

## CHAPTER FIVE

### CONCLUSIONS

Whereas the term, Wealden, may be accurately used to describe geographical locations in the Weald, or to recognise a distinctness of the region, its use can be misleading. Its frequent application in connection with the iron industry has come to imply a regional character where such is often inappropriate; indeed Wealden, in this context, has almost become an epithet for outdated practice. Tomlinson (1976: 386) draws a distinction between Wealden and “alien” gunfounders, suggesting a cohesion among those working in the Weald for which there is no evidence. Apart from the location of their works, there is little about most of them which is distinctly Wealden. From the late-seventeenth century there had been increasing involvement in the region by merchants and entrepreneurs from London. The Westerns and the Gotts, whose families were linked, and who occupied works in the Weald for long periods, were in this category, as were Hooper and Diggs, who built Pippingford furnace (Cleere & Crossley 1985: 194-5). The Gotts later settled in Sussex, but only after their fortune, based on iron founding, had been made. Of their successors, the Fullers and John Legas were Wealden in the true sense, but William Harrison was based in London, and exploited the Weald because of what it had to offer; skilled, specialist labour, appropriately equipped furnaces, and relative ease of access to the main ordnance markets. So the subsequent attraction to the Weald of the Jukes brothers. William Bowen, John Churchill, and Edward Raby, all based outside, serves to dispel the myth of the “Wealden” gunfounder in the eighteenth century. Others also showed interest; Thomas Braxtone, of Fareham, and a Mr Cotton, possibly a member of the family of ironfounders from the north-west Midlands, both received replies to inquiries about the Robertsbridge works in the early 1750s although nothing is known about their motives (Whittick 1992: 57-8).

Links with London brought elements of integration into the organisation of the ironworks in the Weald. This integration was most apparent during the 1740s, when Samuel Remnant acted as agent for both the Fullers and for the Legas-Harrison partnership. His agency, together with his friendship with William Bowen, would have enabled Remnant to draw together their separate manufacturing units for mutual benefit, notably in the arrangement of sub-contracts. Remnant would have been able to retain, if not strengthen, his influence following the death of William Harrison, for Harrison’s sons were still young and John Legas, the co-trustee of Harrison’s estate, was based in the Weald, and therefore in need of an agent close to the markets.<sup>1</sup> However, Fuller’s decision to reject Remnant would have undermined the latter’s influence, and although it cannot be determined whether Fuller, or Remnant, benefited or suffered as a result of this hiatus, an element in the integration of the Wealden ironworks was lost (Crossley & Saville 1991: 260). Remnant’s death, two years later, weakened it further.

Page 88

During the Seven Years' War, the demand for ordnance sustained the viability of the partnership between Harrison's sons and Richard Tapsell, who had succeeded Legas, maintaining the integration of their furnaces and forges. The influence of Robert Bagshaw, who retained an independent role as a merchant, as well as joining the partnership, may have been significant in this period, his acknowledged business acuity compensating for the inexperience of the Harrisons and the apparent imprudence of Tapsell. For whatever reason, the marked decline in the partnership's business after 1763 (see Fig.19) must have been a factor in the bankruptcy of Tapsell, in which Bagshaw was the prime mover. More than any other event, apart from the resumption of peace, Tapsell's bankruptcy contributed to the decline of the iron industry in the Weald in that, at a stroke, as many as ten furnaces and forges went out of production, at least temporarily, and a cohesive manufacturing entity was broken up and its place taken by a number of small, independent operators. Only one of the former partnership's furnaces, the Gloucester furnace at Lamberhurst, remained in use, although all their forges, hitherto an adjunct to their ordnance business, were to continue to serve a declining local market.

Page 89

The integration of furnaces and forges, albeit limited to a small number of units, had been an established practice in the Weald since the sixteenth century. Bowen, Churchill and Raby operated two furnaces each for some of the time, but, more importantly, with the exception of Fuller, Butler and Clutton, the ironfounders in the Weald all operated ironworks in other areas, usually London but, in the cases of Churchill and the Crowley family, elsewhere. The extent to which integration had financial as well as manufacturing implications is impossible to assess. As far as the Crowleys were concerned, it is unlikely that their casting operations at Ashburnham constituted a major part of their annual turnover. The bankruptcies of Raby and Churchill suggest that the integration of their own varied industrial interests was far from successful, although Raby demonstrated that financial precariousness was not a certain threat to continued prosperity. His ability to continue to cast for the Board of Ordnance, after the dramatic lowering of prices forced by the Carron Company, is evidence in itself. Similar resilience is shown by William Bowen, the most consistent of the founders in the Weald.

The end of the Seven Years' War saw a sharp decline in the government market for guns, and although there was a rise in the demand for guns for the merchant trade, the high cost of guns cast out of ore made Wealden ordnance less competitive. Although a small number of air furnaces seem to have been built in the Weald, their location was disadvantaged by the distances to the markets. The existence of a number of foundries close to the River Thames ensured that their products would reach the merchant market unimpeded. Edward Raby is an exception, in that he cast a substantial share of the East India Company's purchases at the end of the 1760s. Lacking innovatory enterprise, iron manufacture in the Weald suffered from its early pre-eminence. Furnace output was markedly below the average for the rest of the country. In 1717, the average annual output of the Wealden furnaces was 180 tons, furnaces in the west of England averaged 450 tons (Hammersley 1973: 601). Even Gloucester furnace, said to have been the tallest in England when it was built in 1695, produced only 200 tons in that period. Although Sir Ambrose Crowley considered Sussex and Kent bar iron to be of "tough" quality, comparable with Swedish iron, it is more likely that

low yields, in addition to small hearth size and short campaign length, had an important effect on output figures (Flinn 1962: 35-8). The relatively high cost of operating small furnaces could only be offset by high-profit production of ordnance for government contracts (Cleere & Crossley 1985: 215).

Page 90

In some technological aspects the Wealden furnaces and forges did not benefit from the improvements made in the iron industry in other parts of the country. Box bellows had been introduced into the Black Country early in the eighteenth century, but there is no evidence of their adoption in the Weald (Schubert 1957: 208). The Carron Company made use of blowing cylinders designed for them by Smeaton. However, developments in cannon boring affected none of the gunfounding furnaces in Great Britain during the 1750s and 60s. Carron were employing the same method as was used in the Weald (Campbell 1961: 88-9). Wilkinson's innovative boring machine was not introduced until the next decade. It is difficult to assess the extent to which casting techniques in the Weald reflected improvements elsewhere. The small number of founders who attempted the casting of shells or trucks suggests that they were specialised skills possessed by only a few. In forging, output was low, and it is not clear to what extent, if any, the use of mineral coal in the chafery hearth had reached the Weald. Being far from the coalfields, it was an expensive substitute for charcoal, but carriage of coal to Woodcock forge may suggest such a use (Hodgkinson 1978: 19). Lack of development and innovation in the Weald was seemingly recognised nationally, even internationally, for when a visit was paid to Britain in 1764 by the distinguished French engineer, Gabriel Jars, his itinerary omitted the Weald, despite its proximity to France, and concentrated on ironmaking at Carron, in Scotland, and at Clifton in Cumberland, as well as on other extractive industries (Chevalier 1949).

Page 91

As far as transport and accessibility were concerned, from only two furnaces, Robertsbridge and Beckley, was it said to be possible to move guns in winter, because of their nearness to navigable water, although it is clear that overland journeys were regularly made from some locations. Nevertheless, the Wealden clays were a considerable hindrance. In the supply of charcoal, there seems to have been little discernible shortage around some sites, although competition for coppicewood, through the increasing demand for hop-poles, which required a shorter growing period, affected others, notably those which were not part of the larger estates. Estate wood prices do not seem to have reflected the general rise in charcoal costs to which earlier authors had attributed the decline of the industry in the region. Similarly, ore remained plentiful in the areas traditionally most associated with ironworking. In the more marginal areas, away from the Wadhurst Clay, the most reliable source, distances over which ore had to be carried were greater. Traditional ironworking skills in its labour force were probably the Weald's greatest asset. Board of Ordnance proofs of guns reveal that, throughout the period, ordnance cast in the Weald had a higher success rate than its competitors.<sup>2</sup> Thus gunfounders in other parts of the country sought to attract moulders and founders from Sussex, ultimately perhaps to the Weald's detriment.

If the transient nature of the gun trade was ultimately doomed to extinction in the Weald, the small local bar iron trade remained unexpectedly resilient. Possibly because of the same

geological intractability that restricted the movement of guns, the forges were able to compete successfully for a market in local blacksmiths, estates and inland towns. Their low output could be serviced by the diminishing number of furnaces, and the livelihoods of their personnel sustained by part-time agriculture.

The commercial security of the iron industry in the Weald in the third quarter of the eighteenth century rested in the continued demand, by the Board of Ordnance, for guns cast out of ore. Once that demand diminished, the region was neither equipped nor located to compete for markets which would make do with guns cast in air furnaces, nor was it able ultimately to compete with furnaces which, because of larger capacity, longer campaigns or coke fuel, were able to cast an equivalent product at a cheaper price. There is no evidence that the Board favoured the Weald, so when demand exceeded the Weald's ability to supply, the Board accepted, even invited, tenders from elsewhere.

Page 92

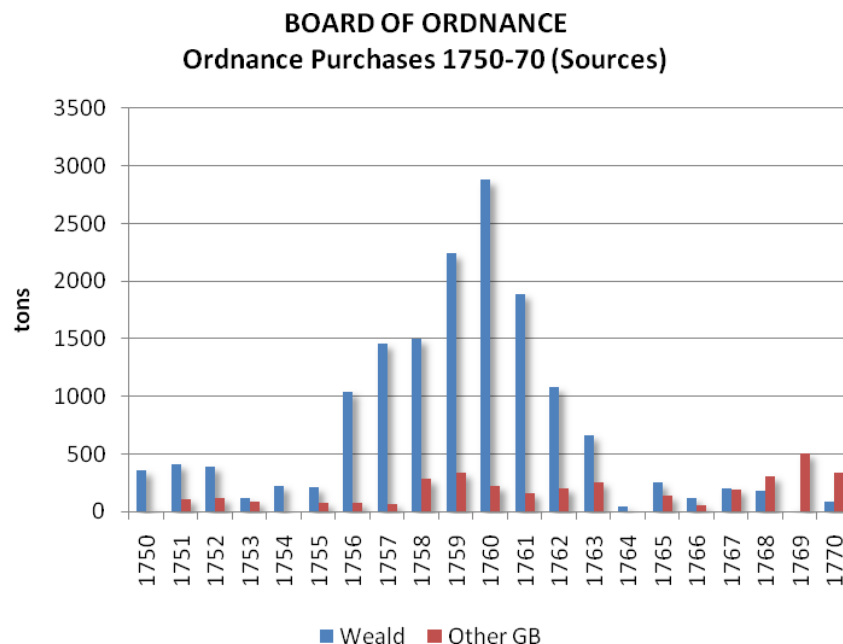


Fig. 13

(PRO WO51 172-246)

The decline in the Weald's share of the government's contracts for ordnance closely followed the end of the Seven Years' War. The disintegration of the Country Partnership, and the fate of individuals, such as William Bowen and Edward Raby who both died in 1771, meant that gunfounding furnaces and, to a lesser extent, forges became unexpectedly vacant at a time when there was little in the markets to attract new tenants. Gunfounding in the Weald was to be revived again early in the 1770s, when the Carron Company's products failed dramatically, but it was short-lived. The period of the Seven Years' War had seen the final demonstration of the strength of a regional industry to prolong the viability of its specialist production.

Page 93

## Notes and References

1. GL Ms.6482.
2. Between 1750-70, 79.5% of the 10,860 guns cast in the Weald passed the Ordnance Board proof, whereas only 70.7% of the 3,130 cast elsewhere (guns cast by Eade & Wilton have been assumed to have been cast in the Weald). It is believed that the records of the proofs of guns, recorded in the Surveyor General's Minutes, are not complete and that some proofs took place without their results being included in the Minutes: PRO WO47 38-76.