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Honorary Editor
David Crossley, 5 Canterbury Crescent, Sheffield, S10 3RW

Honorary Secretary
Ann Callow, Glazier’s Forge Farm, Dallington, Sussex, TN21 9JJ

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FIELD NOTES
 compiled by J. S. HODGKINSON

A bloomery in Battle, East Sussex

A heavy concentration of bloomery tap slag and furnace cinder, centred on TQ 7606 1702, has been found covering the north-eastern part of a field, the adjoining stream bank and the western part of the next field, on the southern edge of Petley Wood. The slag covers an approximate area of 1500m$^2$, but has probably been dispersed by ploughing. An example of a cylindrical ‘plug’ of slag has been found. Roman pottery, in association with evidence of ore digging, was discovered in Petley Wood in the 1950s, although smelting activity has not been reported hitherto.\(^1\)

We are grateful to Liz Phillips for notifying us of her discovery.

A bloomery in Rotherfield, East Sussex

A small concentration of bloomery slag has been found in the bank of a stream in woodland called Pocket Birches, about 100 metres upstream of where the public footpath from Orznash Farm to Boarshead crosses it. Pieces of bloomery slag have been found in the stream below the site which is located at TQ 528334.

Two bloomeries in Heathfield, East Sussex

Two further bloomery furnace sites have been discovered in the search area that has now moved from N. Heathfield to the S. Mayfield area. These were found in a gill flowing N.E., situated to the S. of Bungehurst Farm at TQ 5992 2425. Many potential iron ore pits exist to either side of the ridge road between TQ 595240 and TQ 594231

At TQ 5972 2409, some pieces of bloomery slag were found beside a small side-stream coming in on the right bank. Although
very little slag was easily visible, it is unlikely to have been dumped there.

The other bloomery site, at TQ 5979 2420, was found in the field to the N. of the gill, covering an area about 25m x 25m, but probably only about 300mm deep. Although on gently sloping ground, it is unusually distant from the stream and may be associated with the farm.

Both sites lie on Ashdown Sand, close to an east-west fault where Lower Tunbridge Wells Sand outcrops.

Five charcoal platforms were seen in the gill, but with two blast furnaces, a forge and the recently found Roman bloomery site at Little Furnace Wood, this is not surprising. However, two of the platforms were much smaller than usual - less than 3m diameter - and the charcoal fines less black, perhaps indicating that they had been there a long time.

Brian Herbert

Bloomery slag in Netherfield, Battle, East Sussex

A layer of bloomery slag, with some lumps of significant size, has been discovered in a stream at TQ 7158 1779, upstream from the newly identified, Netherfield Furnace. No evidence of a working area nearby has been found.

Two bloomeries in Ticehurst, East Sussex

A concentration of bloomery tap slag has been discovered in the bank of a ditch and in the adjacent part of a field on the edge of Hoadley Wood, at TQ 6604 2850. Because the field was under grass, it was not possible to make an estimate of the area covered by the slag.

A further concentration of bloomery slag has been found beneath the roots of a tree, also in Hoadley Wood, at TQ6591 2839.

Both sites lie on Wadhurst Clay, and are located within 100m of a slag-metalled track linked to the Roman ironworking site at Bardown. ²
An Iron Age bloomery in Forest Row, East Sussex

In 1999, part of a small bloomery smelting furnace was discovered during the mechanical excavation of a pond on Tablehurst Farm, at about TQ 4298 3559. The remains, which consisted of the base of the hearth, together with a layer of charcoal fines and a few fragments of furnace wall, were about 1m below the modern ground surface. The surviving base measured only about 400mm across, which is relatively small compared with other excavated furnaces in the Weald.3

A sample of charcoal from the furnace was sent for C14 analysis to the Centrum voor IsotopenOnderzoek, Rijksuniversiteit Groningen, in the Netherlands. A radiocarbon determination of 2110±70BP was received, which when calibrated provides a date range of 210BC – 40BC at 68.2% probability, and 360BC – AD30 at 95.4% probability. An additional peak in the calibration curve of 350BC – 320BC at 5.8% probability can probably be dismissed.4

The small apparent size of the furnace may be accounted for by its early date, but the lack of corroborative dating evidence must raise doubts. The depth of the remains below the surface, upon which there is other evidence of ironworking in the bloomery period, adds credence to an Iron Age date. Nevertheless, the limited scope for excavation and the paucity of the remains, and of the samples for dating, make this an unsatisfactory conclusion.

A Romano-British domed bloomery furnace in Mayfield, East Sussex

The discovery of a bloomery site in Little Furnace Wood, Mayfield has already been reported.5 Trial trenching in September 2003 led to the discovery of three sherds of East Sussex ware, which suggested a late-Iron Age or Romano-British date for the site. However, trenching also revealed the top of a furnace structure. Initial examination led to the conclusion that the remains
might be quite well preserved, and the decision was taken to excavate more fully. Chris Butler, of the Mid-Sussex Field Archaeology Team is directing the excavation, which commenced in October 2003, and which has revealed a substantial, and fairly well-preserved domed smelting furnace set into an elongated pit in a bank at the top of the valley side. The size of the furnace, at about 1m wide and over 1m high – both internal measurements – is rather larger than similar furnaces that have been excavated in the Weald. Comparisons can be drawn with furnaces seen at Cow Park, Pippingford, and in Rocks Wood, Withyham, as well as outside the Weald, at Laxton, Northamptonshire and at Clérimois, France.6

A radiocarbon date of charcoal found in the furnace has indicated a date in the second century AD. Excavations will continue and a full report published in due course.

Notes and References

4 Rijksuniversiteit Groningen, GrN-25465, Domesday Ferraria 1. The error margin of ±70 can be accounted for by the small size of the charcoal sample
IRONWORKS IN LATE-16TH CENTURY KENT
J. S. HODGKINSON

In an oft-quoted paper, published in 1981, Charles Cattell drew attention to the lists of ironworks in Kent drawn up in and after 1588, of which the corresponding lists for Sussex and Surrey seem not to have survived.¹ The lists provide considerably more information than those of 1574, upon which they were initially based, but Cattell transcribed relatively little detail and, being deposited in the Staffordshire archives, in Stafford and at some distance from the Weald, the lists are reproduced here in full.

In addition to the basic facts about the owners and occupiers of ironworks, the lists include a certain amount of incidental detail about the individuals named, their employees, the output of their furnaces, numbers of guns cast at certain furnaces, and the names of merchants on Tower Hill, in London, with whom they dealt or, in one instance, were contracted to. The names of the merchants correspond closely with those named in surviving bonds of the same period, obliging merchants to dispose of ordnance according to Privy Council orders.²

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Staffordshire Record Office, D593/5/4/28/4

8 and 9 of August 1589

The names of those persons as did make and cast iron ordnance in the pishes following

Thoms Jhonson of Shornden
Jhon Phillips of Barden
Jhon Phillips of Asherst
Jhon Swaysland of Cowden
Jhon Knight or ffrancis Jhonson of the same pishe
Thoms Willoghbie of Chedingstone  Thoms Browne of Chedingstone
An exacte vewe and inventorie aswell of the numbers of yron workes called ffurnaces in ye countie of Kente wt the names of th’owneres and occupiers of everie of them, as also of the numbers and severell kinde of peeces of cast yron ordnance yt are in any of them now readie made taken by Robt Binge and Will Clarke as herafter followeth

viii November a° 1588

Sir Rycherd Baker knighte hath in his owne hande wt in the pishe of Cranebrooke one yron worke called a fordege or hammer wt in one mile of his dwelling howse in Cranbrooke aforesaid called Sussingherst but hath noe fornace thear

The same Sir Rychard hath in his owne hande wt in the parishe of Hawkherst about iiii miles distant from his said dwelling howse one yron worke called a furnace wherin was never any peece of ordnance cast as it is saide but onlie sowes of yron

John Webbe being over sees of all Sir Rychard Bakers thinges and his onlie doer in his absence being his founder at the said fornace, and Richerd Willie clerke of his workes stande bounden for the due pformance of th’orders sette down by the Quenes ma\textsuperscript{tes} moste honorable previe councell in yt be halfe by cawse the saide Sir Rychard is nowe remaining at London w\textsuperscript{th} his howsholde

viii November a° 1588

Sir Alexander Colepeper knight hath in his owne hande in Cranebrook aforesaid wt in half a mile of his dwelling howse in Gowtherst called Bedgberie one furnace now in the order and government of Anthonie Colepeper esquire sonne and heire apparnt of the said Sir Alexander in the absence of the same Sir Alexander his father where in there was not any one peec of ordnance caste by the space of seven yeares now last paste (as it is said) but onlie sowes or yron
The said Anthonie Colepeper and Peter Lewis founder at the said furnace stande bounden for the dew performance of ye said order

Henry Darell gent hath in Chingley wt in ye pish of Gowtherst only a fordege or hamer now in the ocupacon of Rycherd Ballard but the ffurnace yt was thear is fallen downe and utterlie decayed

Thomas Brattle hath in the pish of Horsmonden a furnace called Shorsmonden furnace, wt he hath letten for yeares to Willm Ashborneham gent who hath letten the same over to Thoms Johnsonne of Hartefeild in the Countie of Sussex gunfounder who now occupyeth the same but hath no workemen thear at this time, in w' furnace they caist no sowes of iron but peeces or ordnance at this psent remaining, but wear latlie caried from thence to ye water side at Maidstone to be convayd to Tower wharfe in London of w' peeces some are remayning at this psent at Yalding and some at Maydstone, the totall numb' and severall kindes whearof ar as followeth

Mynyons lxviii
ffawcons xlvi

The said Thoms Johnsonne & Lewes Hughes clerke of the said ffurnace stand bownden for the dew pformance of ye said order

Thms Dikes hath in his owne hande at Durnedall w'th in the pish of Pevenberie one fordege or hammer but no furnace
fforde mill
fornace in
Tunbridge

Sir Thoms ffane knight hath wth in the pish of 
Tunbridge a ffornace nere unto South Frythe called 
Bornemill fornace now in the occupacon of Edmund 
Willard, and Abraham Willard of Tunbridge gent in 
wch fornace thear ar caste only sowes of yron and not 
any one peec of ordnance, as it is said 
Robt Turner founder at the said fornace standeth 
only bounden for the due pformance of the said 
order by cause the saide Sir Thomas ffane is now 
remaining at London and ye saide Edmund and 
Abraham are rydden from home, and not to be had

Thoms Smithe of London Customer hath in 
Tunbridge aforesaid at Barden a furnace called 
Barden fornace in lease for years unto the said 
Edmund Willard and Abraham Willard the chief 
workmen wherof is one John Phillippes of London 
gunfounder, in wc fornace are seldome caste any 
sowes of yron, but most comonlie peeces of 
ordnance, whear thear are remaining at this psent of 
theis severall kinde following
   Sakers     vi
   Mynnions  xxix
   ffawcons xii

And at Gage Green in Hadlow to be careyed to the 
water side at Milhale and from thenc to Tower 
Wharfe at London
   Mynnions  vi
   ffawcons  vi

The said John Phillips standeth onlie bounden for the 
dew performance of the said order bycawse the said 
Edmund and Abraham wear not to be had as before
xvi November a° 1588

Sir Walter Waller knight hath w° in the pish of Asherst a fornace called Asherst fornace now in th’occupacon of the said John Phillips of London gunfounder, at w° forncac thear are most comonlie peeces of ordnance caste whear thear are remaining at this psent of

- Sakers ix
- Minions xl
- ffawcons xxx

John Swaysland of Cowden yeoman hath in the pish of Cowden a fornace whear in are peeces of ordnance most comonlie caste the founder wherof is ffraenis Johnson of Cowden gunfounder, wch John standeth bounden to Luckantius Roper and Giles ffleman of London March: boath of them dwelling in St Thoms street to deliver unto them lv tunns of mettlee yearlie for the space of foure years, and the same Luckantius and Giles have the said ffraenis Johnson bound also to caste the same mettall into peeces of ordnance for them at w° fornace theris remaining at this present of

- Sakers xiiii
- Minions xxiiii
- ffawcons xx

The said John Swaysland and ffraenis Johnson stand bounden for the dew pformance of the said order. But it is as needful w° the said Lackantius & Giles ffleman should be bound likewise bycause the said John Swaysland standeth bounden to deliver unto them yearlie lx tunns of mettall as afore, and they ar at libertie to make the same into gunnes or what they lyke
xvi November a° 1588

John Knight of Cowden yeoman hath in the said pishe of Cowden a fornace wherin he doth usuallie caste sowes of yron but doth not at any time caste any peeces of ordnance thear as he sayeth. never theless he the said John Knight standeth bounden for the due pformance of ye said order

xvii November a° 1588

Thomas Willoughbie esquire hath in Chedingstone a forge and also a fornace, wch fornace he hath letten for yeares to Thomas Browne of Chedingstone yeoman whose founder is Ephraim Arnole of Chedingstone gunfounded in w© fornace peeces of ordnance are most comonlie caste, whear thear are remaining at this psent of

Sakers  vi
Minions  viii
ffawcons  xii

The said Ephraim standeth onlie bounden for the dew pformance of the said order bycause the said Thomas Browne was not at home, wch Thomas afterwards came to Wrootham and entred into bonds And at Sundewiche to be conveyed to the tower of London

Sakers  x
Minions  x
ffawcons  xii

Staffordshire Record Office, D593/5/4/28/17

The names of the ironmasters who were bound 1590 A° regin Eliz xxxii
Dicessimo octavo die Octobris
1. John Dunnedoll of Lambrest in the countye of Sussex yeom, Occupier of the ffurnace at Bedgherye in the countie of Kent, bound in 2000\text{\textpounds} Suertyes { John Polhill of Shorrham in Kent, gent in 200\text{\textpounds} Willm Tilghman of Eastmallinge, in Kent, yeom in 200\text{\textpounds}}

2. John Swayselande of Cowedene in Kent yeom, Occupier of the ffurnace at Cowedene bound in 2000\text{\textpounds} Suertyes { Thoms Burre of Cowden aforesaid yeoman in 200\text{\textpounds} Abraham Wyllard of Tunbridge in Kent in 200\text{\textpounds}}

3. Thoms Burre of Cowdene aforesaid yeoman Occupier of the upper furnace in the saide parishe of Cowdene bound in 2000\text{\textpounds} Suertyes { Edmund Wyllard of Tunbridge aforesaid gent in 200\text{\textpounds} John Swayesland aforesayde in 200\text{\textpounds}}

4. Abraham Willarde aforesayde Occupier of the ffurnace at Bardeene in Kent, bound in 2000\text{\textpounds} Suertyes { Edmund Willard aforesaid in 200\text{\textpounds} John Swayselande aforesaid in 200\text{\textpounds}}

5. Edmund Wyllarde aforesayde Occupier of the ffurnace at Bardenne aforesayde bound in 2000\text{\textpounds}
Abraham Willarde aforesayde in 200ls

Suertyes { Thomas Burre aforesaid in 200ls

Primo die Novembris 1590

6. John Phillips of London gonnefounder
   Occupier of the ffurnace at Ashurst in 2000ls
   the countie of Kent bound in
   Thomas Johnson of
   Hartfeilde in the countie
   of Sussex in 200ls
   Suertyes { ffrancis Johnson of
   Hartfeilde aforesayde
   yeom 200ls

7. Thoms Johnson aforesayde yeom
   Occupier of the ffurnace at Horsmonden 2000ls
   in Kent called Sherndene bound in
   John Phillips aforesayde
   in 200ls
   Suertyes { ffrancis Johnson
   aforesadayde in 200ls

8. ffrancis Johnson aforesayde Occupier of 2000ls
   the furnace called Scarlets at Cowdene
   aforesayde bound in
   John Phillips aforesayde
   in 200ls
   Suertyes { Thoms Johnson
   aforesayde in 200ls

   the furnace at Hernden in Kent bound in
   John Baker of Lymsfeilde
   Suertyes { Surrey in 200ls
   Thoms Baker in 200ls
10. Thoms Browne of Chiddingstone in Kent gunnefounder Occupier of the furnace at Chiddingstone bound in 2000ls
   George Rustell of Chiddingstone in 200ls
   Suertyes { Edward Willoughbie
   Lincolnes Inn in com Middlesex, gent in 200ls

Staffordshire Record Office, D593/5/4/28/3 (part 2)

Mr Byngs certificat of the […] of the yron works in the weald of Kent

Chedingstone Sakers 0
    Minions 0
    ffawcons 0
    ffawconets 0
    Robinets 0

A perfecte note of all the peces of yron ordnance latelie caste at the ffurnaces of Shorneden, Barden, Asherst and Cowden taken in Kent the viii & ixth of August in the xxxist yeare of the reigne of our most gracious sovereign lady queen Elizabeth &c. by Robt. Bing & Willm Clerke esquires

viii August an° 1589

Shorneden Sakers 0
    Minions xvii
    ffawcons xi
    ffawconets 0
    Robinets 0

Sent to East Sakers iii
ffarleigh & so to
Maidstone
Minions           xi
ffawcons          iii

ix August an° 1589

<table>
<thead>
<tr>
<th>Barden</th>
<th>Sakers</th>
<th>xi</th>
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<tbody>
<tr>
<td>Minions</td>
<td>xv</td>
<td></td>
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<tr>
<td>ffawcons</td>
<td>xi</td>
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<td>ffawconets</td>
<td>0</td>
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<tr>
<td>Robinets</td>
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</tbody>
</table>

Common buyers of peeces of yron ordnance

Oliver Stiner of Thems street
Lackantius Roper ibm.
Henry Porder of east Smythfeild
John Chapman ibm.
Giles ffleming of Thems street
Symo^n Starley in St nicho: lane
Edmund Harney of Thems street
Rycherd Marshall ibm.

ix Augusti

<table>
<thead>
<tr>
<th>Asherst</th>
<th>Sakers</th>
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<tbody>
<tr>
<td>Minions</td>
<td>iii</td>
<td></td>
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<tr>
<td>ffawcons</td>
<td>iii</td>
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<tr>
<td>ffawconets</td>
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<td>Robinets</td>
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Minions           ii
ffawcons          ii

Sent to
Milhale

ix Augusti

<table>
<thead>
<tr>
<th>Cowden</th>
<th>John Swaysland</th>
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<tbody>
<tr>
<td>Sakers</td>
<td>0</td>
</tr>
<tr>
<td>Minions</td>
<td>0</td>
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</table>
Demi Culveringes for her ma\textsuperscript{lie} ii
Thear hath been made of late for Sir John Hawkins xii
peesces, Culveringes and Demie Culveringes

Cowden Mr John Knight none theis viii weekes

Notes and References


THE ORDNANCE RECORDS: THOMAS BROWNE
RUTH RHYNAS BROWN

Part I
1598-1603- The Queen’s Founder

Following the death of Thomas Johnson, Thomas Browne was given the post of Queen’s Founder of Iron Ordnance and Shot. The earliest reference to Thomas Browne in the Ordnance Debenture books is in 25 January 1597/8:
“Receaved of Richarde Polhill deputy unto Thomas Browne her Ma’te founder of cast Iron shott thes severall sortts of rounde and crosbarde shotte hereafter mentioned by him p’vided and broughte into her highnes store w’thin Thoffice of Thordynce for the better supply therof Amountinge to the some of One Hundreth Twenty poundes Twelve pence.”

After this are details of the round and cross-barred shot for culverin down to saker (WO 49/22, 4v). The next debenture to “Thomas Browne her Ma’tie founder of caste yron ordynnce and shotte” for £35 5s 1d is on the following page and is dated 3 February 1597/8. This is also for round shot, from culverin to falcon, weighing in all 3 tons, 15 cwt 2 qr 15 lb (WO 49/22, 5r). This is a third payment for ammunition worth £51 15s 10d on 17th February 1597/8 (WO 49/22, 6r).

These are the first in a number of payments for ammunition (e.g. WO 49/21, 17r; 44r; 53r; 57r; 82r; 83r). One unusual debenture is of robinet shot, for the lightest of the guns in service, on 12 Apr 1598:

“There is due unto Thom’s Browne her Ma’tie Founder of Iron shotte rabonett shotte halfe a tonne by him made, provided and broughte into her Ma’tie Stoare towadres the furnyshinge of a proportion for supply of the Realme of Irelande Amountinge to the some of X lib” [WO 49/21, 44r].

The first payment for an iron gun is on 18 Aug 1598:

“Receaved of Thomas Browne her Ma’tie Founder of Iron shotte One fawcon of caste yron wayinge One Thousande Two Quarters weightte being by him provided and brought into her Ma’tie Store towadres the furnishinge of a proportion for Loughfoyle in Ireland which at x s the cth wgt Amounteth to the some of Fyve poundes five shillings” (WO 49/22, 66v).

Loughfoyle was the future site of Derry/Londonderry; the falcon is another light gun, a little heavier than the robinet.
In 1599 there are four payments for parcels of round and cross-barred shot, two for Thomas and 2 for his deputy, Richard Polhill (WO 49/23, 39v; 64r; 65r; 78r). Polhill is probably a member of well-known Kentish family, based near Tonbridge. However in the following year, a new deputy appears. There are four debentures for parcels between 26 June and 9 November 1600 “unto George Collings of London Salter deputie to Thomas Browne”. At least three of these are signed “George Collings”- the fourth is damaged (WO 49/25, 61v; 66v; 87r; 122r).

There are two remaining debentures from Queen Elizabeth’s reign, both in Thomas Browne’s name. The first, dated 30 Sept 1601, is for round and burr shot, worth £20 11s 3d and is signed “by me Thomas Browne”, as is the debenture of 2 December 1602 for round and cross-barred shot for £63 3s 10d (WO 49/26, 141v and 49/28, 216r).

Round shot is the basic solid ball of iron, weighing in set weights e.g. shot for the culverin weighed 18 lb and the demi-culverin 9 lb. Payments for the cross-barred shot are more complicated to work out. This consisted of a rod of wrought iron with an iron ball cast round it. The payments for these specify an agreed weight for the wrought iron bar and the cast-iron component- e.g. the rod for a culverin shot weighed 6 lb and the cast iron 16 lb, while the rod for a demi-culverin weighed 6 lb and the cast iron 7lb. Burr shot was made of fragments of iron and was bought in bulk. It was used to fill case shot as anti-personnel devices.

**Part 2: The King’s Gunfounder 1603-1615**

The accession of King James brought an end to the long war with Spain and in the early years of his reign there was a reduction in many categories of the Office of Ordnance’s expenditure. Only one payment is recorded over the next few years which may refer to Browne, a debenture dated 23 September 1606 for George Collings for delivering cast-iron guns for the forts on the Thames:
“A Debentur made unto George Collinges of London, Iremonger for these sev’all sortes of yron ordenannce by him cast and made and brought into his Ma’tie Store for the furnishinge of the Fortes of Gravesende & West Tilburie as perticulerlie followeth.”
[There are listed the weights of the cannon, one culverin, four demi-culverins, three sakers and a falcon]
“By me John Wallis for George Collings” (WO 49/32, 121).

A reference in the East India Court Minutes includes negotiations with George Browne, John Wallis and George Collins for guns and shot, suggesting there is still some sort of connection with the Brownes (British Library, EICo B/3, 135r).

From 1608 there are signed of increasing government activity. Between July 1608 and March 1609, Thomas Browne was given debentures for three parcels of round and burr shot delivered into stores. These included ammunition for the largest guns, the cannons of 8 and 7 and demi-cannon (WO 49/33, 68r; 79v; WO 49/34, 16).

Browne and another colleague, the London merchant John Davis, obtained a renewal of a warrant “of their agreement made 30 Jan 42 Eliz [1600] to receive out of the store in the office of the Ordnance all short and unserviceable pieces of iron ordnance, and within one year to deliver again into the store, weight for weight, bore for bore, and length for length, such ordnance as the Master of the Ordnance for the time being or his lieutenant should think fit to accept” (Cal. Marquis of Salisbury, Part XX, 1968, 221-22). In 1604 John Davis had already delivered into the Ordnance stores 60 iron guns, both in his own name and through Sir Thomas Waller and Sir Thomas Willoughby. Whether Thomas Browne was involved, is impossible to determine. (WO 49/30, 88r; 132r).

In response to this, two Ordnance employees, William Bull, the Master Gunner of England, and William Scott, a clerk, travelled to the forts at West Tilbury, Gravesend, Upnor Castle, Chatham wharf and the surrounding sconces “to take a viewe of all such short and unserviceable yron ordnance to be delivered unto
Thomas Browne” in 1608 (WO 49/33, 90r). Robert Bevis and William Forster went down to Chatham “to deliver broken Iron Ordinance to Thomas Browne out of Upnor Castle and Warham Skonce”, travelling by boat and horse (WO 49/34, 21v). The list of the iron guns returned from the forts details 10 guns in size from culverin to minion, as well as two broken fragments (WO 49/34, 17r). Later in March 1610 William Scott, Tristram Slader, Robert Bevis, and Wm Forster, all Ordnance officials, went from the Tower to Chatham “about the deliv’ing of sundry peeces of iron ordynnce unto Thomas Browne” (WO 49 36/22v).

These are records of several deliveries of short and unserviceable iron guns to Browne from out of the stores of the Ordnance. On 17 Nov 1609, 4 demi-culverins, 8 sakers and 3 minions were sent “in liewe wherof he the saide Browne is to redely deliyver into his highnes said store w’thin the space of one yere ensuinge the like quantety of new and serviceable Ordynnce weight for weight of such natures Boore and lengthe as he shalbe required to make…”(WO 49/36, 95r).

On 29 Mar 1610 3 old iron guns, a saker, minion and falcon from Gravesend fort and blockhouse were delivered into the Ordnance stores to be sent on to Browne (WO 49/35, 34r). Further deliveries of guns are recorded in the Ordnance Deliveries for 1610 and 1611 (e.g. WO 49/36, 103r; 106v; WO 49/38, 113r; 130r; 143r).

Browne had to replace these unserviceable guns. In August 1610 William Bull, Master gunner of England, was paid for stores spent in proofing 24 demi-culverins, 24 sakers and 6 minions “caste by Thomas Browne and made of the mynes of Brenchley and Horsmenden in the countie of Kent” brought into the store in lieu of pieces given to Browne (WO 49/36, 127v). The following year, in August 1611, another batch of guns were received in lieu of unserviceable old ordnance, this time 10 culverins and 2 demi-culverins (WO 49/37, 58). As late as 3 Nov 1614 Browne was still sending in replacement guns, in this case, two cast-iron culverins (WO 49/42, 76).
In addition to these guns being disposed of by the Ordnance, Browne also replaced other guns loaned out to Sir Thomas Smith in the summer of 1609:

“More there hath beene receaved into the Store from the said Thomas Browne for and in the behalfe of Sr Thomas Smith knight v demi-culveringes and twoe Sakers of caste Iron formerly delivered out and lent unto him by warr’t from the right hono’ble the Lo’s of his Ma’tes privie Counsell wh pieces doe containe in weight over and above those pieces so lent unto him.” [WO 49/34, 51v]. Their actual delivery is probably recorded in a receipt of 10 August 1609 [WO 49/34, 53r].

Smith was involved in a number of colonial and trading ventures, including to Virginia and Bermuda, as well as the East India Company and it is not clear exactly, which of these the guns had been intended for.

Browne was still delivering guns on normal conditions and shot into stores. This began in March 1608 when William Bull and William Hammond went to Milhall in Kent, where they proofed iron ordnance which were to be sent up to the Tower for the King’s service (WO 49/34, 19v). In December one of the Ordnance labourers was paid for a journey of seven days into Kent:

“for his travell and charges being sent by Sr Roger Dalison knight Lieuten’nt of his Ma’te Ordenance into Kent unto Thomas Browne his Ma’te Founder of yron ordenance about his Ma’te Service for the dispatch and makinge ready of yron ordenance to be sent up to the Tower for the service of Irelande” [WO 49/33,120r].

In June 1609 a number of guns were delivered by Browne “towardes the furnishinge of dyvers of his hign’s castles and fortes and for other his high’s services”: first three culverins, four demi-culverins and five sakers, followed shortly by five culverins, three demi-culverins and a saker (WO 49/34, 36r; 38r). In July he
delivered one demi-culverin and 3 sakers (WO 49/34, 51v). A payment for guns in December 1611, after listing the weights of two culverins and nine demi-culverins, added:

“Poiz of all the said Ordennce is xix tonnes demi vii c’weight, w’ch at the rate of xiii lib vi s viii d the tonne amounteth to the some of cclxiii lib xiii s iiii d whereof there is to be deducted for xiii tonnes vii c’th and twoe q’ters weight of broken and unserviceable Ordennce formerly deliv’d unto him out of his Ma’te Store at the rate of xl s the tonne ye some of xxviii lib xv s And there remaineth due unto him the said some of ccxxxv lib xviii s iii d” [WO 49/37, 91r].

The increase in traffic of ordnance is even reflected in the payments for the crane on Tower Wharf dated 7 September 1610, where new rope was needed “for taking up of new Ordynnce made by Thomas Browne his Ma’te (founder) for caste Iron Ordynce and shotte” (WO 49/36, 128r).

During the 1610s Thomas Browne was also casting ammunition; in fact between 1612 and 1616 he supplied only shot and no guns to the Ordnance. Most of these were round and cross-barred shot but there were a number of unusual items, such as the shot for the largest cannon and non-standard basilisks, as well as hollow shells for mortars (WO 49/34, 65r & 77r; WO 49/35, 3r & 103r)

**Last Years 1616-?**

In 1616 there was another burst of activity relating to gun supply for the Ordnance, beginning with the accessories for the proof, sent out on 20 April:

“Delivered out of his Ma’te store wythin the offyce of the ordinnance the daye and yeare above written unto Wylylyam Hamond mr Gonner of England for the double proving of Three culveringes Tenn demi culveringes Two and Twenty sakers and eight mynions of past Iron ordinance made of the
mynes of Brenchly and Horsmondon cast by Thomas Browne founder of his Ma’te service These quantitieys of powder shott and matche hearafter mentioned by order and directions from thoffycers of thorinance . That is to saye
Round Shott of Iron | for culveringe - iiii or
| for di culveringe - xx ty
| for sakers - xliii or
| for Mynions – xxxii
Corne powder-----------------------vii cth wgt
Match -------------------------------one skeyne”
[WO 49/45, 168r].

The guns were received into store in May; the first delivery for two culverins and three demi-culverins dated 3 May 1616 was for guns in lieu of short and unserviceable guns and therefore has no payment (WO 49/44, 36). The second was a debenture for £607 10s, dated 14 May 1616 for one culverin, seven demi-culverins, 22 sakers and eight minions (WO 49/44, 45). The debenture of 7 June 1617 is made out to “John Browne deputie unto Thomas Browne” and is the earliest reference to Thomas’s son in the Ordnance records. It was for 6 culverins, 13 demi-culverins and 10 sakers, priced at £678 (WO 49/46, 70). However the next payment, for round and cross-barred shot for £200, is made out to Thomas Browne again. At the end of the debenture is a memorandum:

“The sayde Thomas Browne did receave full satisfaction for all the shott before mentioned by virtue of the Privye Seale dated the xiiiith of March 1618 upon w’ch privy Seale and (by) virtue of an Order therupon made he the said Thomas Browne dyd receave at the hands of Sr Thomas Watson knight one of the Colle’rs of his Ma’te Excheq’r the full some of cc lib as by his Acquitance remayning w’th the said Sr Tho Watson may appeare” [WO 49/46, 106].

From 1619, most of the payments are to Thomas’s son, John, who would become the most famous and influential member of the family. The last debenture in Thomas’s name is dated 4 February 1619/20 and is for round shot (WO 49/49, 13).
The exact date of Browne’s death is unknown. Traditionally it is said to be 1615, the date John Browne received the title of Gunstone maker, but there are too many debentures post-dating 1615 to make this seem reasonable. No will seems to have survived which can be attributed to him so that at present I cannot give an exact date for his death.

**Part 4- Conclusions**

The study of the debentures owed by the Ordnance Office to Thomas Browne strongly suggest that in the last years of Elizabeth and the first twenty years of King James were neither good nor profitable years for the Wealden iron industry in so far as state patronage was concerned. The number of iron guns purchased over 25 years was pitifully small; certainly not enough to sustain the burgeoning industry or give it too much encouragement. The largest number (as opposed to weight) of guns Browne supplied in one year was 43 guns in 1616 closely followed by 42 in 1610. However in many years he supplied no new guns at all, such as between 1599 and 1605 or in 1612 and 1613. Between 1598 and 1617 Thomas Browne supplied a total of 181 guns, mainly in the saker and demi-culverin class. In 1625 his son John Browne managed to find over 500 iron guns, mainly for the ships hired to escort the merchants. These relatively small numbers were however very respectable when compared with the purchases of bronze guns in the same period. At this period the great Navy built up by the Tudors was in decline; few ships were built to replace the aging Elizabethan vessels so that when the *Prince Royal* was built in 1610, it was armed with old bronze guns, rather than new ordnance. The iron guns were mainly intended for less prestigious ships and the forts and were usually in the smaller sizes. On the other hand the supply of iron ammunition was a more regular and possibly more lucrative venture; guns had to pass proof, while shot was less scrutinized.

The private markets were more important in the growth of the iron industry than the government patronage, particularly the export
industry. The Wealden gunfounders had long relationships with the Netherlands. There, there were Dutch entrepreneurs who re-exported the ordnance, merchant companies such as the VOC, the East India Company, with a need to arm large merchant ships, cities which needed guns to place on their walls and a government with forces on land and sea committed to their long struggle against Spain. All these were more important to the wealth and status of Thomas Browne that the Ordnance Office’s purchases.

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