

The elusive Walloon finery forges of Liège

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ABSTRACT: In the Walloon forge there were two hearths, the finery, for decarburizing cast iron from the blast furnace, and the chafery for re-heating iron during forging into bars. The use of Walloon forges began in the 15th century and by 1600 they were recorded all over Wallonia (the modern francophone southern Belgium and Luxembourg), where they continued in use until the 19th century. However, south and south east of Liège there was a local contrast: in the basins of Franchimont and Durbuy 19th-century Walloon forges were less common, most ironworks combining the finery and chafery operations in a single-hearth 'fourneau et marteau'. Hansotte explained the local use of these single-hearth ('Comtois') forges by replacement by French decree (1807–1811) in order to save fuel. It is shown here that single-hearth working similar to the German 'Hütte und Hammer' had long been common in Franchimont and Durbuy. This is emphasised by the difficulty that the Liège entrepreneurs who set up forges in Sweden in the 1620s had encountered in recruiting specialists in multi-hearth working from their locality.

Introduction

The decarburisation of cast iron in the finery forge can be divided between two traditions. In the Walloon forge, the finery hearth (or hearths in the case of double-fineries), where decarburisation took place, was separate from the chafery, where the decarburised iron was re-heated before and during forging into bar. In other forges, named 'Hütte und Hammer' in German, and 'fourneau et marteau' or 'Forge Comtois' in France, a single hearth was used for both stages.

The Swedish industrialist Reinhold Angerstein visited John Hanbury's works at Pontypool in 1754. Because he was acquainted with the Swedish Walloon ironworks in Uppland, he at once recognized the forge plant at Pontypool as being Walloon in design, and told the proprietor that 'he did not have to be so afraid of showing strangers his methods of manufacturing, which in any case had originated in Liège and were brought to England from there' (Berg and Berg 2001, 163). But Angerstein himself was unaware of the fact that the Walloon method did not originate in Liège. Hanbury and his workers probably knew even less history, and a Walloon origin of English forges was not among the few

facts about the early history of English iron discussed by Harry Scrivenor in his *History of the Iron Trade* (1854).

The origin and spread of the Walloon forge

The earliest Walloon forge (*afinerie*) so far detected remains the one built at Vaux in 1445–6, in the extreme north of the duchy of Bar, on the border of the Walloon area. Further south, in the duchy of Burgundy, finery bellows were mentioned at the monastic forge of Bèze in 1448, and documentation of 1449 shows that this forge then had a double finery. By 1455 even the forge at Précy in Nevers (where in 1437 the mention of only its *chaufferie* suggested single-hearth fining) was also equipped with a double finery.

The first known finery in Wallonia proper was *une roellette pour affiner fer* which the duke of Burgundy's receiver-general authorized Pierchon de Jausse to build at a new hammer mill near Jausse-les-Férons in the county of Namur in January 1450 (AGR, CC 1002, f. 182). Between 1450 and 1460, *rolettes pour affiner le fer* were installed at forges in both Ermeton and Acoz, a further *marteau, forge et affinoir* was mentioned at

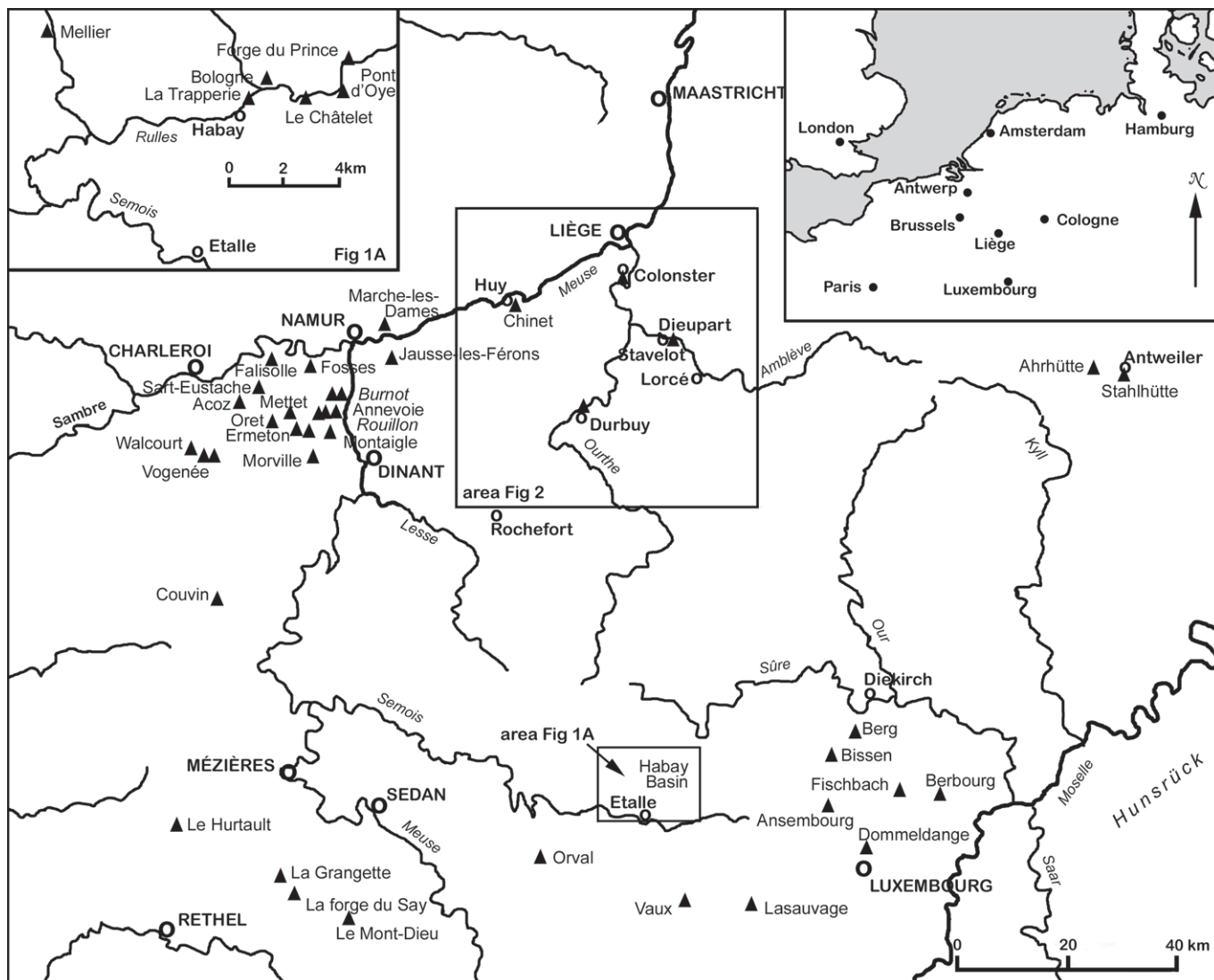


Figure 1: Finery forges in the Low Countries and the Ardennes.

Ermeton, and Gilles d'Awaigne, a Dinant merchant, was authorized to build a forge with two *affinoires* at Morville, all within the county of Namur (Gillard 1971, 95–7, 100).¹

Already by January 1451, Henedric l'Affineur, who came from *Jaux-le-feron* in the county of Namur, with an ironfounder from Franchimont in tow, was negotiating the building of the first finery forge in metropolitan France at Le Becquet near Beauvais, and their company was complete when they were joined by Henry Malerbe, a hammerman, in April of that year. When from the 1460s onwards forges began to be built across western Normandy, eventually to the number of around 50, all had separate fineries, the majority having two finery hearths (Belhoste *et al* 1991, 40, 123–9). The southernmost limit to which these double-finery forges spread from Burgundy was near the headwaters of the Doubs in the Jura mountains above Pontarlier, where by

the 1490s two master finers and a master hammerman were forging iron from Rochejean furnace (Belhoste *et al* 1994, 30, 32).

When Walloon forges began to be built in Britain from 1490 onwards, even in the non-industrial Weald forges such as those at Robertsbridge, Sheffield, Worth, Postern Park, Dunsfold, and possibly also Hawksden, were originally built with two finery hearths. The majority of those built later in industrial areas also had double fineries, whilst even in such a remote area as Furness, mainly a supplier of pig iron for South Wales and the Midlands, the forges at Backbarrow and Nibthwaite had multiple fineries in 1754 (Berg and Berg 2001, 292).

The situation around Wallonia

In Wallonia itself, the double-finery forge flourished in Hainault, where among the thirteen forges of 1678,

nine had two fineries and only four had one, a proportion still unchanged in 1701 (Lequeux 1933, 13, 15). In the Habay basin of western Luxembourg (Fig 1A), numerous ironworks were set up after 1540,² some by forgemen driven from Hainault by the constant warfare along the French border. In Habay at least six forges (Bologne, Pont d'Oye, du Prince, Le Châtelet, La Trapperie and Mellier) had been equipped with double fineries by the 1620s, and the neighbouring works of Orval, established even earlier (1529), also had a double finery. Other Luxembourg forges at Lasauvage (1609), Dommeldange (1624), Ansembourg and Berg all dated from before 1655. A census taken in 1764 showed that almost all the 44 forges in Luxembourg were not only Walloon, but were laid out on the double-finery pattern (Bourguignon 1963, 98, 100, 104).

Between Hainault and Namur, part of the Entre-Sambre-et-Meuse region belonged to Liège (Fig 1). Finery forges were in operation there, at Couvin and at Oret from the 1480s onwards. In addition, those of Mettet, Fosses and Falisolle certainly operated early in the 16th century (Gillard 1971, 98, 102, 130, 132–3, 173, 180–1).

In the Namur region, the finery at Acoz worked until 1531, by which time another was in operation at Sart-Eustache. Two worked at Vogenée for most of the 16th century, whilst another at Walcourt was established in 1549 and continued for many years (*ibid* 1971, 115, 123–5, 127–8, 131–3, 175–7, 180–1). Elsewhere in Namur one of the two early fineries at Ermeton had perhaps closed in 1531, whilst the other continued to operate in 1556. The finery forge at Morville continued to operate into the 17th century, and another at Montaigle continued for at least a century from 1478. At Jausse-les-Férons, Pierchon's finery, now called a *petite roue*, was taken over in 1477 after his death by the Abbot of Grand Pré, and it continued to operate until 1600 and presumably beyond. At Marche-les-Dames a *petite roulette* continued from 1477 until at least 1596, and an *affinoir* of 1504 still stayed in operation into the 17th century (*ibid* 1971, 89–90, 93, 97, 104–5, 107–8, 114–5, 119, 139–40, 146–7, 164–6, 168).

However, by 1600 most of Namur's finery forges were concentrated on the Rouillon and Burnot streams, western tributaries of the Meuse midway between Namur and Dinant. In 1516 a *marteau* and *affinoir* were built at Annevoie on the Rouillon, with a second one established in 1531, whilst at the *marteau* Lambert, Philippe Liskeme was made master finer in 1596. Meanwhile, on the Burnot, Jean Dandoy the younger set up a *marteau et affinoir* in 1556, and the forge of Jean Dandoy senior

included two fineries at the time of his death in 1573 (*ibid* 1971, 110–11, 153–9).

In the Ardennes, the Walloon forges of the Habay basin and of Luxembourg continued up to the Imperial period (1804–1814). Others were set up in the French Ardennes at Raucourt-et-Flaba, where at the Le Mont Dieu works, created in 1518, the iron was apparently fined and hammered (*on y affinait et battait le fer*) in Walloon fashion. Jean Regnesson had permission to build a works which included a double finery at Le Hurtault in Signy-l'Abbaye, when it was leased to him in 1526 (André *et al* 1987, 26). At both La Grangette in Omont, which Regnesson worked from 1531, and La forge du Say at Louvergny (held in 1531 held by Jean Hanus), the separate Walloon fineries were mentioned in inventories taken in 1544, following Regnesson's death (André *et al* 1987, 59, 61).

To the south, in Franche-Comté, Walloon forges at Bley (1528), Les Bâties, La Fraitte (1529), Bougnon (1539), Baignes (1545), Le Mouterot, Pont-du-Bois (1562), and Agneaucourt (before 1584), were added to that of Estravaux in the Saône valley, and they appeared at Cirey-les-Bellevaux (1539), Bonnal (1545), Moulin Martin (1548), Filain (1550), Loulans, Montarlot, Le Loignenot (1562), Miellin (1563) and Moncley (1569), in the valley of the Oignon. In the Doubs valley, finery forges appeared at Crotenay (1488), Fraisans (1526), Evans and Chenecey (1528), whilst the Walloon forge of Rochejean in the Jura was joined by others at Mouthe (1570) and Jougne (mentioned in 1586, but probably dating at latest from the 1560s) (Belhoste *et al* 1994, 52–5).

Liège and the Franchimont basin

In his contribution to the Cologne Symposium of 1967 on ironworking in Europe from 1500 to 1650, Hansotte wrote, with regard to the Belgian basins, 'In the matter of fining, there was no progress: the Walloon process was in general use, as it would stay up to the earliest years of the 19th century' (Hansotte 1974, 140). This was certainly true with regard to the basins of Namur and Habay, but as far as the basin of metropolitan Liège itself was concerned it was far from being the case. An earlier historian, Jean Lejeune, had used the accounts of the Receipt of Franchimont for 1509 to show that 'diversification there was still very slight, with forgemasters acting as charcoal burners, and the founders who produced sow iron often being the same men who converted it into bar iron' (Lejeune 1939, 148–50).³ Either great progress was made in Franchimont early in Hansotte's period, or he

was very much mistaken.

Even Hansotte's own detailed analyses of the ironworks in the Franchimont basin of Liège show that during the 16th century most of the works there consisted of the single hearth *fourneau et marteau*. These were perhaps sufficiently widely spread (the hammer usually in the Liégeois form of the *maka*, a tail-helve, rather than in the form of the *marteau à drôme*, a belly-helve) to inhibit penetration by the Walloon process. The case was probably similar to that in Germany, where only important families with interests on both sides of the border, such as the de Ligne/Arenbergs, with ironworks in both Rochefort and in the Eifel, or determined industrialists, such as Jean Mariotte, were able to introduce Walloon finery forges. There were two Arenberg works in the Eifel (Fig 1), an upper one, the Ahrhütte, and a lower one at Antweiler (replaced in 1642 by the neighbouring Stahlhütte), of which the former had many, and the latter a preponderance of Walloons in their workforces during the 17th and 18th centuries, the accounts for many years being kept in French (Neu 1989, 77–9). Jean Mariotte engaged two finers from Lorcé, André Grogart and his son Guillaume (perhaps from the Querreux works, north of the Amblève), to work for him in the German Hunsrück in 1645, whilst at the successor Ahle works near Oberlahnstein across the Rhine, the plant still included a double-hearth finery in 1817 (Yernaux 1939, 74, 233).

On the Vesdre, Hansotte mentioned further combinations of the same kind, *fourneaux, tous pourvus d'un marteau d'affinerie*, including specifically the *fourneau et son marteau d'affinage* of Toussaint de Noirfalize at La Blanche Plombière at the end of the 15th century, ultimately converted into a lead works in 1594. Another *fourneau et marteau* was one at La Basse Fraipont, started near the end of the 15th century, which became a plating forge in 1620 (Hansotte 1962, 166, 196, 210). It must be supposed that these works were equivalent to *Hütte und Hammer*, and used the single-hearth method of fining, but in Hansotte's contribution to the Cologne Symposium, all were classed as 'fineries'.

In the Hoëgne valley, Hansotte mentioned *un fourneau et un marteau* near Pepinster in 1480, which lasted until the 1530s. Near Juslenville there were, firstly a plating forge of 1512 at the later Forge Jazon, which by 1566 had become the *fornea et forge* of Symon de Fraipont, and was styled *fourneau et marteau* in 1618, when a new plating forge replaced it, and secondly a *fourneau et marteau* at the future Neuves Forges site, which towards the end of the 15th century was styled the *Fourneau*

Jean Thomson, where the furnace was out of action by soon after 1575 (Hansotte 1963, 26, 29 see especially note 2, 30). At Rainonfosse, *un fourneau et un marteau* went back to the 15th century, but the *fourneau* had disappeared by 1574. Near Chawillon, a 15th-century *fourneau et marteau* endured until 1595. From Marteau up towards Winamplanche, there were the *fourneau et marteau* Colin Boyon (mentioned from 1477 up to 1590, by when its furnace was in ruins), the *fourneau et marteau* of Stienne Watelet (where, according to Hansotte, Counot Malherbe had his *marteau d'affinerie* from before 1509) which co-existed to 1548, and the *marteau et fourneau* of Nou marteau of 1485, whose furnace ceased to be mentioned after 1501. Near Spa, the *fourneau et marteau* constructed on the site of an ancient furnace, which Stienne Broignart acquired in 1517, was still known as *la forge et fournea* below Spa in 1640 (Hansotte 1963, 35–40; Den Dooven, 1979, 44). Hansotte characterized all these works as *fourneaux pour la réduction du minerai, accompagnés de marteaux d'affinage* (Hansotte 1963, 12–13), and all were clearly similar in kind to those of the *Hütte und Hammer* which prevailed in Germany, and not a single separate finery was recorded.

When repair of the Marteau Colin Boyon was undertaken in 1572, two hearths (*deux fowires et cheminées*) were projected. The preliminary survey had also suggested the need to repair the wheel of the chafery, and, through its mention of the water-post (*la grosse estache plantée en leawe*) and drome beam (*grand soumi*), showed that its Walloon drome-beam hammer was to be repaired, but it is never quite clear that the projected second hearth was ever built (Den Dooven 1980, 29)⁴

Progressively, from around 1500 onwards, plating forges replaced many of these *fourneaux et marteaux* in Franchimont, whilst by the 1580s slitting mills were introduced which mechanized the conversion of bar iron into rod iron for the nail trade. Blast furnaces were set up close to Liège itself from the 1540s onwards, transforming the immediate area into a centre of the casting trade, and the city also became a centre for the manufacture of a wide variety of finished goods. For bar iron, however, it still remained dependent, first on forges in the Entre-Sambre-et-Meuse and Namur, and later on those of the Habay basin.

The basin of Durbuy (Fig 2)

In his essay on the Durbuy basin, which up to 1830 formed the northern part of the duchy of Luxembourg, Pirotte (1966) described the prevalence of *marteaux et*

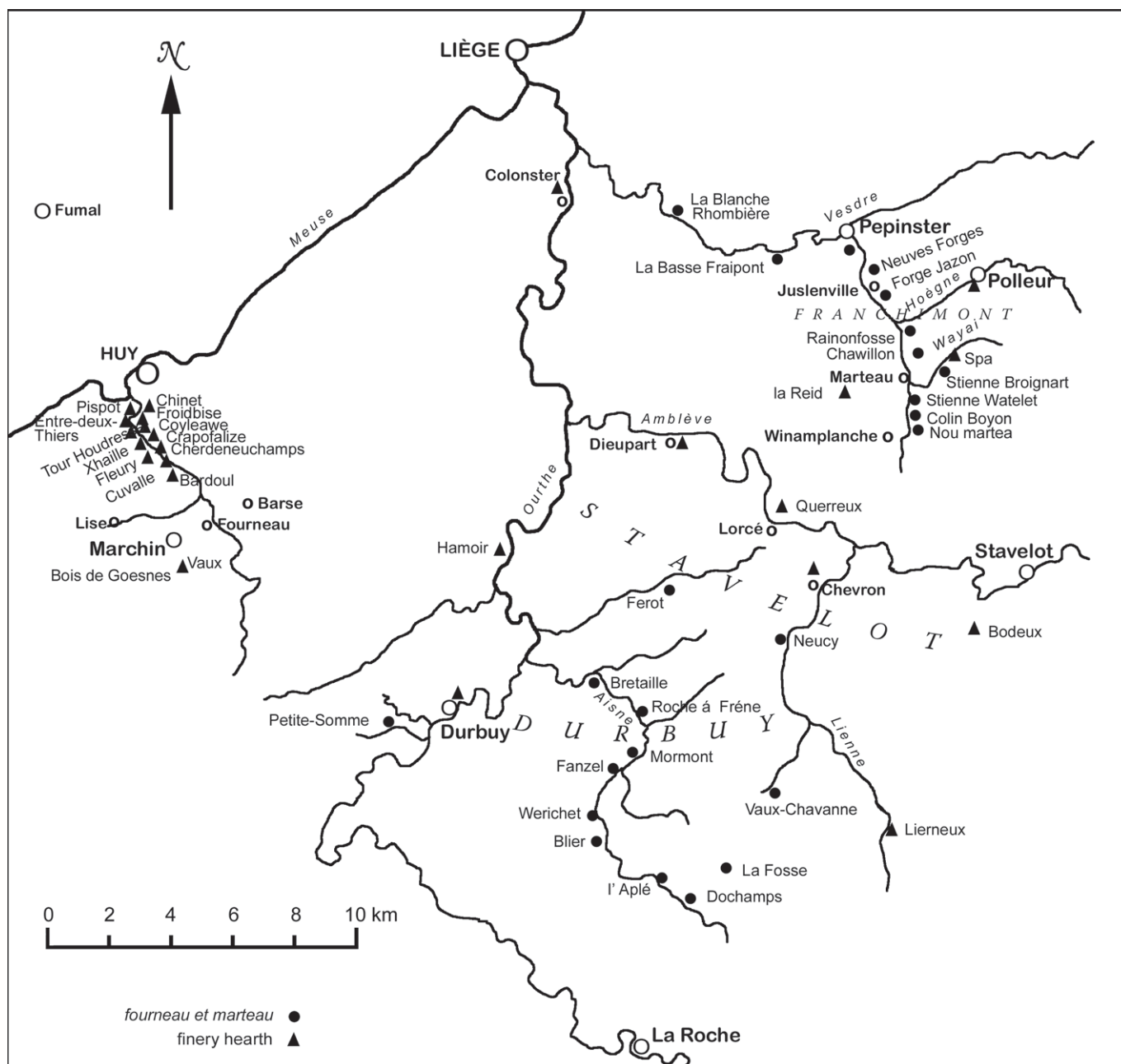


Figure 2: Single-hearth forges and finery forges in the basins of Franchimont, Stavelot, Durbuy and Huy.

fourneaux there. These existed at Petite Somme and Ferot in the north, Bretaille, Roche à Frêne, Mormont, Fanzel, Werichet, Blier, l'Aplé, Dochamps and La Fosse in the Aisne valley, and Neucy and Vaux-Chavanne in the Liègne basin.

However, Pirotte especially highlighted the setting up of a new forge and hammer (*une neuve forge et marteau*) just below Durbuy in 1566, which had a furnace with a quite new finery and chafery (*l'affinerie que chaferye tout neuf*) (Pirotte 1966, 190). Apart from this one instance, the situation was exactly similar to that within Franchimont; all cast iron was fined at a *marteau d'affinage*, or single-hearth forge; the first Walloon forge

appeared only in 1566, and seems to have been only very gradually followed by others.

The basin of Huy (Fig 2)

In the most westerly basin of Liège, that of Huy, the situation was more complicated. All its ironworks appear to date from after 1450, which perhaps accounts for the fact that many incorporated fineries, and Hansotte considered it a major centre of fining (Hansotte 1974, 132). Indeed, a 1588 visitation of the suburban Chinet forge shows that it had separate finery and chafery hearths (Yernaux 1939, 289–90). The basin deserves more detailed consideration.

The Hoyoux valley was lined with mills, but it was subject to flooding. During our period, floods occurred in 1482, 1489, 1572, 1577, 1611, 1616, 1617, 1630, 1640, 1643, 1657, 1661 and 1663 (Discry 1970, 19). The sack of Huy by Dutch troops in February 1595 resulted in further damage. Surveys to list this, and estimate repair costs, furnish precious information. The archives of hospitals and local churches (especially the Collégiale de Huy, but also the monastery of Saint-Lambert of Liège) which owned, or had interests in the sites, are other sources. Local courts, the Cour de Huy, the Cour de Marchin, the Cour de Huy-grand, and the local corporations, especially that of the smiths, settled disputes.

Information on entrepreneurs is plentiful; they were primarily local tradesmen (who included metalworkers), and gentry (who included clergy). Workers were occasionally included among immigrants in the early days,⁵ but later immigrants connected with the industry were more often entrepreneurs or managers. Single management of any site was exceptional. Usually at least two or three parties, sometimes considerably more, were involved. A local term—‘fortnight’ (*quinzaine*)—used for such shares, suggests the original shortness of the periods involved (Discry, 1970, 48–57). In historical times, terms were much longer: Jean de Héran’s ‘fortnight’ in the forge d’Entre-deux-Thiers (which he bequeathed in 1557 to his partner Jean de Pirpont’s children) was half the forge; at Cherdeneuchamp in 1573, the brothers Gérard and Jacques Overbroeck (children of an organist, and related to a mayor of Liège) divided the works between them, Gérard had the new forge, Jacques retained the old one, but the furnace was shared, one having it the first and third quarters, the other for the second and fourth quarters of the year. But shorter periods persisted, as shown in 1574 when Henri Blan Johan, master of Couvale forge, rented his son the use of the forge for one week a year (*ibid*, 75–6, 88). In some cases a new partner put in his own working personnel, but we do not know how common this practice of changing personnel was.

In general, iron ore extracted was smelted at furnaces on the Lilot and the Goesnes streams, and was then carried on the ancient ‘chemin des gueuses’ towards forges which lay on the Hoyoux, northwards to Gava and beyond (*ibid*, 375). Thirteen forges in the Hoyoux valley had fineries at one time or another: Pispot, Chinnet, Froidbise, Entre-deux-Thiers, la Tour Houdresse, Xhaille, Coyleau, Crapofalize, Cherdeneuchamp, Fleury, Lower Couvale, Bardoul or Bardouille, and, separate from the others because it lay in the mining area, Vaux.

The Marteau de Pispot, first described in 1473 as a finery of steel (*affinerie de l’azier*), was perhaps refining sow iron by around 1480, when Henri de Fumal held a half share of it, together with a share in the furnace at Lise (1478), on the Lilot stream. However, from 1518 onwards Pispot operated as a plating forge, and in 1613 it became a paper mill (*ibid*, 232–8, 393).

The Chinnet forge was a *mar-teaul a fier* when Petit Jean *l’affineur* set it up in 1517, but Gilet Boniver, a Franchimontois who took it over after 1543, had erected a furnace by 1559, whilst the forge became a plating works. That it worked as a finery in its early days is pure conjecture, and certainty of its being a finery arrives only in 1574–83 and 1587–93 with Jean Bavelte and his son Martin. In 1599 part of it, and by 1612 the whole of it, had become a paper mill (*ibid*, 239–44).

The forge Brouyart-Froidbise was started about 1500, but in 1540 half of it was held as a *mar-teaul d’affinage* (single-hearth fining?). It is only in 1613 that, as a *forge a fer*, it had its own finery and chafery. By 1646 it was a mill for reaming guns (*ibid*, 249–53).

The Coileau Forge, a tanning mill converted into a *mar-teaul a fer* in 1536, became a finery forge only after its lease to Cloes de Marneffe in 1571. After Marneffe’s death around 1618, it became a powder mill and it later produced starch (*ibid*, 257–61). The *fourneau et le mar-teaul* of Crapofalize, first mentioned in 1535, became a finery forge after 1591, when its furnace was in ruins. In 1639 repairs were needed to the chafery and finery, but after that date it became a mill (*ibid*, 263–70).

The forges and furnace of Cherdeneuchamp were built in 1536 and were taken over by the organist Gérard Overbrouck in 1543, but his two sons later ran the forges separately which suggests single-hearth fining. By 1596 a hammer, a finery and their chafery were mentioned, but the works was last mentioned in 1637 (*ibid*, 270–81).

A cutlery mill at Entre-deux-Thiers was replaced by a *mar-teaul* in 1513 and may have been run as a finery after its partners were joined in 1516 by a finer, Wathélet le Taillart. From 1536, Pholien de Jauce, linked with the furnaces of Pré-au-Bois and Lise, and with the forge of Gava, all in the Marchin area, was involved. Later finers were Piron de Broeme (1562), and Dieudonné Leblan (1594) and his brother Guillaume (1601). In 1658, alongside the ironworks, a paper mill was driven here, using waterpower from the forge and finery. Repairs to the finery, bellows and chafery were mentioned in 1694 (*ibid*, 293–300). A finery may have been a continuing

feature of this forge's existence.

The Tour Houdresse, a lead furnace in 1434, was a forge by 1502. Its exploiter, Micha de Porinne, dit le Bateur, was perhaps a beater of copper. Two hammermen, Johan Wilkin *dit* Phanar and Gros Johan, of Spa or Sart, took the lease, but during the next 60 years its masters or associates changed six times. Not until the de Ville family held an interest, from 1571 until 1698, did more settled ownership come about. It seems possible that the separate finery mentioned in 1624, when chafery, finery and hammer were repaired; was installed only after 1571 (*ibid*, 59–63, 316).

In 1581 the forge delle Xhaille had its bellows and marastres (? - *maraces*) mended, the wheels of its finery and chafery repaired, the watercourses leading to its wheels re-dug, and the cams refitted to its finery and chafery axletrees. Both finery and chafery were reported on in 1682. It had seven workers in 1700, and was exploited up to 1720. In 1803 a rolling mill was built there (*ibid*, 320–28).

The furnace and forge of Fleury were mentioned in 1645. They lay on the left bank of the Hoyoux, opposite Grand Cortil, with which Hansotte associated it.⁶ A visitation of 1665 reported on its finery, hammer and chafery. By 1690 it was the site of the Moulin Libert, a paper mill in 1704 (*ibid*, 331–3). The Lower Cuvaille Forge dated from 1514, and was still a plating forge in 1572. In 1583 its finery, chafery, wheels and hammer needed extensive repairs. Repairs to the finery were needed again in 1595, and the finery and chafery were mentioned in further visitations of 1599, 1632 and 1637, the last also mentioning its furnace (*ibid*, 333–62).

The forge of Vaux was built on the Membre stream by the mayor of Marchin in 1563. In 1575 it consisted of forge, finery and *rechaufferie*. In 1598 it was ceded to Jehenne le Croseit, widow of the Couvin forgemaster Antoine de Résimont, but in 1599 the wheel of the great hammer was unable to turn (*ibid*, 388–91).

Many of the finery forges were short-lived. The apparent lack of double-finery working, the frequent changes of ownership, and the possible consequent changes in work force, suggest that the thirteen finery forges of the valley will have had an output much less than similar numbers elsewhere, where the double-finery method was used.

As to furnaces, that at Cherdeneuchamp in 1561 had become a paper mill by 1598, whilst downstream at Landrecy another of the same period had an equally

short life. This apart, the Hoyoux forges were solely dependent on the four or five furnaces upstream near Marchin for sow iron.

Hansotte's thesis

The rarity of Walloon forges in Franchimont in the 19th century was such that in 1980 Hansotte was driven to explain it as due to the fact that under French Imperial rule (1804–1814) forges with separate finery and chafery hearths were abolished, both in the Belgic provinces and in France itself, in favour of single-hearth forges of so-called 'Comtois pattern' (Hansotte 1980, 77). This name comes from the province of Franche-Comté, where single-hearth working was first resorted to in France in the mid 18th century, on account both of wood shortage and the need to reduce costs in the face of imports of cheap Russian iron. The process differed only slightly from that used in Sweden (apart from Uppland), and in most parts of Germany, Austria and Italy. It should be noted that on its first introduction in Franche-Comté, the terms 'en chaufferie' as well as 'en piquerie' and 'en renardière' all of which implied single-hearth working, were used to describe the method (Claerr-Roussell 1995, 209, n. 1).⁷

The immediate reason for the extension of this conversion to the Belgic provinces during the early Revolutionary period (1792–1797) was an acute wood shortage, due partly to the over-extension of ironworking when France was under threat from all sides, but principally to the elimination of the nobility and bourgeoisie, who under the *ancien régime* had derived great wealth from selling wood to the ironworks for 'coaling'.

Significantly perhaps, Hansotte's evidence for the change was drawn from works published not in Liège, but at Charleroi in the Entre-Sambre-et-Meuse region of Liège (De Nimal 1913, 50, 52), where we saw that finery forges had been implanted early, and at Diekirch in Luxembourg (Wagner 1921, 88–93), where the Intendant's report noted that Bissen, Fischbach, Berbourg, Dommeldange, Berg, Ansembourg, and Lasauvage forges had all been converted between 1806 and 1811 from Walloon to 'Comtois' working.

Typical of this later sort of forge in Franchimont was probably *L'Affinerie ou Grosse Forge*, built in 1789 at the Marteau Goffin, close to Marteau itself, where it seems that both hearths fined 'en chaufferie', because when water was short during the summer, one of its hearths was occasionally closed; this would have been impossible had it worked in Walloon fashion. The

workforce too, which consisted of two so-called ‘finers’ at each hearth, assisted by a ‘jougard’ (?*goujard*, or assistant) who tended the hearths (Den Dooven 1980, 16–17), was that of a Comtois, rather than the finers and hammerman of a Walloon forge.

Recruitment of finers and hammermen for Sweden

When, in the 1620s, the entrepreneur Guillaume de Bèche and the financier Louis de Geer wished to recruit forgemen to set up their colony of Walloons in Sweden, their strong personal links with Liège were of little help in finding the skilled men needed. Their appointment of agents, to recruit workers both in Namur, and at Sedan in the French Ardennes, confirms the fact that specialized finers and hammermen were still only to be had with difficulty in Liège itself.

As his agents in Namur and Sedan, Louis de Geer employed his brother-in-law and brother, Barthélemy Grouwels and Mathieu de Geer. Louis de Geer himself moved to Stockholm in 1627, and, following Guillaume de Bèche’s death in 1629, found himself in control of a vast Walloon ironworking and armaments undertaking in Sweden. After Grouwels and Mathieu de Geer also moved to Sweden, they were replaced at Namur and Sedan by Louis de Geer, cousin and namesake of the great entrepreneur, and another relative, Laurent Verviers (Yernaux 1939, 141).

So the Walloon enterprise in Sweden was managed by Liégeois, and capital for it was raised in the United Provinces and Liège, but its workforce was drawn very largely from the further parts of Wallonia and from France. In Sweden the Walloon forges of Uppland operated with separate finery and chafery hearths. Large double-finery forges on the pattern of those in Burgundy, of the Habay basin, of Hainault, of northern France and of the industrial areas of Britain, appear to have been rare, or were never built in Sweden. But there the Walloon forges coexisted until the 20th century alongside the single-hearth German forges (*Tyskhärd*), which had been introduced into Sweden a century earlier, around 1540.

Finery forges in Stavelot and Franchimont

It is only from around 1640 that evidence for Walloon fineries can be found in Stavelot and Franchimont, and they were far from universal. In Stavelot in 1642, two finers were engaged for a year at the Dieupart works of Georges de Selys, and in 1645 Mariotte, as already mentioned, recruited two finers from Lorcé for his works

in Germany. In Franchimont in 1653, two finers, Jean Michel and his son Georges, commenced work at Polleur (Den Dooven 1979, 26), and closer to Liège in 1660, three finers and a hammerman undertook to work the year 1662 at Colchon Thomas’s Colonster forge (Yernaux 1939, 74). Other finers listed by Yernaux came from Spa (1651), Chevron (1654), Hamoir (1656), Polleur (1660), Lierneux (1661), Bodeux (1664), La Reid (1682) and Juslenville (1686) (*ibid*, 271–2).

The most important of these works were spread across Stavelot, from Bodeux and Lierneux in the east to Hamoir in the west, the exceptions further north being Polleur, Juslenville, La Reid and Spa in Franchimont, and Colonster on the lower River Ourthe. Their dates suggest that these finery forges could all have been set up using personnel recruited by the agents stationed by de Geer in Namur and Sedan in the late 1620s and in the 1630s, whose primary objective was to find finers and hammermen for Sweden.

Finally, it needs to be said that Angerstein himself remarked, on his 1750 visit to the Low Countries, that the hammer mill of one of the six bar-iron and plating forges on the Samson stream near Jausse-les-Férons in Namur was equipped with a hearth of the German kind ‘which is here called “renardière”; the smiths come from Stavelot (Stablo), which lies below Spa, where that kind of smithing is the only one used’. This citation caused the Swede Anders Florén to remark that ‘Hansotte and several other Belgians had set their sights a little too high’ (Florén 1998, 57–8).

Notes

- 1 The early use of a roller (*rolette*) as a synonym for finery suggests that from its inception the Walloon forge converted sows, rather than the lighter pigs of cast iron, which could be manoeuvred with large pincers.
- 2 The Habay basin was famous for supplying most of the cold-short iron, which was slit and converted around Liège into nails, huge quantities of which were exported to the Far East.
- 3 *Ils sont aussi charbonniers: plusieurs maîtres de forges figurent comme tels en 1509 dans les comptes . . . Enfin, ceux qui produisent la gueuse sont parfois appelés à la transformer. La division du travail est donc peu poussée.*
- 4 Den Dooven’s footnote 12, which should have detailed the work actually carried out and have named the workers and their salaries, failed to be printed.
- 5 In particular, Thomason Leclerc, a finer from Polleur, who worked at the Marteau de Pispot from 1498, should be noticed.
- 6 Fleury was associated by Hansotte (1967, 79) with the Grand Cortil forge, in which the Liège forgemaster Denis Masselin had a three-quarter share in 1605. Hansotte’s statement that its furnace was ruined by 1615 and its forge (a finery) was in a poor state, is associated by Discry (1970, 325) with the Xhaille forge.
- 7 There is a growing literature on this subject, including Hildebrand

(1992, 54–66), and Belhoste *et al* (1994, 138–40). Walloon forges had a higher output, but in terms of labour productivity their advantage was only marginal, so given the extra plant needed, they were not uniformly more cost effective. It was also detrimental that the workers, particularly master finers, were reluctant to undertake other tasks whilst, perhaps especially during recession, finers might blame problems on the chafery men, and vice versa. Easier supervision of a single Comtois hearth, and its saving in charcoal and smaller loss of cast iron, were counterbalanced by the different temperatures at which fining and ‘drawing out’ had to be conducted in the same hearth.

Sources

Brussels, Archives Générales du Royaume (AGR), Registres de la Chambre des Comptes (CC 1002).

References

- André L, Belhoste J-F and Bertrand P 1987, *La métallurgie du fer dans les Ardennes (XVIe- XIXe)* (Châlons-sur-Marne: Cahiers de l’Inventaire 11).
- Belhoste J-F, Lecherbonnier Y, Arnoux M, Arribet D, Awty B G and Rioult M 1991, *La métallurgie normande XIIIe–XVIIe siècles; la révolution du haut fourneau* (Caen. Cahiers de l’Inventaire 14).
- Belhoste J-F 1994, *La métallurgie comtoise XVe–XIXe siècles; étude du val de Saône* (Besançon. Cahiers du Patrimoine 33).
- Berg T and P (ed and trans) 2001, *R R Angersteins’s illustrated travel diary, 1753–1755: industry in England and Wales from a Swedish perspective* (London).
- Bourguignon M 1963, ‘La sidérurgie, industrie commune des pays d’entre Meuse et Rhin’, *Anciens Pays et Assemblés d’Etats* 28, 83–120.
- Claerr-Roussell C 1995, ‘The ‘Comtois’ process of iron production: the birth and development of new working methods during the eighteenth century’, in *The importance of ironmaking: technical innovation and social change; papers presented at the Norberg Conference on May 8–13, 1995*, vol 1 (Stockholm), 203–10.
- De Nimal H 1913, *La métallurgie à l’Exposition de Charleroi en 1911, avec des notes sur la forgerie. Extrait du Livre d’Or de l’Exposition de Charleroi 1911* (Charleroi).
- Den Dooven P 1979, *La métallurgie au Pays de Franchimont, 1. Les forges de Spa* (Stavelot).
- Den Dooven P 1980, *La métallurgie au Pays de Franchimont, 2. Winamplanche et Marteau* (Stavelot).
- Discry F 1970, ‘L’ancien bassin sidérurgique du Hoyoux (du XVe au XVIIIe siècle)’, *Anciens Pays et Assemblés d’Etats* 50, 1–402.
- Florén A 1998, *Vallonskt järn; industriell utveckling i de södra Nederländerna för industrialiseringen* (Uppsala).
- Gillard A 1971, *L’industrie du fer dans les localités du comté de Namur et dans l’Entre-Sambre-et-Meuse de 1345 à 1600* (Bruxelles).
- Hansotte G 1962, ‘L’industrie métallurgique dans la vallée de la Vesdre aux temps modernes’, *Bulletin de l’Institut Archéologique Liégeois* 75, 165–220.
- Hansotte G 1963, ‘L’industrie métallurgique dans le bassin de la Hoëgne aux temps modernes’, *Bulletin de l’Institut archéologique liégeois* 76, 5–44.
- Hansotte G 1967, ‘Contributions à l’histoire de la métallurgie dans le bassin du Hoyoux aux temps modernes’, *Bulletin de l’Institut Archéologique Liégeois* 80, 59–90.
- Hansotte G 1974, ‘La métallurgie wallonne au XVIe et dans la première moitié du XVIIe siècle; essai de synthèse’ in H Kellenbenz (ed), *Schwerpunkte der Eisengewinnung und Eisenverarbeitung in Europa, 1500–1650* (Köln).
- Hansotte G 1980, *La métallurgie et le commerce du fer dans les Pays Bas autrichiens et la Principauté de Liège pendant la seconde moitié du XVIIIe siècle* (Bruxelles).
- Hildebrand K-G 1992, *Swedish iron in the seventeenth and eighteenth centuries: Export industry before the industrialization* (Stockholm).
- Lejeune J 1939, *La formation du capitalisme moderne dans la principauté de Liège au XVIe siècle* (Paris).
- Lequeux A 1933, ‘L’industrie du fer dans le Hainaut français’, *Revue du Nord* 19, 5–28.
- Neu P 1989, *Eisenindustrie in der Eifel; Aufstieg, Blüte und Niedergang* (Köln).
- Pirotte F 1966, ‘L’industrie métallurgique de la terre de Durbuy de 1480–1625; ses rapports avec la métallurgie liégeoise’, *Bulletin de l’Institut archéologique liégeois* 79, 145–210.
- Scrivenor H 1854, *History of the Iron Trade* (London).
- Wagner J 1921, *La sidérurgie luxembourgeoise avant la découverte du gisement des minettes; histoire technique du bon vieux temps* (Diekirch).
- Yernaux J 1939, *La métallurgie liégeoise et son expansion au XVIIIe siècle* (Liège).

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