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ADVENTURES IN COAL IN THE SOUTH DURHAM COALFIELD: THE STORY OF ELDON AND CHILTON COLLIERIES

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Although coal was worked in ancient times near the southern edge of the South Durham coalfield, the area remained largely bereft of adequate transport facilities until the 1820s, and it was only in the 1870s that numerous and large-scale collieries were developed in the district. The railways, in the form of branches of the Stockton and Darlington and the Clarence Railways, had indeed been promoted in the 1820s with a view to the development of the coal industry, but in South Durham economic factors combined with physical ones to allow only initially slow development. The difficulties of making deep sinkings through the upper waterlogged strata, plus the cost and the reluctance of entrepreneurs to invest on a substantial scale until the market was proved, combined to give the usual patchwork exploitation, even though the area possessed the benefits of a good quality coal for export purposes, and was close to a slowly exhausting older coalfield. It also had excellent shipping facilities on the Tees and increasing markets there for use in iron (and subsequently also steel) production. The collieries considered below were indeed ultimately bought by large and conglomerate concerns with major iron-based interests. The small investor had no early part in these collieries, and, even though joint stock status was ultimately taken, they were owned by numerically small groups of large-scale capitalists until the big conglomerate companies took over.

Amalgamations of colliery interests were typical of the area, and are indeed central to our story. Eldon was taken into Pease & Partners empire from the South Durham Coal Company (Ltd from 1888) in 1903, until its initial closure in 1930, and was then re-opened by Dorman Long, the steel giants, in 1934. Chilton Colliery was re-opened in 1902 by Henry Stobart & Co. Ltd, after closure since 1883. That firm ultimately became a subsidiary of Pease & Partners by 1920, and this firm took over the colliery in 1924. Chilton too, survived a closure during 1930 to 1931, and both Eldon and Chilton survived far into NCB days, to 1962 and 1966 respectively. Our concern here, however, is rather with the period before the great depression of the 1920s.

An unusual documentary survival, which makes a study of the concerns of the Eldon and Chilton collieries possible, is a series of reports made upon them, and backed up with the original correspondence relating to them. The reports, made at regular intervals and based upon visits and upon discussion with the senior colliery officials, were made by the Forsters of Newcastle, the well-respected mining engineers and consultants, in their capacity as mining agents for the Earls of Eldon, the owner of much of the surface as well as the coal worked at these collieries. With the associated working papers, the

reports were ultimately bound-up into volumes and they form, along with the more numerous volumes of bound up correspondence (in and out), plans and notes, the source for a story of change, not only in types of colliery lessees, but also in working methods and machines, in output, in employees and in wages. Together they allow the undertaking of the present study.

The Eldon estate was too far from the navigable river Tees or from the sea to allow any major exploitation of its coal reserves before the introduction of some form of cheap transport, a canal or railway, even though 'Old Crop Pits' near the village of Eldon were recognisable. By 1821, however, reference is made to producing collieries, which included Eldon, and the authorisation of the famous Stockton & Darlington Railway in 1821 and its opening in 1825 proffered the necessary improved transport facilities, although the possibility of an export trade in coal from the port of Stockton was doubted initially even by the railway company itself. The still-capable old first Earl of Eldon had opposed the railway's promotion and had been successful, like others, in having his opposition bought off for a handsome sum. Upon the railway's opening in 1825, coal was carted to the Stockton & Darlington from Eldon Colliery and in 1828 Eldon Colliery coal was brought to Stockton. In the following year coals from Eldon were described as fire coals, small coals and lime coal. The Stockton & Darlington Railway's Black Boy branch, which opened in 1827, served Eldon Colliery via a short private branch, and powers for constructing such, within five miles of the authorised line, had been contained in the original Act. By 1842 the Eldon Colliery output was some 59,339 tons per year. The Northern Pit at Eldon was down to the Main Coal in 1829, and a new winning made in 1831, although the 1828 trade directory lists George Appleyard as colliery owner and lime burner at Eldon.

In 1824, presumably in anticipation of railway connections, a borehole was sunk in the Eldon estate at Nunstainton for George Lambton, esquire and colliery owner, to 442 feet. In 1828 another borehole was sunk at Great Chilton, and it was probably from that period that the Eldon coal at Chilton was worked by Christopher Mason of Great Chilton Hall, while a nearby royalty at Little Chilton, in Ferryhill, was leased by the Dean & Chapter of Durham to one Thomas Arrowsmith. The Clarence Railway had obtained authorisation for the construction of branches, and its Chilton branch, authorised in 1833, was opened to the (Great) Chilton Colliery in 1835 and to its terminus in 1836. A three-quarter mile branch to (apparently) Mason's Colliery at Dene Bridge Wood, the site of the later Chilton Colliery, was also completed. The sinking of the first Chilton Colliery, however, proved to be one of those ambitious, costly and ultimately unsuccessful ventures which were not unknown in this extreme southern edge of the Durham coalfield. In about 1860 a writer blamed the failure of the Old Chilton Colliery on the coal being "*found so unsatisfactory and uncertain in thickness, quality and position*", a situation which he applied equally to the South Wingate and

Bishop Middleham collieries. Mason, the colliery's owner, is mentioned as such in the 1828 directory. He worked a 3 foot 8 inch coal at some 287 feet. He died in May 1835, but before his death the colliery was closed owing to (unspecified) "*unexpected difficulties having been encountered*", and in the October of that year the colliery's materials were sold.[1] Arrowsmith's colliery at Little Chilton, on the Clarence Railway's branch which was completed to Ferryhill in 1834, worked the Five Quarter seam (3 feet 5 inches of coal here, with 15 extra inches of good splint) at about 246 feet and close to the later Ferryhill Station village. Exploratory boring was taking place here in 1834 and the colliery, known locally as Bull Crag(g), closed in 1865.

It was just before the death of the first Earl of Eldon in 1838 that the modern exploitation of his Eldon and Chilton Estates' coal reserves began. He had been born plain John Scott in 1751, knighted in 1788, created Lord Eldon in 1799 and Earl of Eldon and Viscount Encombe in 1821, the reason for this sudden rise in the social world of a Newcastle hostman's son being his extremely successful practice of the law which led, among a number of other factors, to his appointment as Lord High Chancellor of England and his holding that office during the periods 1801-1806 and 1807-1827. With part of the fortune which he acquired, in July 1792 Sir John Scott (as he then was) bought the manor of Eldon and upwards of 1300 acres for £22,000, and for several years he ploughed back the rents in improvements.

When the first Earl died, his fortune and estates passed to his grandson, who wrote, "*That part of the country, which originally presented a barren and bleak appearance, is now greatly beautified by his judicious plantations. When asked by me what had induced him to select this property for an investment, Lord Eldon answered, that he thought that as he did not require a residence, and had therefore no object in the selection of any particular locality with that view, he might as well let the Chancellorship of Durham (an office which he then held) throw its weight in the scale, - which decided him to make the purchase of Eldon, situated in the southern part of that county.*"

An additional estate, Nunstainton, was also purchased, and by the time of the New Domesday survey of 1873, the then Earl of Eldon owned 11,841 acres 2 roods 8 perches in Co. Durham.

Although the virtual monopoly of the supply of the London and south of England coal markets by the Durham and Northumberland coalfield had been broken by the mid 1850s by the opening of new railways to London, substantial markets for domestic coal remained, and there were increasing demands for iron- (and later also steel-) making coke locally. Indeed, as we have seen, both Eldon and Chilton were themselves ultimately to become steel-company owned, primarily for this usage of their coals. Changing markets, partial exhaustion of the coal reserves elsewhere in the coalfield, increasing demands

and the desire of the capitalist to invest, were coupled with increased technological ability. What had been engineering difficulties in the 1830s were not insurmountable by the much improved technology of the 1860s, and in May 1862 the sinking of a very large shaft for the period, being 15 feet in diameter, was begun on the Eldon coal royalty as South Durham Colliery. Several seams of workable thickness had been proved, down to the 6 foot 2 inch Brockwell and the total shaft depth was 976 feet. Two shafts were in fact sunk, the second being nine feet in diameter, and they were connected by drifts at the levels of the Hutton (3 feet 4 inches thick) and Harvey (3 feet 8 inches thick) seams. Some parts of the shafts were unlined, some walled on cribbing and some walled on foundations set in the stone of the wall side, while from about 8 fathoms to 57 fathoms from the surface, cast iron tubbing had to be used, erected in three separate sections vertically, each laid on wedging ribs.

The sinking proving satisfactory and in November 1865 a lease was granted by the Eldon estate trustees - the heir being under age - to the following adventurers who had financed the sinkings:-

Samuel Smithson	Heighington	Co. Durham
R.S.D.R. Roper Esq.	Richmond	Yorkshire
Ralph W. Jackson Esq.	Greatham Hall	Durham
William C.W. Jackson Esq.	Greatham Hall	Durham
Henry Cradock	Gilling Lodge	Yorkshire

The leased area, in the township of Eldon, covered about 1340 acres, and the getting rights were for 36 years from May 1865, at a minimum rent of £2500. The tonnage rent was 3¾d on coal from the Five Quarter seam, 6¼d from the Main Coal and from others, with 3d for "*the splint coal*", and 6d for fireclay, all to be paid for "*as they first appear at the surface*", allowing 1/25th part of stone, slate, brasses and other impurities. One third of a penny a ton (of 20 cwts) was payable for shaft rent, and another 1/3rd of a penny for underground wayleave, both of course on non-Eldon coals.

The whole concern apparently experienced geological and financial difficulties in those early days, and by 1871 two of the partners had left. In the following year an entirely new partnership was formed, consisting of:-

John Straker	Tynemouth (and Brancepeth Coll'y, Northumberland)
John Henderson MP	City of Durham
John Lancaster MP	Ashfield, near Wigan

who were to buy the concern – the price is not stated – through payments over the following five years. The sale was made without the lessor's knowledge, but he agreed when the new lessees agreed to pay an increased minimum rent

of £4000 for the remaining 36 years of the lease. Eldon was also able to demand this substantially higher minimum rent because "*for several years last past the working of the said coal mine ... hath been so vigorously prosecuted*", which would led to earlier exhaustion.

The earlier lessees had been prohibited from taking the Windlestone royalty of Sir William Eden, Bt, except for 100 acres of Main Coal, and no part of Eldon Estates coal except for Middridge.

Meanwhile, trials which proved the practicability of working the Eldon estate coal were being made at Chilton, on the site of the Dene Bridge Colliery of the 1830s. A boring was put down to the Five Quarter seam between April 1864 and February 1865, and a draft lease of 1874 survives, recording (or proposing only?) the lease of the colliery rights from November 1871 for 56 years, at a minimum rent of £4000 from the fourth year, to a partnership consisting of:-

John Straker
John Henderson
John C. Straker
Jos H. Straker

Here at Chilton, the leased area extended over some 1200 acres and the tonnage rents were a substantial 10d for the Harvey and Brockwell seams and 8d for the others, with 6d for the fireclay. A 33 yard barrier was to be left against adjoining royalties.

It will be noted that the two senior partners were the major part of the lessees of the Eldon (or South Durham) Colliery in 1872. John Henderson of the Leazes, Durham, was a carpet manufacturer, and, apart from his interest in these two Co. Durham collieries, he was also a partner in the large Sharlston Colliery in Yorkshire, taking up an interest of £13,350 (almost 20%) between 1866 and 1869. Henderson would seem to have taken only an absentee proprietor's interest in the whole of "his" collieries, as only a few letters on policy matters survive in the colliery papers.

Something is known of the promoters of the 1860s and 1870s. Roper lived at The Grove in Richmond, in Yorkshire. His son and successor, George, was born in 1841, married in 1869 and was a magistrate. R.W. Jackson was born in 1816 at Normanby Hall and was educated at Rugby, becoming a major promoter of railways and collieries (he had owned the Little Chilton Colliery in 1859) and the acknowledged father of modern Hartlepool as a port and a town. He was MP for Hartlepool in the Conservative interest from 1868 until he was defeated in 1874. His son, C.W. Jackson, married the third daughter of Joshua Ingham of Blake Hall near Mirfield in the West Riding, another major colliery owner, in 1864. Henderson was born at Durham in 1807 and

was a highly successful carpet manufacturer there. A Liberal MP, he died in April 1884. Lancaster's father was an FGS. Lancaster himself was born in 1842 and was Liberal MP for Wigan from 1868 until he was defeated in 1874, although he again contested Wigan, unsuccessfully, in 1880 and 1881.

John Straker, born in 1815, was the youngest son of Joseph Straker of Benwell House, Northumberland. His interest was in Brancepeth Colliery and he was a JP for both Northumberland and Durham. His son and successor, J.C. Straker, was born in 1847. Sometime a Captain in the Northumberland Hussars, he was for a long time a director of colliery companies and by the mid 1920s he was a co-director of two of the five (three in the North and two in Derbyshire) colliery companies of which T.E. Forster was also a director.

By April 1873, the Harry Pit at Eldon Colliery was down to the Harvey seam at 104 fathoms, the section being as follows:-

SEAM	**CONSISTING OF**			**APPROX. DEPTH**
Five Quarter	brassy coal		4"	
	good coal	3'	9"	
	good splint coal	1'	11"	
Total 6' 0"				19 fathoms
Main Coal	good coal	4'	8"	
	coarse coal		5"	
	good splint coal	1'	4"	
Total 6' 5"				35 fathoms
Low Main	good coal	2'	8"	57 fathoms
Hutton	good coal	3'	4"	77 fathoms
Harvey	Jet		2½"	
	good coal		4½"	
	stone band		2½"	
	good coal	2'	10½"	
Total 3' 8"				104 fathoms

Chilton Colliery, apparently operated under the same title as the (unlimited) firm of the South Durham Coal Co., was obviously opened as cheaply as possible. Cheapness in this case was inconsistent with good workmanship, as referred to below. Chilton was also being sunk in a period of marked depression in the coal trade, after the boom of the early 1870s, although for a time the new colliery induced increased population in the township.

Terms for a new lease were negotiated in 1877, but the continued depression in the industry made the lessees' returns insufficient to warrant its continuance, and water difficulties were horrific. For example, in February 1877 the manager, Fenwick Darling, who remained into the 20th century, wrote that the South Durham Colliery at Eldon *"has had a very narrow Escape. We are just able now, so long as all keeps right, to keep the water down and keep the pit working."* John Henderson MP, one of the partners, called in G.B. Forster to report on what needed to be done, and what it would cost.

In March 1877, the latter was busy preparing two commissioned reports on Eldon Colliery, which together give a rare glimpse of the circumstances of a southern Durham colliery of that period. The first of these was concerned with the increasing quantities of water pouring into the workings in the Brockwell seam, as it was worked upwards towards the outcrop. In the old Eldon Colliery, for example, feeders averaging 500 gallons per minute were dealt with satisfactorily using a 450 gallon water tub, lifted by the winding engine on the John Henry Shaft. This engine had two 26 inch cylinders. At the new colliery, feeders of 300 gpm were also dealt with using 480 gallon water tubs in 1871. As the Brockwell seam workings neared the outcrop, however, the inflow increased to 1200 gpm and made the installation of new pumping equipment necessary. Two large Hathorn, Davey & Campbell engines, each with 22 inch high pressure and 54 inch low pressure cylinders, were housed in the workings. The small cylinders worked at 80 lbs per square inch of steam, and each engine could pump 500 gallons per minute to a height of 600 feet. One engine was served by four steel boilers, also underground, but the other was fed steam at only 45 lbs pressure from surface boilers, which themselves were not satisfactory. There was also insufficient standage for the water waiting to be pumped. Forster felt that, with larger cylinders, these engines could cope with the current situation, but had no power to spare for emergencies or greater flows of water. He suggested the problem be relieved by a drift from the higher part of the Brockwell workings to the shaft of the upper-lying Harvey seam, from which the water could be pumped, saving in pumping power and providing a useful alternative access for coal and men. The estimated cost of the scheme was £8450.

Forster reported again in March 1877, this time on the working methods at Eldon colliery. He found that the Brockwell seam provided nearly all of the colliery's output, with 170 men getting some 850 tons a day from a seam between 5 feet 2½ inches and 5 feet 9½ inches thick, at a depth of 924 feet and with a good roof of blue shale and sandstone. The coal made a fair coke and its large coal was used for locomotives and general purposes. The Brockwell was worked on the bord and pillar system, with four horses and 87 ponies, and the hewers earned 5s 3d and the putters 4s 5d a day. The hewers used large quantities of powder as the coal was difficult to blast – "*shot fast*" – and he suggested that the coal be nicked and that the Welsh system of payment on

round coal only be adopted, as recently introduced into the Steam Coal district of Northumberland. Self-acting inclines were in use in the workings. The Harvey seam at about 300 feet above the Brockwell was newly worked and the pit to it recently sunk. It was a good coal, 3 feet 5½ inches to 3 feet 7 inches thick, together with a 2 to 2¾ inch cannel seam above and an intervening band of 2½ inch, and a good coal of 3¾ inches to 5 inches. The cannel and the thin coal beneath made a good gas coal. The workings, to the rise of the shaft, were being laid out for longwall and on the end of the coal. The gates were to be 20 yards apart, and he suggested 30 to 40 instead. Labour in the Harvey seam cost some 7d to 12d per ton more than in the Brockwell, but this was owing to development costs. In the Harvey workings, 76 men got some 170 tons a day with only four ponies. Hewers here got 5s 3d and putters 4s 9½d, but it was nearly all narrow work, i.e. making the preliminary headings. In the Harvey pit was an underground vertical engine with two 36 inch cylinders, of 6 foot stroke, 19 foot drum and using a round rope, fed with steam brought from surface boilers down the Harry Shaft.

The Hutton seam was some 153 feet above the Harvey. It was an excellent coal and in a seam nearly as thick as the Harvey, but without the muck band. It was not yet worked, but Forster suggested that ultimately a drift, which had been started, might be completed so as to allow the coal to be carried by self-acting incline to the Harvey pit hanging-on point. If the pumping arrangements were improved as he suggested, more room would be available for coal-drawing in the Harry pit shaft, as the water tubs which worked there would be unnecessary, and the Hutton coal could be drawn instead. Forster's Report also referred to the Five Quarter and Main seams, which were "*very fine beds of coal*", but nearly worked out. Each produced some 100 tons a day. The total daily output was some 1150 tons and, in the Brockwell seam at least, the men averaged 5½ tons per shift. The Harry and Harvey shafts were each 15 feet in diameter. One 15 foot shaft had started to be sunk in May 1862 and was now down to the Harvey seam, with a deep sump below. Ventilation was by two furnaces, eight feet wide by six feet long and 48 feet from the shaft, burning 10 tons of coal each per day. The Old Pit pumping engine had a 72 inch cylinder and worked nine strokes per minute in winter and five and a half in the spring.

Generally, Forster suggested that, even in the current period of "*depressed condition*" in the coal and other trades, the thinner seams should be worked along with the Brockwell, but that the working of the Hutton should be left until demand improved. Despite these difficulties, the Eldon Colliery continued at work with its three shafts of 15 foot at the Harry and Harvey pits, and the upcast of 12 feet. Not all the collieries in this part of the coalfield, where the coal lay so deep and was surmounted with such vast quantities of water and sand, making both sinking and later pumping inordinately expensive, managed to continue producing during the great depression which began in

1874, however. The situation at Eldon's sister colliery, Chilton, which shut down for a couple of decades, is detailed below. At neighbouring Mainsforth Colliery, also near Ferryhill Station, the coal was reached in June 1877, but the colliery was closed and did not reopen until 1910. Somewhat earlier, at adjoining Little Chilton, which was on the Eldon estate, the Bull Crag Shaft was sold to the West Hartlepool Harbour & Railway Co., which owned a number of pits, and was closed down by them in 1865.

The water difficulties at Eldon Colliery were overcome, but only at a cost of £24,277 and in 1894 the feeders being dealt with produced some 2100 gpm. By 1894, when the vend was 361,541 tons and some 1400 tons were being produced each day, the Brockwell seam was nearly exhausted and a coal merchant complained that coal shipped from Eldon on the "*Magnet*" was the worst he had seen in 35 years in the business. In May 1895 it was agreed that rents be reduced. In 1890 the area of the royalty was calculated at 1340 acres, less 105 acres of boundary barriers.

In 1889 it had been suggested that the coal trade was showing signs of recovery overall, and at Chilton the output-based rents increased from £58120 4s 11d in 1888, but in the early 1890s production dipped as follows:-

Years 1889 and 1890		Year from May 1894-1895
tons	Seam	tons to the nearest 100
495,490	Eldon, Harvey	129,100
633,374	Brockwell	
679,872	Brockwell in Windlestone royalty	104,700
	Busty	8,200

In 1890 the Busty, along with the Low Main (2ft 8in) and the Hutton seams (3ft 4in), were unworked, as being of inferior quality.

Not much is known about the company's sales policy, but in 1890 the South Durham Coal Co. from its fitting and general offices at West Hartlepool was shipping Wallsend Nuts, West Hartlepool Steam, Trebles and Double Nuts, and Coke, through C.S. Davidson, at Hartlepool, Stockton, Middlesbrough, Sunderland and Tyne Dock. In 1894, however, Forster claimed that the coke was second class.

The detailed reports on the Eldon Colliery begin as a series in 1890, just before the breakup of the old South Durham Coal Co, which of course owned both the Eldon and Chilton collieries, and the takeover of Eldon by Pease & Partners in 1903. The output figures were, to the nearest 500 tons:

Year to	Tons	Year	Tons
May 1902	339,500	1906	351,000
1903	340,000	1907	319,500
1904	323,500	1908	323,500
1905	347,500		

and the profits and losses were:-

Year to	£		Year to	£
May 1902	4898 +	10 months to	April 1907	2758 +
1903	670 -		April 1908	14143 +
1904	13451 -		Oct'r 1908	2682 -
1905	16408 -			
1906	2944 -			

At the South Durham Colliery at Eldon in June 1900, the seams worked at the Eldon shafts were the Brockwell, Harvey, Busty and Hutton, while the Brockwell and Harvey were worked at the associated colliery at Windlestone. There were 282 hewers (of whom 118 worked in the Brockwell workings) at Eldon and 54 at Windlestone, giving a total of 336, and daily output averaged some 1500 tons. In the Busty at Eldon, the 3 feet 3 inches seam was worked to the rise and by the longwall method, each man getting an average of some four tons in a shift. The larger round coal was sold for ship bunkers and for gasmaking, while the small coal was used for making coke. In the Hutton seams at Eldon, preparations were being made for a coal cutter. That seam was 3 feet to 3 feet 4 inches thick. The top portion was used for house coal and the bottom for steam coal.

By May 1901, the Busty seam at Eldon had overtaken the Brockwell in the number of hewers employed, now 375 in all. At the John Henry pit (with 14 men in the Hutton and six in the Three-Quarter seam, producing about 70 tons daily), a new screening plant had been put down and a new electric plant was about to make the old Cornish engine and its set of pumps redundant. A plan of 1902 shows the reservoir adjoining South Durham Colliery, the colliery brickworks on the west and the extensive banks of coke ovens to the north. By May 1903, electric bar coal cutters were in use in the Harvey seam, too, apparently but recently introduced.

Forster's reports of 1902 and 1903 refer to driving through old workings to make an engine plane and to difficulties caused by faulting and dirt bands parting seams. In the Busty seam, worked to the rise by both longwall and bord and pillar, the total "*get*" was some 1500 to 1530 tons a day. In May 1904, the long-term manager reported that some 1300 tons a day were being produced in each "*pay*" of 10 days by 478 men, "*as trade is bad*".

The electric plant now consisted of a powering Robey engine, with cylinders 18 inches and 30 inches in diameter, driving a "*large 4 pole Scott & Mountain Dynamo giving 30 amp: at 500 volts*", and three smaller dynamos supplying the power to the electric bar coal cutters. Another large dynamo drove two pumps delivering 500 gallons per minute each and working for 16 hours a day. However, the electric machinery suffered from short circuits as a result of defective insulation.

Reference is made to old coal pillars, found to be some 15 yards by 35 yards, and to No.10 incline. In the Hutton seam, now at work, pillars 30 yards by 33 yards were being left, and there were 28 men working on bord and pillar work and 57 on longwall in these new workings. By 1905, all the Hutton seam was worked longwall, with six feet wide gates and nine feet main roads, packed three yards thick on each side and with crossgates every 75 yards. A Goulden bar cutter undercut 3½ inches high to a depth of 4 feet 6 inches in the clay below the coal, but was found unsatisfactory, cutting only 30 yards in an eight hour shift, as there was insufficient electric power. Hewers averaged 2¾ tons per shift and fillers six to seven tons. Ponies were used to put the tubs in gates 5 feet to 5 feet 6 inches high, formed by taking down the roof an extra 2 feet 6 inches to three feet. Hewers were paid two shillings a ton in the West district and 2s 2d in the East, plus in each case the regional bonus of 28¾ per cent. Tubs averaged 7½ cwt loads and were on 2 foot 4 inch gauge track.

In the Main Coal, Siskol coal cutters were used, with coal pillars 30 by 30 yards, bords five yards and headways eight feet. The coal was drawn by main and tail rope haulage. Now some 1601 tons were produced in a day, averaged over a pay of 12 working days, but the men often absented themselves on the two Saturdays in each pay. There were 483 hewers in all, including 26 fillers. Ventilation was still by furnace. In April 1907, Stobarts at nearby Chilton were installing a new coking plant of 50 by-product recovery ovens of the Fabry-Linard type, using about 1600 tons of dry slack weekly. The *Colliery Guardian* commented that many other collieries were also putting in batteries of such ovens, many of different types. In 1909, coking at the Eldon ovens cost 2s 9d a ton. These were of the Otto type and were referred to as new in May 1906. In May 1908 there were 456 hewers and fillers, the hewers producing three to four tons each. In February 1909, the water feeders were reported as very heavy, with up to 4000 gpm, and it was commented that there were some 240 houses on the Eldon Colliery royalty.

The overall cost of working coal (i.e. in all the seams of the colliery) increased from 6s 11.2d a ton in 1902 to 8s 1.91d in 1907 and then to 8s 5.91d in the first half year of 1908 and 8s 7.01d in the second half. But output was going up and it reached 533,276 tons in 1910-11. New screens were introduced in 1914. In 1918 the men averaged up to five tons a day in the Brockwell, but only just two tons in the Busty. An account of May 1919

shows the Brockwell hauling engine at the shaft bottom, drawing setts of 48 tubs, each carrying 10 cwt. On the subordinate feeder inclines, single-rope inclines drew setts of 24. The underground haulage and the pumping were fully electrified in 1916. By 1922 Diamond and Sullivan cutters were hewing and coal cutting. The numbers of employees dipped before the First War and rose again in the 1920s, although improved machinery allowed a higher output with a somewhat smaller number of hewers:-

Year to		Hewers	Daily average produced	
May	1914	618	1700 tons	
do.	1915	487	1401	
do.	1916	485	1292	
do.	1918	441	1317	
do.	1919	533	969	
do.	1920	501	1000	(at Chilton Colliery,
do.	1921	448	1315	413 men and 1000 tons).
do.	1922	522	1688	
do.	1923	530	1633	
do.	1924	509	1837	
do.	1925	566	1630	
Apr	1926	600	1850	
Nov	1930	-	1348	
May	1931	374	1432	

The numbers of underground men employed in 1918 are stated as 111, and surface men 432.

Fenwick Darling seems to have remained as colliery manager from 1877 until around the First War - certainly until at least 1910. In 1915 Mr Thornton is described as the new manager, and in 1918 A.L.S. Greenwell is so described. A reference to a proposed site for a manager's house in July 1911 possibly marks Darling's departure from office, and certainly he is last mentioned in the annual visits' papers in 1910. Of the subordinate officers, the surviving papers record nothing. Possibly the officials' list for Wingate Grange Colliery - only some 13 miles from Eldon Colliery - and dated 1907 may illustrate the situation:-[2]

SCHEDULE OF SALARIES paid to the Principal Colliery and Fitting Office Officials during the year ending 31st December, 1907.

COLLIERY	**£**	**s.**	**d.**	**£**	**s.**	**d.**
(a) Included in Salaries Account-						
John Gully, Financial Manager (died 17/08/1907)	315	15	0			
Wm Armstong, Agent	650	0	0			
Do. Towards Railway pass	6	0	0			
W. Fleetham, Cashier (died 15th January 1907)	6	5	0			
W.G. Wright, Cashier	146	3	4			
W.M. Owen, Cost Clerk	70	12	6			
R.L. Etherington, Assistant	89	9	2			
E.T. Bailes, Surveyor and Bill Clerk	149	16	0			
Dr Arthur, Colliery Doctor	150	0	0			
				1398	1	0
(b) Included in Wages Account-						
T. Robson, Engineer	208	0	0			
B. Hughes, Master Mason	98	16	0			
W. Clarke, Keeker	124	16	0			
R. Owen, Under Manager	208	0	0			
A. Etherington, Fore Overman	123	10	0			
John Brown do.	123	10	0			
J.W. Hill do.	123	10	0			
M. Owen do.	123	10	0			
T. Gordon, Back Overman	114	8	0			
G. Bailes do.	114	8	0			
J. Forster do.	109	4	0			
J. Morrison do.	66	11	1			
R. Cook, Master Shifter	104	0	0			
E. Murton do.	104	0	0			
J. Elliot, Master Wasteman	104	0	0			
				1850	3	1
				3248	4	1
FITTING OFFICE:						
*A. Hill, Fitter	450	0	0			
M. Hays, Clerk	175	0	0			
G. Clark, Assistant	52	0	0			
				677	0	0
				3925	4	1

*Mr Hill also receives certain profits and commissions up to £100 a year.

Meanwhile, at Chilton Colliery the long-continued trade depression which had such marked effects upon the coal trade was being felt very deeply. In 1883 notice was given to terminate the lease, and the colliery probably closed in 1884. Certainly by the end of 1884 a sale of plant had been held, but not much had been sold. Details for a suggested new letting (for which there were no takers!) give an outline of the situation at the time:-

> Around 2000 acres coal royalty, in a ring fence
> Two adjacent shafts had been sunk, each of 15 foot diameter, one to the Main Coal (and continued as a 10 foot ventilation shaft to the Brockwell), and the other to the Brockwell.

At the dip of the estate, the Brockwell coal lay at around 1200 feet deep.

The Brockwell seam, which had to be won under the lease, had been certified by an engineer, John Johnson, as "*effectually won*" in October 1883, but working came to an end during that year as a result of "*expense of working, & the bad state of trade*". No more coal was produced for public sale, although some was worked to allow the colliery's own machinery to operate.

The remaining coal was as follows:-

SEAM	**CONSISTING OF**	
Five Quarter	c100 acres pillars remaining to get	house
Main Coal	c540 acres whole coal	coals
Harvey	c40 acres had been worked only	
Busty	untouched	coking
Brockwell	untouched	coals

There was a private railway of about two miles in length to the NER main line near Ferryhill Station (the old Dean Bridge branch had not been relaid), and there were cottages, offices and a manager's house.

As mentioned, no new lessees were forthcoming, but, to ensure the immediate availability of the colliery, certain necessary upholding and improvement works were required by 1887 and Lord Eldon, as landlord, was said to have sunk £42,000 in Chilton Colliery. The principal difficulty was with the tubbing in the shafts, which was constantly on the move, and the walled parts of the shafts gave way occasionally.

In 1887 G.B. Forster had become consulting mining engineer for the Eldon estate, and one of his firm's first jobs was to oversee the closure of the colliery after the necessary shaft repairs had been completed and certain exploratory work had been undertaken. The company managed the work successfully, although it was both troublesome and expensive. In September 1887 it was recorded that "*the lower tubbing is perpetually failing*" and the proving of the deepest seam, the Brockwell, which was another significant issue at this period, was rendered very difficult because of the rubbish in the shaft sump, preventing the water-extracting tub getting into the sump bottom. Eventually, after constant failure in the shaft linings, apparently largely occasioned by the heavy water pressure behind the tubbing where it passed through the limestone, and the poor quality of the original work, the Earl was advised to forget the proving of the Brockwell as a gas manufacturing coal, and the shafts were flooded and covered early in the following year (1888). A whole notebook in the colliery archives is devoted to the technical difficulties of the maintenance required prior to this closure.

Chilton Colliery remained closed until 1902. The largest part of the remaining machinery was sold off by auction in June 1888 and only a vertical 36 inch

double winding engine, a 90 inch Cornish pumping engine (whose engine houses were occasionally broken into by vandals), and the rows of constantly-more-dilapidated colliers' cottages remained on the ground. Other collieries in Chilton township and its immediate vicinity were also in trouble at this period. Windlestone Colliery was "*set down*" by Pease & Partners in 1874, and in 1894 Little Chilton Colliery, lying near the main line railway, was described as "*long since been exhausted.*" Although Chilton Buildings village was "*almost deserted*" by 1894, certain services were required, and the Chilton Buildings Board School was built in 1878, after the nearby Windlestone Colliery had closed, but before Chilton itself had gone.

At Chilton, the colliery stood derelict until 1902, although apparently serious negotiations were in hand with various parties about letting the concern from 1897, when Bell Bros Ltd of Middlesbrough, iron, coal and lime masters, commissioned a report on the Chilton and Mainsforth royalties from A.C. Steavenson of Durham. Steavenson was hardly encouraging. He reported that the two royalties, which adjoined, lay "*on the extreme South of the Durham Coalfield and had already had some £500,000 expended on them; they possessed almost every conceivable disadvantage*". The Chilton royalty of about 1270 acres was available on a 42 year lease at 5d a ton rent for coal, one third of a penny a ton on "*Foreign coal*" carried through it, and 4d a ton on fireclay. £4500 would have to be paid for the machinery, left since 1887. The Mainsforth royalty of some 700 acres belonged to Col. L. Surtees and was available on similar terms, but with 3d a ton for fireclay. There the Mainsforth A pit was 14 foot 6 inches in diameter and was sunk to 32 fathoms and the B pit to 145 fathoms, each having substantial lengths of shaft tubbing. At Chilton New Colliery, where sinking had begun in February 1872, the Five Quarter and Main coals had been almost exhausted by 1883, and the Brockwell was only proved, not worked, as it had been reached in March 1882 and abandoned in October 1882. The winning of the Windlestone belonged to Sir David Dale. Steavenson commented to Bells:-

> "*If I am now asked why you may be expected to do any better than those who have tried these royalties and failed, to this I would reply:-*
>
> 1. *Your circumstances are different. You are seeking Coking Coal only, and near Clarence* [iron works].
>
> 2. *The Chilton pit, and to some extent Mainsforth also, were both sunk in the worst possible place for winning the coal underground.*
>
> 3. *A good deal of the capital now spent in Shafts and houses, may be made available although much must yet be spent.*

There are therefore abundant reasons for looking carefully into the questions involved and the two royalties offer a larger field for speculation than either separately."

Bells were unable to decide on such a new development and negotiations continued with other parties from 1899. John Morrison called in October 1899, concerning a proposed lease, and later revealed that he represented "*a small syndicate*" of the North Eastern Coal Co. (sic) and two or three other individuals, who proposed to sink some £20,000 in opening up the coal. Then, if their findings proved satisfactory, they proposed to promote "*a stronger company*" to open up fully, which would require a capital of between £80,000 and £100,000. Mr Stobart of Etherley "*called and asked if Chilton was to let*" early in 1900, representing Hy Stobart & Co (Ltd from 1893), a firm which owned a growing group of South Durham collieries. Meetings were held with Morrisons and with Stobarts on May 15th 1900. Eight days later, another meeting was held at the offices of Lord Eldon's London lawyers, Bell, Stewards & May, with Lord Eldon himself present. At this it was agreed to finalise negotiations with Stobarts and to meet them in Newcastle on May 29th 1900. A lease was offered and accepted for 42 years, at a rent rising from £500 in the first year to £1500 in the third and following years, the tonnage rent being fivepence on drawings on the Brockwell seam coal, and fourpence on the Harvey and other seams. Bolckow, Vaughan & Co. had also been interested in the possibility of a lease.

The derelict condition of the colliery houses was a problem which had to be resolved by the lessor and the new lessees jointly. Most of the houses had been unoccupied for a long time and some had been built too closely to meet with the necessary approval of the local sanitary authority by this time. At Chilton and Ferryhill, where the colliery houses merged into one hamlet, there were 227 houses, as follows:-

Front Chapel Row	24	West Row	19
Back Chapel Row	25	Cross Rows	127
Railway Row and Upper Railway Row			32

At Dean Bridge there were 74 and at Chilton Buildings, nine. Of the total of 310, some 190 could be repaired and the new company would pay rent of £4 a year on each, Lord Eldon would lay out perhaps £10,000 (estimated as being the cost of repairing roof and floors). The remainder would be repaired at the lessees' expense. Some of the houses were in ruins, and on some the roofs had collapsed.

Stobart and Hutchinson agreed to sink to the Brockwell seam from the bottom of No.1 shaft at Chilton, and to win out from the bottom of No.2. The engines at the colliery were apparently in quite good order and the Cornish pumping

engine, which had a beam cast at Redruth in 1872, was compounded by the addition of a 60 inch high pressure cylinder to the earlier 90 inch diameter by 10 foot stroke low pressure engine, raising the capacity to 190 gallons a minute.

In May 1901 it was reported that rails had been laid on the old branch line of the 1830s, which connected with the NER's Chilton branch, and new locomotives were purchased from 1902. By May of that year, the Harvey seam was dry and coal began to be drawn again in that October, in which month about 250 tons were being drawn daily. Stobarts were soon anxious to extend their royalty area, and in 1903 they were negotiating for the adjoining Nunstainton coal. The negotiations were continuing in 1905. The employment figures of 1918 were:-

Seam	Below	Surface
Brockwell Harvey Busty	812	355

from shafts number 1 and 2. The colliery was taken over in 1925 by Pease & Partners when Stobarts became a subsidiary of that company, but there had already been a proposal in 1920 to effect such transfer to Peases. In 1927, as has been seen, a proposal for closing both Chilton and Eldon was unsuccessful, but in April 1930 Chilton was described in hardly complimentary terms:-

> "*On the whole the Colliery has a very shabby and unkempt look and the heapsteads screens etc are in a dirty & unkempt condition*".

There were then 58 coke ovens at work. The colliery was closed in 1930, but was reopened about 1931 by Dorman, Long & Co. Ltd, steel masters and colliery owners of Teesside, and continued in operation far into the period of coal nationalisation. Certainly the writer of a letter in November 1930 had not foreseen so long a continuance: "*Chilton was closed in May*", he wrote, "*and nobody seems to know when she may be re-opened. The new pumps which were to be put into the Main Coal were never installed and the seam is drowned out.*" The colliery was merged in 1960 with Dean & Chapter Colliery, and the complex closed on January 15th 1966.

The South Durham Coal Co. had been constituted as a limited liability concern in 1888 and continued to work Eldon colliery until 1903. By December 1901, however, negotiations were in hand for the assignment of the Eldon lease from Henderson & Straker to Pease & Partners, already large-scale coalmasters in Co. Durham, although the numbers of workers involved in the new Pease & Partners' acquisition were only small. The following were the numbers of employees at Eldon and at the revived Windlestone Colliery near Chilton Buildings, both on the Eldon Estate:

Seam	Eldon Colliery	Windlestone Colliery
Brockwell	118	24
Harvey	49	40
Busty	91	-
Hutton	24	-
	totals 282	64

From this it will be seen that, in an era of marked coalmining prosperity both nationally and regionally, the numbers of employees had been drastically reduced at Eldon from c1894, even allowing for the latter figures probably covering surface workers too. Peases wished to take a lease for 35 years. Terms were agreed and the Pease lease, covering 1419 acres of coal, was signed in November 1902. Pease & Partners held the colliery lease for very nearly another three decades, which was the remainder of its working life.

During the Great Strike of 1926, Eldon Colliery "*stood badly*", presumably physically, and in October 1927 there was a proposal to close both Eldon and Chilton collieries. Both managed to survive the crisis, and on one day in November 1930 the Eldon Colliery output was 513 tons and on a day in May 1931, 692 tons. Eldon was nearing exhaustion, however, and in June 1931 the Eldon Mineral Estate records state that "*Eldon closed down on June 6th and it is not known when she will re-open*". All the coke ovens were then out and the colliery was dismantled by T.W. Ward in 1933-34.

The fortunes of the two collieries, Eldon and Chilton, are to an extent mirrored in the populations of the two townships in which they lay and in which they provided the major employment. It will be recollected that Chilton Colliery closed in about 1884, and the population of that township reflects its rise and fall:

Year	Chilton	Eldon
1841	189	186
1851	977	238
1861	1456	311
1871	643	742
1881	2690	1389
1891	1536	1646

For many years during the period of its major mineral exploitation, the estate was owned by the third Earl of Eldon, who was born in November 1845 and succeeded to the title and estates as a boy of about nine in 1854. Educated at Eton and at Christ Church, Oxford, he subsequently lived the life of a country nobleman. A JP, DL, and subsequently a County Councillor for Gloucestershire and a JP for Dorset, he was no fool. His country seat was at Stowell Park at Northleach in Gloucestershire. He had a town house at 43 Portman Square and he was a member of the Carlton Club. Lord Eldon lived until August 1926, but his interest in his Durham mining property, as the

estate increasingly came to be considered, is difficult to determine. It was certainly real, however, and he attended meetings at his London lawyers' offices in relation to making decisions about it. His personal financial situation, like that of so many of his contemporaries with large agricultural estates, made him loathe to sink the necessary £36,720 in securing Chilton prior to its flooding in 1888.

The Earl of Eldon's estates were, with the exception of the minerals under them, conveyed to trustees in June 1869, but, under a settlement of 1898, surface and minerals were reunited. The estates in Co. Durham and in Dorset were extensive and in 1873 they amounted to:-

	Acres	Gross annual rental
Durham (seat at Seaton Carew)	11,841	£12,897
Dorset (seat - Corfe Castle)	8,192	£12,193

Both estates contained minerals. That in Co. Durham had coal, but also worked limestone, sand and salt. In Dorset, marl workings with shafts and levels produced some 15,000 tons in 1902 from a 15 inch seam, which were used to make cement, and there were also stone mines. The Finance Act of 1910 necessitated a detailed valuation of the land (and of minerals below), and in 1914 Lord Eldon was in dispute with the Commissioners of Inland Revenue about the interpretation of the word "minerals" in this regard and about Great Chilton Farm. Upon his lordship's death in 1926, a detailed valuation of his estates was made, one part of which revealed:-

Coal Property:	Wayleave		land & houses	
	£/pa	£/pa	(houses)	£/pa
Eldon	2944	368	290	153
Chilton	4887	-	132	809 and Chilton Hall
Nunstainton	276			
Mainsforth	184			
Limestone: Middridge, Aycliffe, Chilton.	£319 10s 0d			
Sand: Ferryhill	50			

The surface estates were run by an (apparently part-time) estate agent, to whom occasional reference is made in the papers. For a long time in the early 20th century this was Percy Stephens, successively of Croxdale, Croft and

The Hermitage at Richmond. The Forsters managed the mineral business, however, and some brief account of them is necessary.

In the 1870s and much of the 1880s, the mineral estate work for Lord Eldon was undertaken by John Johnson, of 1 Osborne Terrace, Newcastle, who was described as a Civil Engineer. Perhaps he was the one of that name elected to the North of England Mining Institution in August 1852. G.B. Forster acted for Johnson as an arbitrator in a dispute in 1872, but it was only in May 1887 that he began to act permanently for Eldon. He had prepared consultative reports during difficult times for him since 1877, however, and it may well have been the all-round stress of the closure and consequent expense on cocooning Chilton Colliery at a cost eventually of almost £40,000, which brought Forster into Eldon's direct employ.

George Baker Forster was born at Caswell in Co Durham in 1832, son of a well-known mining engineer. He was sent to public school and then to Cambridge, where he rowed and where he graduated with mathematical honours in 1854, proceeding to an MA degree in 1857. He was apprenticed as a mining engineer and, during the 1850s, he began to receive his first mining appointments, being appointed Viewer of Cowpen Colliery in 1858. There he soon made new sinkings and output rose under him to one million tons a year. He held this position for the rest of his life and also engineered many new mining developments in the North, the West Riding and Cumberland. He acted as mining agent to many royalty owners, large and small and also sat as a member of the Royal Commission on Mining Royalties in 1890. He was President of the North of England Institute for three years, as well as being a Northumberland JP, Vice Chairman of the Northumberland Coal Owners' Association, and a member of many other organisations. At the same time, he took an active part in various mining rescues, was a hearty supporter of Mechanics' Institutes and was said to have enjoyed excellent relations with his men.

Forster's father died in 1873, and in that year the son acted as umpire in a suit in which Lord Eldon was a party. In the same year he also acted in regard to an exchange of lands between Eldon and Sir William Eden. In 1878 he was consulted on the lease of Chilton Colliery, and in the previous year he was concerned in an exchange of coal between the South Durham and the Windlestone colliery companies. In 1877 he was also consulted about specifications for new pumping machinery, and in the March of that year John Henderson wrote to him from Bournemouth, asking him to examine and report upon the South Durham collieries (sic) at Eldon. Only in May 1887 did Forster begin to act for Lord Eldon on a retained basis, at £175 a year. He was still paid that sum in 1900 and in 1920. His son T.E. Forster joined him in partnership in 1890. G.B. Forster died at his home, Farnley Hill, Corbridge, in January 1901. Twelve years earlier, Lord Eldon's London lawyers, with

whom Forster had a long, intimate and mutually respectful relationship, wrote to Forster that Eldon "*has great confidence in anything you suggest*". His son, T.E. Forster, was still acting for the Eldon Mineral Estate in 1933.

As we have seen, in 1914, as the First World War started, the third Earl was locked in a written contest with the Commissioners of Inland Revenue in relation to the operation of the land valuation clauses of the Finance Act of 1910 regarding his Durham estate. From May to July 1913 detailed and careful valuations were made of the area and of the value of the coal remaining under the various farms which comprised it, as provisional valuations. Forty-five sets of such calculations survive, including details which included, amongst other things, very much inter alia, assessments of the value of tithes, fee farm rents, tillages and manures, timber, sporting rights, footpaths and buildings. The letter of instructions, which was drafted in June 1914 by the lawyers in London for the use of those in the field, related to a valuation to be calculated as at April 30th 1909 of Great Chilton Farm of some 374 acres. The Assistant Solicitor of Inland Revenue added his comments to these instructions, and revised and printed instructions came from Eldon's lawyers with the date of September 10th 1914, as approved by legal counsel. At this stage arbitration proceedings were announced and a hearing before a referee was held at the Surveyors' Institution in Westminster on the 8th and 9th of October 1914. Nine points were apparently in dispute, one of which concerned surface land support when minerals were extracted.

Upon the death of the third Earl in August 1926, it was necessary to make a detailed Death Duties Valuation, which is a further complex document providing the historian with an interesting survey. The mineral estate was valued at a mere £60,000 plus unproved minerals, which were assessed at a further £2000, and, apart from coal rents, the mineral income was but small.

REFERENCES

1. The whole of the Clarence Railway's Chilton branch is said to have been largely unproductive for some years.

2. John Gully MSS.

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