

³⁰ Ibid, p. 99

³¹ Ibid, p. 99

³² Ibid, p. 99

CONCLUSIONS

This paper has considered the location and background to the iron-mining heritage on the mountain, the Canigou, in the Eastern Pyrenees. Over the centuries, the area has seen movement of peoples and ideas, along the Mediterranean and over the mountains. The Catalan language is spoken by many, alongside French, and, although Catalonia has never had defined borders, the region is referred to as Catalonia du Nord. The mountain, the Canigou massif, dominates the landscape and is part of the mythology of the Catalan culture.

Iron mining, and processing of the ores, has left its mark on the mountain. The sites for the Catalan Forges, and earlier smelting activity, might only be marked by their heaps of slag. Remains of the large scale mines of the 20th century are much more prominent in the landscape today. The mine entrances, heaps of waste rock, and ore hoppers, the barracks and office buildings, and the earthworks associated with the transport systems, are very evident for all who penetrate the forest covered slopes of the Canigou.

Consideration of the long history of iron mining in the area brings together a variety of strands: mining and processing the ore over the centuries, the documented evidence to support mining and forging activities, the promulgations to respect the forest desertification, medieval trade and finance, the Catalan Forge as part of the culture, the loss of production leading to eventual closures. These strands form a multi-layered, approach to the relationship between people and their landscape. It has relevance for this research in that it gives a platform from which to discuss the role of this heritage on the identity and culture of the local population which live in the villages today.

Iron does not make itself; people are needed for the transformation of the ore. The earth and the people merged in this past landscape. Today, increasingly, people in Western Societies do not have this connection with the land but they carry the mythology of this past relationship with them. The various strands of the iron mining history of the region inform the background between these lost landscapes and the sense of identity of the village populations today.

REFERENCES

- Académie Francois Bourdon (AFB), Le Creusot (Saône-et-Loire, France) - 01G0563, Records of Schneider & Co.
- Barouillet, V., Lamy, A., Mut, G., Pineda, J. and Siret, A. 'Mines et fonderies Antiques et Médiévals du Canigou', in *Mines et Metallurgies antiques et medievales de la France Meridionale* Recherches Recentes Journées de Perpignan 20-22 Février 1987, (Perpignan, 1989)
- Cathala, S., Christofol, J. and Nicolau, B. *Taurinya: Fragments de la vie d'un village du Canigou*, (Taurinya: Association Vall de Cuixà, 1999)
- Cloughton, P. 'Mining in the Mountains: the development of aerial ropeways on the iron mines around the Canigou massif (Pyrénées-Orientales, France)' in Proceedings of the 11th International Mining History Congress (Linares, 2016), pp. 515-526 - [PDF document] URL https://drive.google.com/file/d/1cU2RMaDxrSk0cLirg2x_2mC6gqyn1QJ2/view?usp=sharing [accessed 27 February]
- Dabosi F. 'La Forge a la Catalane: Magie de l'Eau et du Feu' in *Fréquence Chimie, Journal de l'ENSCT* (Avril 2000)
- Domergue, C., Serneels, V., Cauuet, B., Paille, J-M. and Orzechowski, S. 'Mines et métallurgies en Gaule à la fin de l'âge du fer et à l'époque romaine', in *Celtes et Gaulois, l'Archéologie face à l'histoire 5 : la romanisation et la question de l'héritage celtique* (2006)
- Giraud, J. -E. 1909 'Transport des Minerais de Fer du Canigou à Port-Vendres (Pyrénées-Orientales)', *Le Génie Civil*, 1434 (4 Dec. 1909), 81-85
- Hilaire-Perez, L. and Verna, C., 'Dissemination of Technical Knowledge in the Middle Ages and the Early Modern Era: New Approaches and Methodological Issues', *Technology and Culture* 47.3, (2006), 536-565
- Izard, V. 'Cartographie successive des entreprises métallurgiques dans les Pyrénées nord-catalanes; support préliminaire à l'étude éco-historique des forêts charbonnées', *Archéologie du Midi Medieval* 12 (1994), 115-129
- Izard, V. and Mut, G. 'Mines Forges et Charbonnières dans le massif du Canigou; Problèmes de transition entre les industries antiques et des indices du renouveau carolingien,' *Domitia: Revue de Centre de Recherches Historique sur les sociétés Méditerranéenne*, no. 8-9 (Mars 2007).
- Le Fil de Fer* 13 (Les Amis de la Route du Fer, 2011)
- Les Pyrénées-Orientales, Les mines de fer [Web page] URL <http://pyreneescatalanes.free.fr/Thematiques/Activites/MinesDeFer.php> [accessed 14 March 2018]
- Marty, N. 'Une désindustrialisation perpétuelle? Comment (ré)évaluer le cas du Languedoc-Roussillon?' *Rives méditerranéennes* 46 (2013) [PDF document] URL <http://journals.openedition.org/rives/4518> [accessed 14 March 2018]
- Musée de la Mine d'Escaro - [Facebook pages] URL <https://www.facebook.com/musee.escaro/> [accessed 19 March]
- The National Archives: Public Record Office (TNA: PRO), Kew, London, UK - FO, Foreign Office Papers
- Praca, E. La grève des mineurs du bassin de la Tet à travers la presse en 1906, [PDF document] URL <http://www.aphpo.fr/articles/article-greve-mineurs.html> [accessed 5 March 2018]
- Statistique de l'industrie minière*, 1847- (Paris : Ministère de l'agriculture, du commerce et des travaux publique : direction des mines, 1854-) - available on-line - Bibliothèque de Mines ParisTech
- Taurinya, A. *Ballades catalanes: Manerots, La Pinosa, Formentera*, (Magellan & Cie, 2002)
- Verna - Navarre C. 'Esquisse d'une histoire des mines et de la métallurgie monastiques dans les Pyrénées (IXe-première moitié du XVIe siècle)', in P. Benoit & D. Cailleaux (eds) *Moines et Métallurgie dans la France Médiévale, études réunies par*, (Paris : A.E.D.E.H., 1991), pp.45-58
- Verna - Navarre, C. 'Forges catalanes : la question des origines'. in M. Zimmermann (ed) *Le Moyen Age dans les Pyrénées catalanes, Art, culture et société, Actes du Colloque de Prades* (2005), pp. 55-62
- Walmesley, O., *Guide to the Mining Laws of the World* (London: Eyre and Spotteswoode; Sweet and Maxwell Ltd, 1894)