

## Weardale Iron Company Blast Furnaces Notes

These notes record (primary) evidence about the blast furnaces owned by the Weardale Iron Company at Stanhope and at Tow Law.

For more detailed information from the "Mineral Statistics" for 1854 to 1897 and from the "Mining and Smelting Magazine" for 1862 to 1865, see "Summary of Weardale Blast Furnace Statistics from Mineral Statistics". That document also includes all the information available about iron ore mines and quarries, and tonnages and values of iron ore. (And it includes information for Witton Park Iron Works as well as Stanhope and Tow Law.)

Please note that for some years the tonnages of iron ore recorded as delivered to Stanhope and Tow Law (and listed below) do not include all ore from all mines.

For more detailed information from the "Mining and Smelting Magazine" for 1862 to 1865, see "Summary of 1860s Weardale Information in 'The Mining and Smelting Magazine'".

### Summary:

#### Stanhope:

**There was 1 blast furnace at Stanhope, built in 1844.**

**It was in blast by Sat 7 June 1845. It was in use in 1849, 1851 and 1854, possibly for all of this time. It was out of use 1855-1858, in use 1859-1860, out of use 1861, in use 1862, out of use 1863.**

**It was repaired in early 1864, put into use in week beginning Mon 14 Mar 1864 and used until about April 1865, but probably with a temporary stoppage in Dec 1864 – Jan 1865 due to low prices.**

**It was out of use later in 1865, was never used again and was demolished in 1915.**

#### Tow Law:

**In 1845, Attwood planned an ironworks at Tow Law with 2 powerful blast-engines and 6 large blast-furnaces. Furnaces were being erected in Oct-Nov 1845.**

**In Jan 1846 a steam engine was erected in the Tow Law loam mill engine house, together with boiler, feed-pump, two safety valves and other pumps. Iron production might have started in April or June 1846. By Sept 1846, there were 3 blast furnaces built, but only one in blast.**

**On 13 Apr 1847 there were 3 furnaces, with 2 in blast. 60 tons per week of rail chairs were being made, soon to be increased to 100 tons per week.**

**In 1848 George Dyson became manager of Tow Law. He arranged for Ransome and May of Ipswich to make rail chairs at Tow Law from circa 1851 (using their own staff and tools). He overcame the difficulties of iron production, proved that very good malleable iron could be made and in 1852 set up a malleable ironworks at Tudhoe, to use iron from Tow Law.**

**2 new larger furnaces were built at Tow Law in 1854 and were nearly ready to be blown in at the end of 1854.**

In 1855-1857, there were 5 furnaces (3 built in 1846, 2 built in 1854), with 4 in blast.

In 1858-1860, there were 5 furnaces, all in use.

In 1861-1870, there were 5 furnaces. Numbers in blast (more details below) were 1861-1862 = 3, 1863 = 4, 1864-1865 = 5, 1866-1870 = 3.

From 1858 Charles Attwood developed a new process for making cast steel, which he patented in 1862. In Oct 1863 new works were planned at Tow Law to make steel using this process, but Barings did not support this, so instead Attwood built his own new works at Stanners Close in Wolsingham, which opened in May 1864.

**One of the old furnaces was abandoned or demolished in 1871, reducing total number to 4.**

In 1871-1888, there were 4 furnaces. Numbers in blast (more details below) were 1871-1873 = 2, 1874 = 1, 1875-1878 = 2, 1879 = 1, 1880-1888 = 0, 1882-1886 = 1.

**In Oct 1878 the very extensive foundry was entirely closed.**

**No furnaces were in blast in 1887 or later.**

**The remaining 2 old (1846) furnaces were abandoned or demolished in 1889, reducing total number to 2.**

In 1889-1895, there were 2 furnaces, but none in blast.

**The last 2 furnaces still existed in 1895, but were abandoned or demolished in 1896, and had been demolished by 1916.**

### Outline of events:

- 1) Charles Attwood leased the Stanhope furnace and the rights to ironstone on 23 Nov 1844.
- 2) In June 1845, Attwood had recently started using the Stanhope furnace. He got promising results and persuaded Barings to invest.
- 3) In 1845 Attwood designed an iron works with 2 blast engines and 6 furnaces to be built at Tow Law.
- 4) Wilkinson, Baring and others bought the Tow Law Estates and conveyed them to the Weardale Iron Company on 20 May 1845.
- 5) In late 1845 construction at Tow Law was under way, designed for 6 furnaces. The first furnaces were being erected in Oct and Nov 1845. In Jan 1846 a 14 horse-power steam engine, built by Messrs Murray and Co. of Chester-le-Street, was erected in a loam mill engine house, together with boiler, feed-pump, two safety valves and other pumps.
- 6) On 7 Jan 1846 Attwood (when pitching to the Wear and Derwent Junction Railway to try to persuade them to build a railway to Rookhope) said "he expects to have six furnaces ready, and which will be capable of working 300 tons of ironstone per week each in the early part of April next". It is not clear whether he meant April 1846 (which is unrealistic but typically ambitious) or April 1847 (which is realistic).
- 7) In Feb 1846 (at the opening of the Witton Park Iron Works), Henry Pease said that (Witton Park Iron Works and) Tow Law Iron Works would be in (full) operation in summer 1846.
- 8) In Jan and Feb 1846, Attwood acquired coal to use at Tow Law.
- 9) By Sept 1846, 3 furnaces had been built at Tow Law and 1 was lit. Production might have started in April or June 1846, because the loam mill steam engine was in operation then and its boiler exploded in June 1846.
- 10) On 13 April 1847, Joshua Bates (a partner at Barings) visited Tow Law and reported 60 tons per week of rail chairs being made. Probably 2 furnaces out of 3 in blast. The Stanhope furnace continued to be used and building of the remaining 3 furnaces planned at Tow Law was postponed.
- 11) 1848: 1 furnace at Stanhope making 80 tons/week (according to Henry English in 1850, but 57 tons/week according to Hollis in 1893).  
2 furnaces in blast at Tow Law, each making 80 tons/week (according to Henry English in 1850, but 150 tons/week according to Hollis in 1893).  
1 furnace out of blast at Tow Law.
- 12) 1848-1851. Dyson begins work at Tow Law and perfects the reliable smelting of the Weardale ore.
- 13) 1849 and 1851. Stanhope furnace in use both these years, proven by Bill Heyes records.
- 14) 1851. Because results are now good, Weardale Iron Company builds Parkhill to Rookhope railway.
- 15) 1853. Decision taken to build 2 new larger furnaces at Tow Law. Helped by greater availability of ore from Rookhope, due to Rookhope railway being opened in 1852.
- 16) 1 Sept 1853. "Contract to be let for the building of 40 workmen's cottages at Tow Law Iron Works, for the Weardale Iron Company." This indicates more workmen needed for the new furnaces.
- 17) 1853 to 1854. 2 new larger furnaces built at Tow Law, where the additional 3 had been planned in 1846. The blowing house was adapted for the additional 2 larger furnaces, rather than the additional 3 it had been built to serve in 1846. By end of 1854, the 2 new furnaces were nearly ready to be blown in.
- 18) 1854. 4 furnaces in blast, which were 3 old (1846) ones at Tow Law and 1 old (1844) one at Stanhope. Truran (in 1855) says that the Stanhope furnace could make 120 tons/week and the Tow Law ones 140 tons/week. Fordyce (in 1855) says that the (Tow Law) furnaces were "unusually large", which could be said of the Tow Law ones built in 1846; in 1846 Porter had said that the Tow Law furnaces were large.
- 19) When the number of furnaces in 1854 was reported by Hunt, Fordyce, Truran and Smyth in 1855 and 1856, they misunderstood that total of 6 furnaces meant 5 at Tow Law plus 1 at Stanhope, not 6 at Tow Law.
- 20) Summer 1854. Rookhope to Middlehope railway built to provide more ironstone.
- 21) In 1855, 1856 and 1857, Stanhope furnace was not in use and 4 furnaces were in blast at Tow Law and 1 not in blast at Tow Law. The 4 in use at Tow Law were either 3 old + 1 new or 2 old + 2 new.
- 22) In 1858, Stanhope furnace was not in use and all 5 furnaces were in blast at Tow Law.
- 23) In 1859, Stanhope furnace was in use and all 5 furnaces were in blast at Tow Law, making all 6 furnaces in use.

- 24) Stanhope furnace was in use 1859-1860, out of use 1861, in use 1862, out of use 1863. It was repaired in early 1864, put into use in week beginning Mon 14 Mar 1864 and used until about April 1865, but probably with a temporary stoppage in Dec 1864 – Jan 1865 due to low prices. It was out of use later in 1865 and was never used again.
- 25) From 1858 Attwood developed a new process for making cast steel, which he patented in 1862. In Oct 1863 new works were planned at Tow Law to make steel using this process, but Barings did not support this, so instead Attwood built his own new works at Stanners Close in Wolsingham, which opened in May 1864.
- 26) In 1861-1870, there were 5 furnaces at Tow Law, with number in blast varying between 3 and 5 (see below).
- 27) On 23 July 1863 “The Weardale Iron Company” became a limited company “The Weardale Iron & Coal Company Limited”. This reduced Attwood’s influence and probably led to the new steel works being an independent company at Wolsingham, instead of part of the Weardale Iron Company at Tow Law.
- 28) Attwood retired from the Weardale Iron Company in 1865, aged 74, to concentrate on setting up the Stanners Close Steel Company which he had begun to construct in 1864 at Wolsingham.
- 29) In 1871, one of the old furnaces at Tow Law was abandoned or demolished, reducing total number to 4.
- 30) In 1871-1879, there were 4 furnaces at Tow Law, with only 1 or 2 in blast each year (see below).
- 31) In 1880-1881, there were 4 furnaces at Tow Law, but none were in blast.
- 32) In 1882-1886, there were 4 furnaces at Tow Law, but with only 1 in blast.
- 33) From 1887 onwards, there were no furnaces in blast at Tow Law.
- 34) In 1889, the remaining 2 old furnaces at Tow Law were abandoned or demolished, reducing total number to 2.
- 35) In 1896, the last 2 furnaces at Tow Law were abandoned or demolished, and the Mineral Statistics record no more blast furnaces at Tow Law. The OS 25 inch map revised in 1895 shows the blowing house and 2 newer furnaces still standing.
- 36) Stanhope furnace was demolished in 1915.
- 37) When Tow Law was mapped in 1916, the site of the furnaces had been cleared.

Sources are given in {}, and comments in [].

8 Nov 1843

{ [http://www.disused-stations.org.uk/t/tow\\_law/](http://www.disused-stations.org.uk/t/tow_law/) }

Railway from Bishop Auckland to Crook opened to goods traffic.

3 Jan 1844

{ [http://www.disused-stations.org.uk/t/tow\\_law/](http://www.disused-stations.org.uk/t/tow_law/) }

Railway from Bishop Auckland to Crook authorised to open for passenger traffic.

23 Nov 1844

{William F Heyes, “The Formative Years of the Weardale Iron Company: Part 1. A Review of the Weardale Iron Mining Leases”, in Bonny Moor Hen, no.9, 1997, p.21-31}

On p.22-25, Heyes reports:

In lease dated 23 Nov 1844, from John Rippon of Newlandside Hall to Charles Attwood, Attwood acquired the furnace for smelting iron erected by John Rippon in Stanhopeburn, the ironstone and iron ore on Lane Head Farm and other nearby land, the right to win and use limestone as flux from parts of Lane Head farm, and much else.

*[So the **Stanhopeburn blast furnace existed in Nov 1844**, but it might only have been partly built at that date, because that is what was reported by 1893 by H W Hollis].*

16 May 1845

{ [http://www.disused-stations.org.uk/t/tow\\_law/](http://www.disused-stations.org.uk/t/tow_law/) }

Railway from Crook to Tow Law to Waskerley opened to traffic on behalf of Derwent Iron Company.

20 May 1845

{William F Heyes, “The Formative Years of the Weardale Iron Company: Part 1. A Review of the Weardale Iron Mining Leases”, in Bonny Moor Hen, no.9, 1997, p.21-31}

On p.31, Heyes reports:

Conveyance of Tow Law Estates, Parish of Wolsingham, from James John Wilkinson, Thos Baring and others, to Weardale Iron Company, was dated 20 May 1845.

***[This sets the first date at which blast furnaces at Tow Law can be begun]***

7 Jun 1845

{Newcastle Journal, Sat 7 Jun 1845. (By email from Ian Forbes to Ernest Bate, 23 Jan 2021)}

"LOCAL & GENERAL INTELLIGENCE.

Iron Works at Stanhope.—

The iron furnace recently put in blast at Stanhope, in Weardale, by Messrs. Chas. Attwood and Co. is likely, it seems, to turn out a very profitable speculation. The ore or iron-stone is of the richest quality, yielding a very great percentage of the best iron. It a singular fact, that the iron ore of this extensive royalty had been hitherto considered a worthless stone, until Mr. Thomas Willis, of Cross Hill, Stanhope, with his usual skill in mineral matters, recognized and leased it from the Bishop Durham, and has since let a lease of it per ton to the above company. The employment that these works will give, will be of great benefit to the working classes of the district."

***[On 7 June 1845, the Stanhope furnace had recently been put in blast.]***

16 Jun 1845

{William F Heyes, "The Formative Years of the Weardale Iron Company: Part 1. A Review of the Weardale Iron Mining Leases", in Bonny Moor Hen, no.9, 1997, p.21-31}

On p.25, Heyes reports:

Between Nov 1844 and June 1845, John Rippon built a crushing mill for lead ore from W B Beaumont mines in the Stanhope area, and on 16 June 1845 John Rippon leased this crushing mill to Charles Attwood.

1 Nov 1845

{Newcastle Journal, Sat 1 Nov 1845. Also same report in Durham Chronicle, Fri 7 Nov 1845}

The newspapers report that 2 furnaces at Witton Park Iron Works were lit. And also that:

"Other furnaces are in course of erection at Tow Law by Charles Attwood."

***[Furnaces were being built at Tow Law Iron Works in Oct-Nov 1845.]***

1846

{William F Heyes, "The Formative Years of the Weardale Iron Company: Part 1. A Review of the Weardale Iron Mining Leases", in Bonny Moor Hen, no.9, 1997, p.21-31}

On p.23 Heyes says:

"In the event, four new blast furnaces were erected at Tow Law" and "the four furnaces at Tow Law (one hundred and fifty tons average a week each)".

*[This suggests 4 furnaces at Tow Law, but is incorrect, as shown by other sources. The 4 furnaces stated by Heyes might be from what was written in 1893 by H W Hollis, General Manager of the Weardale Iron and Coal Company, in Journal of the Iron and Steel Institute, vol.11, p.142-154. But Hollis is inaccurate, because he states that the Tow Law site was fully operational in 1845 (Heyes p.23), which is wrong; the Tow Law site was fully operational in Summer 1846, as proven by newspaper and accident reports etc.*

*The correct numbers for Tow Law are:*

*In 1845 Attwood designed an iron works with 2 blast engines and 6 furnaces to be built at Tow Law.*

*Sept 1846: 3 furnaces erected, but only one in blast.*

*1848: 3 furnaces, with 2 in blast.*

*1853-1854: 2 new larger furnaces built. At end of 1854, 3 old furnaces in blast and 2 new ones nearly ready to blow in.*

*1855-1870: 5 furnaces, with between 3 and 5 in blast.*

*1871-1888: 4 furnaces, with between 0 and 3 in blast.*

*1889-1895: 2 furnaces, but none in blast. ]*

7 Jan 1846

{Whittle "Railways of Consett", 1971, p.56, quoting W&DJR committee minutes}

On 7 Jan 1846, Charles Attwood attended a Wear & Derwent Junction Railway committee and "explained that **he expects to have six furnaces ready**, and which will be capable of **working 300 tons of ironstone per week each** in the **early part of April next**".

*[Attwood expected to have 6 furnaces working at Tow Law in "April next". "April next" might mean April*

1846 or April 1847, but Attwood was ambitious and optimistic, so he probably expected to have 6 ready in 1846.]

Jan 1846

{Newcastle Guardian and Tyne Mercury, Sat 20 June 1846. In [https://gracesguide.co.uk/Towlaw\\_Ironworks](https://gracesguide.co.uk/Towlaw_Ironworks) }  
14 horse-power steam engine, built by Messrs Murray and Co. of Chester-le-Street, erected in loam mill engine house, together with boiler, feed-pump, two safety valves and other pumps.  
**[Tow Law Iron Works was being built in Jan 1846.]**

Jan and Feb 1846

{William F Heyes, "The Formative Years of the Weardale Iron Company: Part 1. A Review of the Weardale Iron Mining Leases", in Bonny Moor Hen, no.9, 1997, p.21-31}

On p.31, Heyes reports:

Attwood leased coal and iron ore at Thornley and Cornsay, from William Russell of Brancepeth Castle, on 16 Jan 1846.

Attwood agreed to purchase coal at Thornley Pit House Estate, from Emerson Muschamp, on 20 Feb 1846.

**[So in Jan and Feb 1846, Attwood acquired coal to use at Tow Law.]**

Fri 13 Feb 1846

{Newcastle Courant, Fri 13 Feb 1846}

Mr Cuthbert Ritson, builder, Tow Law, advertised for joiners to work at Tow Law Iron Works.

Fri 20 Feb 1846

{Durham Chronicle, Fri 20 Feb 1846}

The report on the Opening of the Witton Park Iron Works describes what was said in a speech by Mr Henry Pease, which includes:

"He stated, as one effect of new works, that they have now trains running three times a-day up to Crook, and conveying upwards of 600 passengers per week, where it was one time thought an act of insanity to make a railway. And there was little doubt that **in the course of the approaching summer, when the Witton Park and Tow Law Ironworks were brought into full operation**, that the passenger and other traffic would be very considerably increased."

**[Tow Law Ironworks were expected to be in full operation in Summer 1846.]**

Thurs 11 June 1846

{Newcastle Guardian and Tyne Mercury, Sat 20 June 1846. In [https://gracesguide.co.uk/Towlaw\\_Ironworks](https://gracesguide.co.uk/Towlaw_Ironworks) }

Three men died in accident at Tow Law Iron Works. The boiler of the steam engine in the loam mill house exploded. The stones of the engine-house fell, leaving the loam mill house in ruins. The boiler had been in use about 5 months [= since Jan 1846]; it exploded due to lack of water in the boiler. A new plate had been put in the boiler about 2 months previously [= April 1846].

**[Tow Law Iron Works were in production in June 1846, and probably in production in April 1846.]**

Sept 1846

{Paper by GR Porter, "On the Progress, present Amount, and probable future Condition of the Iron Manufacture in Great Britain", given at 16<sup>th</sup> Meeting of the British Association for the Advancement of Science", held at Southampton in September 1846. Report on-line at

[https://www.google.co.uk/books/edition/Report\\_of\\_the\\_Meeting\\_of\\_the\\_British\\_Ass/CqhEAQAAMAAJ](https://www.google.co.uk/books/edition/Report_of_the_Meeting_of_the_British_Ass/CqhEAQAAMAAJ) }

On p.108 of this report, given in Sept 1846, GR Porter says:

"Referring to the counties of Durham and Northumberland, Mr. Mushet gives a list of thirty-five furnaces where twenty years ago only one blast furnace, at Chester-le-Street, was known to exist; and he mentions, but not as of his own knowledge, another source of supply as about being brought forward into notice from the spoil and waste of the lead-mines in Weardale, "which are now worked and have been so for ages." He says, "The rider of the lead-ore is a true carbonate of iron, some of it yielding from 25 to 40 per cent. **A small blast furnace has been erected at Stanhope, where a very important and interesting experiment has been made, and a successful result obtained, in which this rider ironstone has been smelted, and pig-iron of a strong and excellent quality produced.** This ore, even after being ground and washed, still contains some particles of galena, and which in smelting gives out at the furnace-top a heavy cloud of sulphurous smoke, of a forbidding aspect. The pig-iron, however, when remelted, yields no smoke from its surface, which would

be the case if a small quantity of metallic lead were thrown in, from which it may be inferred that the lead is in the process of smelting entirely dissipated and driven off. What effect may be produced upon the conversion of this iron into bar-iron remains to be determined. **The result of this experiment has been deemed so satisfactory as to induce the company to erect large smelting-works about three miles from Wolsingham. These works consist of two powerful blast-engines and six large blast-furnaces.** In this enterprise we shall by and by behold the spoil of ancient mines, which has reposed for ages, brought to light, no longer as a useless, but as a useful material for the production of the common and ordinary sorts of pig-iron. Great and beneficial results are calculated upon, and should they be realized, will no doubt contribute greatly to the produce of our iron manufacture."

Other authorities do not speak so hopefully of this discovery, and **certain it is, that of the six blast-furnaces of which Mr. Mushet speaks, only three have hitherto been erected, and only one of these is lighted."**

*[This proves that:*

***\* In Sept 1846, 3 of the planned 6 furnaces at Tow Law had been erected, and 1 was in blast.]***

Tues 3 Nov 1846

{Durham Chronicle, Fri 6 & Fri 27 Nov 1846}

Building land to be sold at Tow Law Iron Works, immediately adjoining the Derwent Junction Railway. Several plots for building, with garden ground attached.

(Repeated on 21 May 1847)

**Tues 13 Apr 1847**

{Letter in Barings Archive at [risksandrewards.org.uk/source\\_view.php?id=120&expand=1](http://risksandrewards.org.uk/source_view.php?id=120&expand=1) }

Letter from Joshua Bates, a partner at Barings, visiting Tow Law Iron Works on Tues 13 April 1847 says that they are making 60 tons of rail chairs per week and refers to 6 furnaces:

**"The furnaces are going well** and I found Mr Attwood quite ready to adopt my suggestions for reducing expenditure. I have great hopes that in the future we shall be able to meet our payments by **sale of iron and chairs**. As to the undertaking generally I do not alter my opinion at the least but the **outlay has been greater of course than was calculated but it has been in preparation for six furnaces.**

They are making **beautiful chairs and at the rate of 60 tons per week and will make 100 tons per week as soon as they have patterns**. They prove every cast so as to be quite sure that no fault can be found with them. I have examined everything here and go to Stanhope tomorrow and shall be at my post on Thursday."

*[This is consistent with 3 furnaces at Tow Law, with 2 in blast, and with Stanhope in blast, and with no plans to build the remaining 3 planned furnaces at Tow Law at present.]*

1848

{*"The Mining Almanack for 1850"*, compiled by Henry English, published 1850, which is on-line at the Internet Archive at <https://archive.org/details/miningalmanack00londuoft>

The 1848 Stanhope production given on p.355 of *"Mining Almanack for 1850"* is quoted on p.36 of William F Heyes, *"The Formative Years of the Weardale Iron Company: Part 3. Operations in Stanhopeburn 1845-50"*, in *Bonny Moor Hen*, no.13, 2008, p.32-39.

The 1848 Stanhope production is also quoted in photo caption of Issue 23, p.54 of *"Archive, The Quarterly Journal for British Industrial and Transport History"*, where it is taken from the book *"British Blast Furnace Statistics, 1790-1980"*, by Riden & Owen, 1995, pub. Merton Priory.}

On p.355 of *"The Mining Almanack for 1850"*, English says that in the year 1848, the Weardale Iron Company had:

**1 furnace in blast at Stanhope, making 80 tons per week, giving total 4,160 tons in 1848, and 3 furnaces at Tow Law Works, with 2 in blast and 1 out of blast, with each of the 2 in blast making 80 tons per week, giving total of 8,320 tons in 1848.**

(The Mining Almanack also says that in the year 1848, the Witton Park Company had a total of 4 blast furnaces, with 3 in blast and 1 out of blast, with each of the 3 in blast making 80 tons per week, giving total of 12,480 tons in 1848.)

*[This proves that:*

***\* In 1848 the blast furnace at Stanhope was in use, making 80 tons of iron per week. This is contrary to frequently published assumptions that the Stanhope furnace was not used after the Tow Law furnaces opened in summer 1846.***

*\* In 1848 there were only 3 blast furnaces at Tow Law, with 2 working, each making 80 tons of iron per week.*

*\* Joshua Bates letter about "the outlay being in preparation for six furnaces" means that Attwood had originally planned 6 furnaces, but initially only 3 were built.*

*\* In 1848 there were 4 blast furnaces at Witton Park Iron Works, but one was not in blast.]*

Fri 22 Sept 1848

{Durham Chronicle, Fri 22 Dec 1848}

Mr Cuthbert Ritson, builder and cabinet-maker, Tow Law, is leaving the neighbourhood and his premises and all his stock is to be auctioned on 26, 27 and 28 Dec 1848.

1848-1866

{Obituary of George Walter Dyson, 1817-1891, was published in "1891 Institution of Civil Engineers: Obituaries", and in "1891 Iron and Steel Institute: Obituaries". They are on-line at [https://gracesguide.co.uk/George\\_Dyson](https://gracesguide.co.uk/George_Dyson) }

The obituary of George Dyson provides the following information about the Weardale Iron Company for 1848 to 1866:

GEORGE DYSON was born in London on the 11th of November, 1817. After being trained as a Civil Engineer he was appointed, when quite a young man, manager of the Park Gate Ironworks, near Rotherham.

**About the year 1848** he undertook the management of the Weardale Iron Co's blast furnaces and mines at Tow Law under the late Charles Attwood, the founder of the Company. Owing to Mr. Attwood's delicate health **it was uncertain whether the Company would be able to overcome the many difficulties then standing in its way, but with the advent of Mr. Dyson things soon began to assume a better complexion.**

One of the first difficulties in smelting Weardale iron was **to avoid making 'glazed pig-iron,' known in the market at that date as silicon pig-iron.** This quality was then of very little value commercially, as it would not make malleable iron and was practically of no use for foundry purposes. Mr. Dyson, however, **offered some thousands of tons of silicon iron at a cheap rate to Ransome and May of Ipswich, who in 1850 had secured a large contract for chairs for the Great Northern Railway. This firm, finding that the strength of silicon pig-iron was greatly increased by re-melting, accepted the offer.**

Mr. Dyson then advised Mr. Attwood to enter into a **contract with Messrs. Ransome and May**, but that the **iron, instead of being conveyed to Ipswich, should be made into chairs at Tow Law, the latter firm to have the use of the foundry and to carry out the manufacture with their own staff and tools.** This suggestion was carried out, and resulted in a great saving in carriage to both parties.

*[The Joshua Bates letter of 13 April 1847 shows that the Weardale Iron Company was making rail chairs at Tow Law in 1847, before supplying the poor "silicon iron" to Ransome and May at Ipswich in 1850. The Dyson obituary suggests that circa 1851 Ransome and May started making rail chairs in the Weardale Iron Co. Tow Law foundry using Ransome and May's staff and tools.]*

The difficulties of blast furnace smelting having been overcome, **Mr. Dyson's next work was to show that Weardale iron could be made into merchant bars, to compete with other brands.** On his advice a **Malleable Ironworks at Dunfermline in Scotland was bought on very favourable terms.** The works were carried on under his supervision, and, having satisfied himself and Mr. Attwood that a high-class iron could be made from Weardale material, **he advised that they should be removed to Tudhoe, near Spennymoor, which was situated on a coal royalty belonging to the Company and had excellent railway accommodation. Here he built in 1852 from his own designs extensive rolling-mills and foundries, and took entire charge of the Company's Works and Collieries.**

Mr. Dyson's next battle was caused by his firm **taking up in 1855 the manufacture of Bessemer steel**, as to which process very little was known at that time. **A plant sufficient to make two tons at a time was put down**, and many a heartache did this matter cause him and others associated with him. These **experiments proving costly and unsuccessful, the Bessemer department was closed shortly afterwards.**

*[This suggests that the Bessemer Department at Tudhoe was closed down circa 1857. But in 1863 (see below) Gruner and Lan recorded a Bessemer apparatus being erected at Tudhoe in 1860, having been proven at Sheffield to be effective. And note that the Mineral Statistics records 4 Bessemer Converters at Tudhoe from 1868 till 1885. It appears that an initial experiment in 1855-1857 failed, but a later attempt in 1860 worked and led to Bessemer steel production from 1860 till 1885 at Tudhoe.]*

In December 1866, Mr. Dyson left the Weardale Iron Company, and commenced business on his own

account as an iron merchant at Middlesbrough. This he carried on until within a week of his death, which took place at Hurworth-on-Tees on the 10th of May, 1891.

August 1849

{William F Heyes, "The Formative Years of the Weardale Iron Company: Part 3. Operations in Stanhopeburn 1845-50", in Bonny Moor Hen, no.13, 2008, p.32-39}

Heyes reports the Weardale Iron Company "Stanhopeburn Iron Works Pay-sheet for August 1849" which indicates that the **Stanhope furnace was in continuous use in August 1849, with 47 employees involved in running the furnace.** Tasks (listed on p.38) included furnace keeping, furnace slagging, blast engine keeping, wheeling coals and coke etc. The company accounts for 1849 show iron ore being mined at West Pasture, and at Noahs Ark (on west side of Stanhopeburn), and in August 1849 105 tons of iron ore transported by horse and cart from Middlehope mine to Stanhope. Limestone was quarried at West Pasture quarry, transported to near the furnace and then broken into smaller pieces before being wheeled and charged into the furnace. Transport of iron ore and limestone to the furnace was mainly via the rolleyway. Coke to fuel the furnace was made by coke-burners working near the furnace.

*[This proves that the blast furnace at Stanhope was operated in 1849.]*

1849

{“The Mining Almanack for 1850”, compiled by Henry English, published 1850, which is on-line at the Internet Archive at <https://archive.org/details/miningalmanack00londuoft> }

On p.361 lists furnaces in Newcastle area in 1849 and states:

Witton Park Works, Bolckow & Vaughan, has 3 in, 1 out, 4 total.

Weardale and Towlaw Works, Weardale Iron Co., has 2 in, 1 out, 3 total.

*[This 1849 information by English must be only for Tow Law, because the company records (reported by Heyes, above) show that Stanhope was being worked in 1849]*

Mar 1851

{William F Heyes, "The Formative Years of the Weardale Iron Company: Part 3. Operations in Stanhopeburn 1845-50", in Bonny Moor Hen, no.13, 2008, p.32-39}

Heyes (p.39) reports that many people in the 1851 census taken on 30 March 1851 have occupations listed which indicate that they were running the Stanhope furnace. Occupations include furnace charger, furnace labourer, engine keeper, engine fireman, fireman (blast furnace).

*[This proves that the **blast furnace at Stanhope was operated in 1851.**]*

Thurs 1 Sept 1853

{Durham Chronicle, Fri 2 Sept 1853}

Contract to be let for the building of 40 workmen's cottages at Tow Law Iron Works, for the Weardale Iron Company.

Mid 1854 or early 1855

{William Fordyce, "County History of Durham, vol.1", first printed 1855, reprinted in London, Sept 1857. The estimated writing date for pages 646-647 is mid 1854 to early 1855, which is consistent with the railway into Middlehope being built at that date. Vol.1 of the 1857 London reprint is on-line at

<https://archive.org/details/historyantiquiti01ford> }

In the preface on p.vi, Fordyce says:

To Charles Attwood, Esq., the editor is indebted for information respecting the extensive iron works of Tow Law

On p.646 Fordyce says:

TOW LAW IRON WORKS. The works of "The Weardale Iron Company," constructed under the management of the resident partner, Charles Attwood, Esq., were **begun in 1845, by the erection of one blast furnace at Stanhope. In 1846, this was followed by the erection of six others, at Tow Law**, in a more suitable situation; namely, at the point where the coal-field of the county of Durham terminates, in contact with the mountain limestone formation, in which latter are contained the deposits of iron ore required for their supply.

On p.647 Fordyce says:

They employ at present, at Tow Law and in Weardale, about 1,700 men, of whom about one half are occupied in raising iron and lead ore. **They have four blast furnaces, of unusually large size, in blast, and two more nearly ready to blow in;** each of them capable of producing, according to the different quality

afforded by their ores, as wrought near Stanhope or further westward, **from 130 to 180 tons, and, in some cases, even more, per week.**

*[Fordyce wrote this circa Dec 1854, but it can be misleading. Based on other evidence it means:*

*\* Attwood planned to build 6 furnaces at Tow Law (but did not do so).*

*\* In Dec 1854, there were 3 old (1846) furnaces at Tow Law in blast and 2 new (1854) ones, "nearly ready to blow in". The 4<sup>th</sup> furnace in blast in 1854 was the Stanhope (1844) furnace.]*

1854 to 1859

{*"Mineral Statistics"*, see *"Summary of Weardale Blast Furnace Statistics from Mineral Statistics"*}

Stanhope had 1 furnace. It was in blast in 1854 and 1859, and out of blast in 1855 to 1858.

Tow Law had 5 furnaces at end of 1854 and in later years. 3 were in blast in 1854, 4 in blast in 1855 to 1857, 5 in blast in 1858 to 1859.

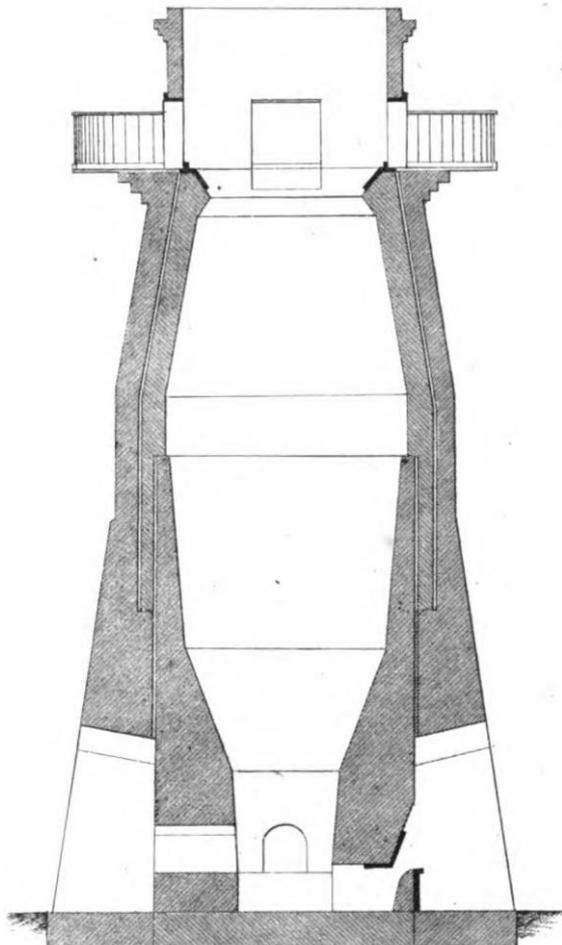
Recorded (incomplete) tonnages of iron ore delivered to Tow Law were 259t in 1856, 539t in 1857, 149t in 1858.

1854

{Drawing of Blast Furnace at TowLaw Ironworks is Plate 112 of 2nd edition, 1862 and 1867, of *"The Iron Manufacture of Great Britain, Theoretically and Practically Considered"* by William Truran, 1st published 1855, revised for 2nd edition by J Arthur Phillips and William H Dorman. 2nd edition, with plate 112, is on-line at [www.google.co.uk/books/edition/The\\_Iron\\_Manufacture\\_of\\_Great\\_Britain/UVUhAQAAAMAAJ](http://www.google.co.uk/books/edition/The_Iron_Manufacture_of_Great_Britain/UVUhAQAAAMAAJ) (This drawing can be assumed to show the 1854 furnace at TowLaw, not the 1846 furnace, because of the date of publication)}

The following drawing shows the 2 furnaces built at Tow Law in 1854. Measurements from the drawing give 47 feet from ground to charging platform level and 57 feet from ground to top of furnace.

*[JS Jeans wrote in 1875 that the Tow Law furnaces were 48 feet high, but does not say whether he is referring to the old 1846 furnaces or the new 1854 ones.]*



July 1855

{The 1<sup>st</sup> edition of "The Iron Manufacture of Great Britain, Theoretically and Practically Considered" by William Truran, was published 1855, with preface dated 5 July 1855. It is on-line at [https://www.google.co.uk/books/edition/The\\_Iron\\_Manufacture\\_of\\_Great\\_Britain/zidRAAAAYAAJ](https://www.google.co.uk/books/edition/The_Iron_Manufacture_of_Great_Britain/zidRAAAAYAAJ)

This book is a complete guide to iron manufacture, including blast furnace design and operation. Section XX of the book includes pages 172-176 which are a set of statements on "State of the manufacture, Pig Iron Works, in Great Britain in 1855".}

Statement H on p.174 of Truran, 1855 is for "List of works, and number and capacity of blast furnaces in the Northumberland District [at time of publication, in 1855]". It states:

Towlaw has 6 furnaces, with weekly make per furnace of 140 tons, giving annual production of furnaces = 43,680 tons.

Stanhope has 1 furnace, with weekly make per furnace of 120 tons, giving annual production of furnaces = 6,240 tons.

*[The annual production tonnages quoted are based on all furnaces in blast for 52 weeks in year, but it is known that not all furnaces were in blast in 1855 nor 1854. Truran reports the maximum possible production capacity, not the tonnage actually made.*

*The number of furnaces at Towlaw (6) and Stanhope (1) appear to be taken from the 1854 Mineral Statistics, published in 1855, which are incorrect and were put right in the 1855 Mineral Statistics, published in 1856.*

***The correct figures for end of 1854 and for 1855 are 1 furnace at Stanhope and 5 at Tow Law.]***

Jan 1856

{Geological Survey Memoir, "The Iron Ores of Great Britain, pt.1, North & North-Midland Counties of England", pub. 1856, written in Jan 1856 by WW Smyth. This is on-line at <https://archive.org/details/ironoresofgreatb00geolrich> }

On p.12, Smyth reports:

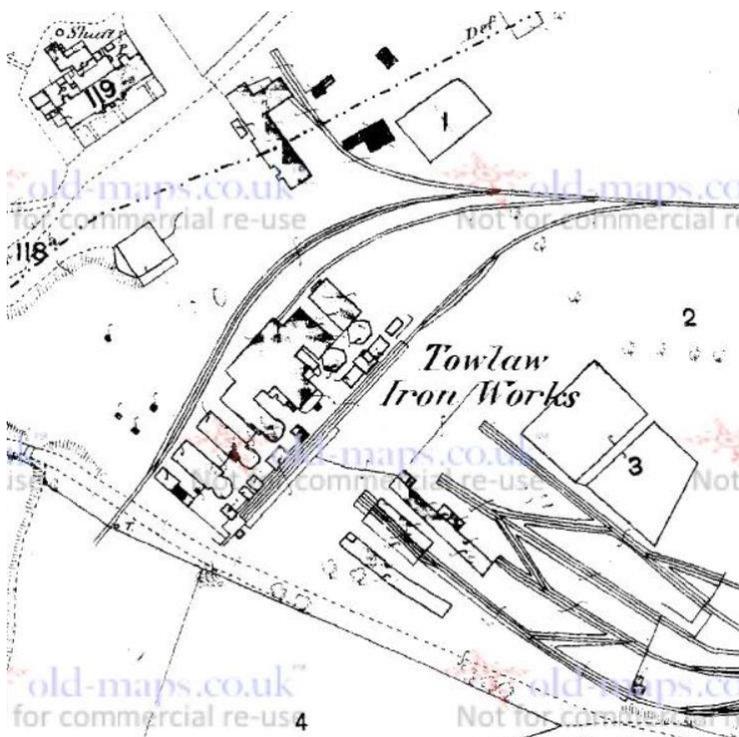
Weardale Iron Company has 1 furnace at Stanhope and 6 furnaces at Tow Law, with 4 furnaces in blast.

*[This information is taken from the 1854 Mineral Statistics, published in 1855, but is incorrect. The Mineral Statistics are confusingly presented for Stanhope and Tow Law and are misleading. **The correct figures are 1 furnace at Stanhope and 5 at Tow Law, with 1854 having Stanhope in blast and 3 at Tow Law in blast, and 1855 having Stanhope out of blast and 4 in blast at Tow Law.]***

1858

{OS 25 inch map Durham XXV.11, surveyed 1858, published ~1859}

Shows **5 furnaces and blowing house**. Note 3 smaller furnaces built 1846 and 2 larger furnaces built 1854:



1860 to 1869

{“Mineral Statistics”, see “Summary of Weardale Blast Furnace Statistics from Mineral Statistics”}

Stanhope had 1 furnace. **It was in blast in 1860, 1862, 1864 and early 1865.** It was out of blast in 1861, 1863 and late 1865 onwards. **Stanhope furnace was last listed in 1867, but not used in 1867.**

Recorded tonnages of iron ore delivered to Stanhope were 5,462t in 1864, 426t in 1865.

Tow Law had 5 furnaces. Numbers in blast (given by “Mineral Statistics”) were:

1860 = 5, 1861-1862 = 3, 1863 = 4, 1864 = 5, 1865 = 5 then 4, 1866 = 3, 1867 = 3 then 2 from 30 Sept, 1868-1869 = 3.

Recorded tonnages of iron ore delivered to Tow Law were:

1860 = 217t (incomplete), 1861 = 309t (incomplete), 1863 = 83,492t, 1864 = 131,269t, 1865 = 114,308t, 1867 = 79,218t, 1868 = 74,149t, 1869 = 88,646t.

*[These tonnages of iron ore to Stanhope confirm the operation of Stanhope in 1864, and part of 1865, and agree with the “Mining and smelting Magazine” reports below, and the 19 Mar 1864 newspaper report below.]*

1860

{William Fordyce, “A history of Coal, Coke, Coal fields, ... Iron, its Ores, and process of manufacture ...”, first published 1860. This book is on-line at

[https://www.google.co.uk/books/edition/A\\_History\\_of\\_Coal\\_Coke\\_Coal\\_Fields\\_Progr/T\\_1CAAAAcAAJ](https://www.google.co.uk/books/edition/A_History_of_Coal_Coke_Coal_Fields_Progr/T_1CAAAAcAAJ) }

This 1860 book by Fordyce includes on p.148 details on Blast furnaces and Iron works, and on Tow Law Iron Works. But the section on Tow Law is a direct reprint of what Fordyce wrote in 1854 in his “County History of Durham”, saying “The works of ‘The Weardale Iron Company’, constructed under the management of the resident partner, Charles Attwood, Esq., were begun in 1845, by the erection of one blast furnace at Stanhope. In 1846, this was followed by the erection of six others, at Tow Law, in a more suitable situation.”

*[In 1860, Fordyce repeats his wrong statement that there were 6 blast furnaces built at Tow Law.]*

7 Apr 1861

{1861 census (Information from Alan Blackburn by email to Ernest Bate on 3 Feb 2021)}

There are no blast furnace workers in the Stanhope area in the census. In the Stanhope area there are 4 relevant men:

- 1 Iron works clerk,
- 1 Book Keeper iron works,
- 1 Keeper of the weighing machine at the iron works,
- 1 Night Watchman for the iron works.

***[This confirms Stanhope furnace not in use in 1861, which agrees with Mineral Statistics that list Stanhope out of blast in 1861.]***

1862

{William F Heyes, “The Formative Years of the Weardale Iron Company: Part 1. A Review of the Weardale Iron Mining Leases”, in Bonny Moor Hen, no.9, 1997, p.21-31}

On p.29, Heyes reports:

Attwood perfected an alternative process to that of Bessemer for conversion of pig iron to steel and was granted a patent in 1862. This was:

British Patent No.1473 (1862), Improvements in the Production or Manufacture of Steel and Iron of a Steely Nature.

*[Attwood planned to implement this at Tow Law, but ended up establishing an independent company and works at Wolsingham; see 3 Nov 1863 and 3 Jun 1864 below. According to*

[https://www.gracesguide.co.uk/Charles\\_Attwood](https://www.gracesguide.co.uk/Charles_Attwood) *he had begun experiments at Tow Law in 1858.]*

1863

{“Mining and Smelting Magazine”, see “Summary of Weardale Blast Furnace Statistics from Mineral Statistics”}

Stanhope had 1 furnace, out of blast, between at least 1 Dec 1862 and 1 Mar 1864.

Tow Law had 5 furnaces, with 4 in blast, 1 out of blast, between at least 1 Dec 1862 and 1 Jan 1864.

3 Jun 1863

{“Mining and Smelting Magazine”, see “Summary of 1860s Weardale Information in ‘The Mining and

Smelting Magazine". P.321-335 of the magazine contains "The Iron Manufacture of the North of England. Districts of Cleveland, Durham, and Cumberland" by Gruner and Lan. This is abstracted from the "Annales des Mines, 6th series, vol. I, p.89. Gruner and Lan are two eminent French engineers, who were commissioned by the French Minister of Public works to report on all aspects of the iron industry in Great Britain. The report began to be published in France in 1861. This is the section of the report relevant to Durham.}

The Gruner and Lan paper on p.333-334 (of vol.3, 3 Jun 1863) details the Weardale Iron Company (visited in 1860), as follows:

**"The Weardale Iron Company possesses four works, all very modern ones: five blast-furnaces at Towlaw near Weardale; one at Stanhope; and two at Ferry Hill, built in 1860. Lastly, a large forge of sixty-four puddling furnaces, built about 1853 at Tudhoe near Ferry Hill. The make at these works is quite special.** The Weardale company treat in their furnaces at Towlaw the spathic ores and brown hematites of the Weardale, Allenhead, and Alston Moor table-lands, &c. They have the monopoly of all the ores furnished by the lands of the Bishop of Durham. These ores are very manganiferous, without phosphorus, and almost without sulphur, and contain less than 1 per cent. of alumina. They also smelt the red ores and some Cleveland ore, but only as an accessory. **It will be seen from this that the Towlaw pig is specially adapted for manufacture into wrought iron.** It is white, lamellar, and easily refined. Its cost-price doubtless exceeds by about 20s. that of the ordinary Cleveland pig, but it can be refined for fine iron and thin plates, which are superior to the best irons of Staffordshire; and even in applying the Lowmoor method products are obtained in no respect inferior to those of that establishment. **The Towlaw pig-metal is also puddled at Tudhoe for steel, and, at the time of our visit [1860], a Bessemer apparatus was being erected,** it having been proved at Sheffield itself, that it was capable of yielding by that method good cast-steel. **The Weardale company sell but little iron in pig. Almost all that they produce is converted into wrought iron at their fine forge at Tudhoe,** one of the best appointed that we saw in England. **About 30,000 tons of wrought iron per year can be produced there, and of late years, besides fine irons, superior rails for Russia have been manufactured at 8l. 10s. per ton."**

23 July 1863

{P.407 of CE Mountford & D Holroyde "The Industrial Railways & Locomotives of County Durham, with a history of their owners & sites, part 1", pub. 2006, by Industrial Railway Society}

"The Weardale Iron Company" became a limited company "The Weardale Iron & Coal Company Limited" on 23 July 1863.

*[This reduced Attwood's influence and probably led to the new steel works being an independent company at Wolsingham, instead of part of the Weardale Iron Company at Tow Law.]*

3 Nov 1863

{ "Mining and Smelting Magazine", see "Summary of Weardale Blast Furnace Statistics from Mineral Statistics". P.269-284 of the magazine contains

"Report on the Metallurgy of the District", a paper given by Isaac Lowthian Bell, T Sopwith, Dr Thomas Richardson and Thomas Spencer, at the Meeting of the British Association in 1863. This paper includes sections on "The Manufacture of Iron in Connection with the Northumberland and Durham Coal-field", "Lead Metallurgy of the District", and "The Manufacture of Steel in Northumberland and Durham".

This paper was later published in 1864 (with slight rewording) in the book "The industrial resources of the district of the three northern rivers, the Tyne, Wear, and Tees, including the reports on the local manufactures, read before the British Association, in 1863". The book was edited by William George Armstrong, Isaac Lowthian Bell, John Taylor and Thomas Richardson. The 1st edition is dated 10 Feb 1864. The 2nd edition (with some added papers) is dated 11 Aug 1864. The book is on-line and can be downloaded from <https://archive.org/details/industrialresou00sciigoog> }

The paper "Report on the Metallurgy of the District" includes:

*[Mag.p.275, book.p.87]* "About this period [1844] Mr. Charles Attwood, in concert with Messrs. Baring and Co., **purchased a small furnace then recently erected at Stanhope by Mr. Rippon, and built five others at Tow Law** [not completely accurate: he actually planned to build 6 at Tow Law, but ended up building 3 at first and 2 more later] for smelting the "rider ore" (carbonate and oxide) of the lead veins. There is no doubt that, owing to the extreme irregularity of this kind of material, **immense labour and expense were at first incurred, and, as regards the quality of the produce, frequently with very unsatisfactory results. Better**

**acquaintance, however, with the veins and their contents has enabled that firm now to produce iron of a very high class** – so good indeed as to closely resemble in composition and quality the celebrated German “Spiegel Eisen”. For bar-iron purposes it bears a high name, and has, like its prototype in Germany, been found well adapted for the manufacture of the finer kinds of steel, an application, as is well known, confined exclusively to the purest descriptions of metal.”

[*Mag.p.284, book.p.124*] Concerning steel manufacture. **“The Bessemer process of making steel has also been introduced into the district, at Tudhoe, near Ferryhill,** but with what success the writer is not able to say. The operation, as is generally known, consists of blowing atmospheric air through a mass of melted cast-iron until the carbon and the whole of the impurities of the iron are burnt out of it.”

3 Nov 1863

{“Mining and Smelting Magazine”, see “Summary of Weardale Blast Furnace Statistics from Mineral Statistics”}

**“It is reported that new works for making steel are to be built at Tow Law, by Mr. Charles Attwood.”**

[*See 1862 patent above and 3 Jun 1864 below. In Oct 1863, Attwood planned to build the new works at Tow Law. But Baring Brothers did not support this, and Attwood’s influence was reduced by the new limited company (see 23 July 1863), so Attwood instead set up a new company and built the new steel works at Stanners Close in Wolsingham.*]

1864

{“Mining and Smelting Magazine”, see “Summary of Weardale Blast Furnace Statistics from Mineral Statistics”}

Stanhope had 1 furnace, in blast, between at least 15 Apr 1864 and 19 Nov 1864.

Tow Law had 5 furnaces, with 5 in blast, between at least 1 Mar 1864 and 19 Nov 1864.

**At end of 1864, Stanhope was out of blast and Tow Law had 3 in blast, 2 out of blast, possibly due to temporary stoppage caused by low prices.**

**[*Stanhope was in blast Mar 1864 – Nov 1864. Tow Law had all 5 in blast Feb 1864 – Nov 1864.*]**

19 Mar 1864

{Shields Daily Gazette, Sat 19 March 1864. (By email from Ian Forbes to Ernest Bate, 23 Jan 2021)}

“Iron Works at Stanhope.—

The blast furnace at Stanhope has been put into thorough repair, and resumed operations last week. The Company have commenced to work a seam of ironstone called the “red vein,” which is of superior quality. It is only about two hundred yards from the furnace.”

**[*Stanhope furnace repaired and resumed operations “last week”, which is probably week beginning Mon 14 March 1864.*]**

3 Jun 1864

{“Mining and Smelting Magazine”, see “Summary of Weardale Blast Furnace Statistics from Mineral Statistics”}

**“The steel works which Mr. Charles Attwood and partners have erected in the neighbourhood of Tow Law have been opened, and it is said that cast steel will be manufactured there by a process discovered by Mr. Attwood, at a much reduced cost.”**

[*See 1862 patent and 3 Nov 1863 above. These steel works were built in Wolsingham and owned by the “Stanners Close Steel Company”, not by Weardale Iron Company.*]

1865

{“Mining and Smelting Magazine”, see “Summary of Weardale Blast Furnace Statistics from Mineral Statistics”}

Stanhope had 1 furnace, in blast, on 3 Feb 1865.

Tow Law had 5 furnaces, with 5 in blast, on 3 Feb 1865.

1865

{William F Heyes, “The Formative Years of the Weardale Iron Company: Part 1. A Review of the Weardale Iron Mining Leases”, in Bonny Moor Hen, no.9, 1997, p.21-31}

On p.29, Heyes reports:

Attwood retired from the Weardale Iron Company in 1865, aged 74, to concentrate on setting up the Stanners Close Steel Company which he had begun to construct in 1864 at Wolsingham.

Jan 1866

{“The Engineer”, 19 Jan 1866, see [https://www.gracesguide.co.uk/1866\\_Cleveland\\_Blast\\_Furnaces](https://www.gracesguide.co.uk/1866_Cleveland_Blast_Furnaces) }  
Weardale Iron Co. is listed as having **1 furnace at Stanhope and 5 at Tow Law.**

1867

{Issue 23, p.54 of “Archive, The Quarterly Journal for British Industrial and Transport History”}  
The photo caption in “Archive” states that iron production at Stanhopeburn ceased in 1867.  
But this information is wrong. 1867 is the last year that Stanhope furnace is listed in the “Mineral Statistics”, but the “Mineral Statistics” for 1867, published 1868, show that the furnace at Stanhope was out of blast in 1867. The last time that Stanhope was used was in the first half of 1865.

1870 to 1879

{“Mineral Statistics”, see “Summary of Weardale Blast Furnace Statistics from Mineral Statistics”}  
Tow Law had 5 furnaces in 1870 and 4 furnaces in 1871 to 1879. One furnace was abandoned or demolished during 1871. Numbers in blast (given by “Mineral Statistics”) were:

1870 = 4 to July then 3 from Aug,

1871 = 3 to Oct then 2 from Nov,

1872 = 2,

1873 = 2 to Jun then probably 3 then 1 from Nov,

1874 = 1,

1875 = 1 to Aug then 2 from Sep,

1876-1878 = 2,

1879 = 1 to Jul then 0.

Recorded tonnages of iron ore delivered to Tow Law were:

1870 = 109,594t, 1871 = 101,218t, 1872 = 7,914t.

*[The 16 Oct 1878 newspaper report (below) shows that 2 in blast was reduced to 1 in blast in Oct 1878.]*

Tues 10 Sept 1872

{Newcastle Journal, Thurs 12 Sept 1872}

Accident. One of the furnaces at Tow Law had been out of blast for some time. Scaffolding nearly 40ft high was being put up to repair it. Nearly ten tons of the furnace lining fell on the scaffold at 5pm. One man died and 2 were badly injured.

1875

{J S Jeans, "Pioneers of the Cleveland iron trade", 1875, is based on an interview with Charles Attwood}

On p.24 Jeans says:

Attwood built **5 blast furnaces at Tow Law and purchased one at Stanhope that Mr Rippon had erected.**

On p.28 Jeans says:

At Tow Law works there are **five blast furnaces, erected in 1847 and each 48 feet in height.**

*[The drawing of 1854 Tow Law furnace shows 47 feet to charging level and 57 feet to top.]*

Sat 6 Jul 1878

{Sunderland Daily Echo and Shipping Gazette, Wed 10 July 1878}

Many workmen given 14 days notice.

Wed 16 Oct 1878

{Sunderland Daily Echo and Shipping Gazette, Wed 16 Oct 1878}

**One furnace has been blown out**, with 30 workmen dismissed. **Only one furnace remains in blast. The very extensive foundry has been entirely closed.**

*[Presumably there is a 3<sup>rd</sup> furnace, which is not in blast. Mineral Statistics record 2 in blast through 1878, so fail to report reduction to 1 in blast in Oct 1878.]*

July 1879

{Newcastle Journal, Tues 10 Jan 1882 (Report in 1882 says that furnaces had been blown out since 1879)}

**3 furnaces at Tow Law are all blown out.**

1880 to 1889

{“Mineral Statistics”, see “Summary of Weardale Blast Furnace Statistics from Mineral Statistics”}  
Tow Law had 4 furnaces in 1880 to 1888 and 2 furnaces in 1889. Two furnaces were abandoned or demolished in 1889. Numbers in blast (given by “Mineral Statistics”) were:  
1880-1881 = 0, 1882-1886 = 1, 1887 onwards = 0.

Mon 9 Jan 1882

{Newcastle Journal, Tues 10 Jan 1882}

**One of 3 furnaces at Tow Law was put in blast.** A 2<sup>nd</sup> furnace is ready and is expected to be lit soon.  
*[But “Mineral Statistics” state that the number in blast remained at 1 during 1882 to 1886.]*

1890 to 1897

{“Mineral Statistics”, see “Summary of Weardale Blast Furnace Statistics from Mineral Statistics”}  
Tow Law had 2 furnaces in 1890 to 1895 and no furnaces in 1896 onwards. The last two furnaces were abandoned or demolished in 1896. No furnaces were in blast in 1890 to 1897.

1893

{ [https://www.gracesguide.co.uk/Henry\\_William\\_Hollis](https://www.gracesguide.co.uk/Henry_William_Hollis)  
and [https://www.gracesguide.co.uk/1893\\_Iron\\_and\\_Steel\\_Institute:\\_Index](https://www.gracesguide.co.uk/1893_Iron_and_Steel_Institute:_Index) }

Henry William Hollis wrote paper:

"The Tudhoe Works of the Weardale Iron and Coal Company, Limited," in SECTION II.—MINUTES OF PROCEEDINGS of 1893 Iron and Steel Institute, p.142-154.

Some details from this are given in papers by Heyes (but I have not looked at it).

1895

{OS 25 inch map Durham XXV.11, revised 1895, published 1897}

Shows remains of **2 furnaces and blowing house**:

