

DERBYSHIRE ARCHAEOLOGICAL
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THE TUMULTUOUS COURSE OF DOVEGANG.

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THERE is little detailed history known about any particular Derbyshire lead mine before the 18th century, and even then it is mostly unpublished and has to be patiently pieced together. But Dovegang, to the north of Wirksworth, was astoundingly rich in the 17th century, and much of its history can be disentangled because of a fact which Daniel Defoe expressed so well when he wrote his *Tour Thro' Great Britain* just after the close of the 17th century — in fact one cannot help wondering if he had in mind these particular mines. When he came to Wirksworth he found “the Provisions extraordinary good, not forgetting the Ale.” He says that people came twelve or fifteen miles to a market, but that there was not great trade in the town, except that of “the Lead Workes, and of the subterranean Wretches . . . who work in the mines . . . they are a rude boorish kind of People, but they are a bold, daring, and even desperate kind of Fellows in their Search into the Bowels of the Earth. for no People in the World outdo them.” He continues to describe the Barmote Court and its lead mining laws, which “prescribes Rules to the Miners, and limits their Proceedings in the Works under Ground, also they are Judges of all their little Quarrels and Disputes in the Mines, as well as out, and, in a word, keep the Peace among them, which, by the way, may be called



CROMFORD SOUGH.

Photo by C. E. Brown.

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the greatest of all the Wonders of the Peak, for they are of a strange, turbulent, quarrellsome Temper, and hard to be reconciled to one another in their subterraneous affairs."

In "Sir Cornelius Vermuyden and the Dovegang Lead Mine" (*D.A.J.*, 1952, pp. 74-118), Mr. F. N. Fisher has given the history of the suits and cross-suits in the Barmote Court, in the Court of the Duchy of Lancaster, and in the Court of Chancery, which continued throughout most of the century, not only between Derbyshire-born lead miners, but also between Dutchmen and gentlemen from London, drawn to the richness of this lead ore.

The words "mine" and "vein" are often loosely used in old records, but in reality a lead vein stretches for some distance; some of the Derbyshire rake veins extend for miles, and they may be inches, or yards wide, and hundreds of feet deep, and on a vein there may be many mines, owned by different people. So we find references to Dovegang, or Gang, mine and vein, also to parts of it, and the cross-rakes had different names.

There is no evidence as to whether originally the name was Dove or Dōve, although now it is pronounced Dove. Gang is from the German, meaning a vein. But for Dove one can only say that dōve is the past tense of dive, meaning dipping, and that this vein dips, or hades, and that the one thing this vein was found to do from the start was to dip into underground water. But two mines on the vein were called Upper and Nether Dovenest. But also the Dovegang mine was connected with the Earl of Dover, although Sayers was working it for nearly twenty years before the earl became a partner. It is interesting to note a reference in Yeatman to Robert de Dovorr "for the expenses of the lead mines" which the bishop of Coventry and Lichfield had at Wirksworth in 1307. In 1652 it is called "a very great and ancient work of lead", and Farey gives Dover-Gang as one of its names. Even now one can see that parts have been worked, as were all early mines, open to the surface, and it was worked deep enough to necessitate attempts to drain it by about 1605.

The road out of Wirksworth to Matlock rises about 200 ft. in the first mile, and from the well-known Black Rocks the road drops 400 ft. down to Cromford. On the Wirksworth side of the Rocks the early Cromford and High Peak Railway, going from east to west, crosses over the main road. Parallel with this is Porter's Lane, going to Middleton-by-Wirksworth; Dovegang vein is roughly in line with the lane. To-day it is typical of deserted lead mine ground, hummocky, uneven, with grass-lined hollows of run-in shafts, mostly rough grass land, with some stony hillocks, and light grey limestone walls, and the workings on the north, dipping into Dean Hollow, have scrubby bushes on them. Uninteresting, desolate, compared with the beautiful and popular dales, but one has only to step a few yards off Porter's Lane on to the rough land on the north side, and one can sit quietly alone in the sunshine, looking eastwards downhill, the woods of Black Rocks rising in the background, and history can come alive, remembering a December day in 1652, when a tumult of angry lead mining men and women gathered on the hillocks when a bailiff came to arrest a young Dutchman.

Geologically it is a faulted vein, with the beds thrown in more than one direction; "squinted", as the old miner put it. There was slickensides in it, smooth polished ribbing caused by stresses and strains. It was a wide vein, and as well as lead, barytes has been mined in it, and zinc-blende, large cubes of fluor spar, and there was petroleum in pockets, and volcanic rock, and a hot spring underground. It is said that probably a good deal of the ore was in clay, and therefore easy to mine, but making it very wet.

When George Sayers, about 1615,¹ called in partners to help to bear the cost of draining Dovegang, the composition ore which the miners were to pay them was half the lead ore obtained, and was higher than that demanded in similar circumstances in later times. One of his partners, Mr. Thomas Wright, was also a part-owner in a Winstor Sough, and was possibly the lead merchant of

¹ *D. of L. Decrees & Orders*, D.L. 5/32, P.R.O.

Chesterfield of this name, who is mentioned in a smelting case of 1634; smelters and lead merchants often became "Adventurers", investing money in mines and soughs.

They sank an engine shaft of 240 ft. deep, and set pumps. The references added together seem to make it clear that this was the shaft later referred to as "the Ould Engine Pitt in ye old Field at Cromford" which was on Shore's Rake (also called the Old Engine Pitt Rake).

I have found a number of references, here and elsewhere, to shafts sunk up to 300 ft. deep by this period, and really one needs to have been down old lead mines to realise fully what a fine achievement this was in hard work, for this was before the use of gunpowder in mines, and of course no compressed air drills.

The country-rock is hard limestone, or sometimes toadstone, which, being harder still, even a hundred years or so later often defeated the miners altogether.

As the vein is a mineral filling between limestone walls, the vein in places can be removed with a pick or other tools, and sometimes a shaft will go down on the vein, with two sides of solid rock, and two sides built up with stones, but where the vein twists and hades the shaft will not be vertical, and although it can be climbed, will not always be suitable for drawing up the corves, or buckets, of ore. So in old lead mines one can go down shafts sunk through solid limestone with the tool-marks still clear on the sides, like small peckings on the rock; I have seen these two to three hundred feet below the surface. Or long levels, sometimes soughs for draining, are driven through the limestone, with the swinging marks of picks on the smoothed surface. One cannot date these levels, all one can say is that they were before the use of gunpowder. Many of these levels are narrow at the top, widen to shoulder-height, and narrow down to the feet, so that the modern lead-miner has christened them "coffin-levels". Also there are other levels, squarish in section, exceptionally low and small, with a close mass of old tool-marks; these are often considered to be Roman.

In the 17th century, to break down rock, the miners were still using several methods which had been used for

centuries. Among them was fire-setting, or firing. The lead miner knocked off the outer part of the rock, and then built up a fire against the fresh stone, and after the rock became cracked and more brittle with the heat, he poured water on it, and then broke it away more easily. By this method the workings were filled with suffocating smoke, so that there were laws forbidding it to be done in mineral time, that is during working hours.

Plug and wing, or plug and feather, were much used, and still are used. The feathers were two semi-cylindrical small rods of iron placed in a hole, and a steel wedge was driven between the flat side of the rods; or sometimes the wedges were of wood, which were inserted, and water poured on them so that they swelled, and the rock split.

Also before the days of gunpowder, blasting was done with lime. A hole was drilled by hand, one miner holding a long borer, turning it slowly at each stroke, while one, or two, miners swung their heavy hammers on to the head of the borer. The drilled hole was then filled with quicklime, the hole plugged, and water poured through a small hole in the plug, so that the lime swelled and the rock burst. All this work was done by the light of tallow candles.

In 1652 John Foulds and Francis Buxton were the Wirksworth chandlers.² I have been told how, in comparatively recent times, the rats used to rush squealing, in a great army, between the bone merchants and the chandlers at Wirksworth.

In a few Derbyshire villages there was still a chandler up to the early part of this century, and less than thirty years ago tallow candles were still being used in at least one mine, and very good they were too, I was told. The only trouble was that they had to be kept in tin boxes in the mine, or rats and mice entered by the mine-level and ate the tallow. The chandler made them by fixing a metal tube upright, and a string wick was pulled through the mutton-fat which was poured in. It was pulled through again and again, so that the tallow was in layers.

² *D. of L. Depositions*, D.L. 4/103/18.

In a mine-reckoning book of the 1630's candles were about 4d. to 5d. a pound, and each candle seems to have weighed nearly a pound.

When, in the 1620's, Sayers and the Earl of Dover and his other partner "laid dry the vein" of Dovegang three times, and "discovered the wealth thereof, but by casualties and the water running in upon them they could never get any great profit" to cover their expenditure, they had several "engines", for the mines were "annoyed with continual waters in great measure". Henry Carey, Viscount Rochford, was made Earl of Dover in 1628, and he had an interest not far from this lead mine, for in 1628 he bought the manors of Upper and Nether Bonsal, though soon selling them to the copyholders. And John Bartholomew, his servant, the "skilful Engineer" was brought into drain Dovegang. It is exceedingly interesting to note that Bartholomew also figures in the draining of Tearsall Mines, near Winstar, with a resulting quarrel about an engine. The owner, George Columbello, was to pay him one-third of the ore obtained after draining. Columbello³ was to sink the shaft at his own charge and bring the water to the foot of the engine, and if all the water from the deepest parts of the mine was not drained away, Columbello was to make the shaft deeper, and drive levels to it. Bartholomew agreed "to plant an engine to the water and take the water away so that the miners might work on the sole of the engine pitt"; he could not read or write and put his mark to the agreement "to the end that he (being no scholler) might know the same when he saw it again, but he did not accept the same as a just account."⁴ One of the conditions was that Bartholomew, or a sufficient deputy, "should at all times night and day (Sabbath Dayes and Christmas dayes only excepted) draw away all the water." Besides making the shaft, Columbello and his partners paid "all manner of wages" to Bartholomew, as well as money for horses and workmen. In

³ In the 17th century there were George Columbello, father and son, at Darley Dale; the father died sometime between 1639 and 1644. One of them was a part owner in an Ashover lead mine.

⁴ Exchequer Depositions, E. 134/11, Car. I.

Exchequer Depositions taken in 1635 Columbello stated that he had scoured and cleansed all the drifts and passages according to their agreement, but that Bartholomew had absented himself and left no deputy, and "once or twice left the said Engine when it hath been out of temper", and Columbello said that because of this he had lost £400 worth of lead ore, and that more ore in a vein had been revealed, but the stopping of the engine had flooded it again. As Bartholomew had refused to stay, a carpenter from Derby, Grymes, had been called in, and had been paid 20/- for mending and looking to the engine for one week. This was quite a large sum, for one miner witnesses that he was paid 12d. for six hours work, and another 12d. for eight hours work. The apparent discrepancy between six and eight hours could be explained if a similar custom obtained in Derbyshire then to that in Cornwall two hundred years ago, where men in wet work had a shift of six hours instead of eight hours work.

Unfortunately we are not told what kind of "engine" it was which was "out of temper". The engine was planted 170 ft. below the surface, but this could mean the pumps. The word "engine" has a wide use at this period. For short lifts of 10 ft. or so, hand pumps were used. A variant of this was called a Sweep-pump, and had a handle which was moved up and down like a village pump.

Rag-and-chain pumps were much used.⁵ There was also a pump made on the same principle as the hand-pump; this was said to raise water more than 100 ft., and there was a more elaborate version of this, in which there was a water-wheel on the surface, and several pump-barrels, going down one below the other, with all the pistons working together by cranks from the wheel. The lowest pump lifted water into an underground tank, the pump above lifted this water to a higher tank, and so on to the surface. In all these pumps there was a good deal of timber-work, so that an engineer was largely a carpenter also. The ore was drawn up deep shafts by

⁵ See *D.A.J.*, 1950, pp. 4-5.

horse-gins.⁶ But generally underground short shafts would link one level with another, and men would draw up the ore in buckets called corves, winding by hand-windlass. Most of the winders were women and boys, earning about 1/6d. a week, or 2/- if the work was more than usually hard. Even in those days there was not equal pay, for if a man was a winder he had 2/- to 2/2d. a week. In 1630, in Wirksworth, a lead miner's wages were 4/- to 4/6d. a week, a few extra good men could earn up to 5/6d. Many miners had a small share in a mine, or else, it was said, there was "much loitering", and they worked an eight-hour day, "winter and somer", and "none are ever accompted workmen, viz. miners, unless they can do whole works as well tymber as myne."⁷ As well as being a miner, a man would have a cow, pigs and poultry, and a field or two of oats — for they never ate wheaten flour. They drank plenty of ale, and there are many indications that they fed well. In Derby, in 1631, turkeys were 1/- each, and chickens 5d. each; eggs cost 3/- for 100, and butter was 3d. per lb.

When Sir Robert Heath and Sir Cornelius Vermuyden took Dovegang⁸ from the Earl of Dover and partners, what qualified as "deserted" was a matter of dispute. The mines were described as being "all runn in and stopt upp with weeds and grasse." After three trials (this number was the law), the Barmote Court, with Richard Carryer as Barmaster, gave the mines to Heath and his partner, on the grounds that by the lead mine law they were deserted. Sayers and his partners protested that no owner of a mine could lose his title "for not working thereof so long as his grove or mine is troubled with water or in case of want of winde." They had left pumps and chains and engines in the mine, and John Molanus and Anthony Cotes (or Coates — several of this family come into the records), servants of Vermuyden, as pumpers, had used them, as they considered they might lawfully do so by the custom. But the other side, including John Bartholomew, interrupted their "quiet possession." The

⁶ *Ibid.*, p. 4.

⁷ *The Thieveley Lead Mines 1629-1635*, edit. R. Sharpe France, 1951, p. 82.

⁸ *D.A.J.*, 1952.

Court of Chancery admonished "the Pretenders and Miners and all others, that they use noe tumultuous course to mayntayne their tythes or pretences" and if "any shall transgresse, this Board intended to p'ceed to a severe and examplary punishment of the offenders."⁹

In this case the in-coming owners claimed the pumps, etc. left by the former owners, saying this was the custom. This is not mentioned in the Phillip and Mary Act, nor in the 1665 Act; the first printed article to mention this was an additional one of 1720, and this states that the dispossessed miners could remove any ore lying above ground, also if there were "any Mineral Working Tools, or any other materials belonging to the parties dispossessed", it was lawful for them to take them away, "be it in a Coe, or anywhere upon the Mine above ground." But if there was a Coe upon the mine, it was to "be left standing for the good of the Mine." Coes are the small stone buildings, in which ore was stored, and tools kept, and sometimes they were built over the top of a shaft. One can still find dozens of ruined walls and foundations of coes all over the lead mine area. On Carsington Pastures there are some with the interior corners recessed back, though this is not apparent from the outside. They are said to have been made like this "to diddle the Barmaster", so that when ore was piled up inside the coe, the Barmaster would judge there was less ore than there was in reality, and the miner would be able to cheat the Lord of the Field of some of the lot, the mineral duty. One can examine dozens of these coes which still have walls several feet high, and find no remains of roof-slabs, and, examining old mine reckoning books, there are to be found numbers of entries for the cost of thatching coes.

The words "pretence" and "pretenders" are used for those claiming title to a lead mine in the possession of others, and the phrase about "tythes and pretences" makes it clear that the "tumult" was a mixture of trouble over tithes and title — which was not surprising as Carryer was the Barmaster. He was Justice of the Peace, Vicar

⁹ *Chanc. Proc.*, 2/44.

of Wirksworth, Rector of Carsington, Barmaster, and Farmer of Lot and Cope in the Wapentake of Wirksworth. He had made himself unpopular by submitting a successful Bill in 1629, when he was Barmaster, against four "poor lead miners in Wirksworth", and obtained a decree against them, to pay him and his successors for ever the tenth dish of tithe lead ore. Though later it was stated that he never received any of this ore — but that is another story.

The Farmer was the individual who paid a sum of money, so much rent per annum, to the King (in the case of the lead mining area called the King's Field), and then when anyone worked a mine he had to pay to the Farmer a certain amount of ore called the lot. And the buyer of the ore had to pay Cope, 6d. a load. Carryer also had a share in some Dovegang mines, so that, with this and mineral duties and tithe, he had a personal interest, and yet at the same time as Barmaster he was the chief officer in the Barmote.

At one point Robert Parker was holding the lease of lot and cope in trust for Richard Carryer and his wife Janet. I do not know if it was Carryer's wife, but I have been told by a lead miner that a parson's wife once came into the Barmote Court¹⁰ and created a disturbance by telling the miners that they ought to get more lead so that the tithes would be larger, and the disturbance was so great that she was taken out and put into the stocks in Wirksworth market place.

Previous to the grant made to Parker, the Barmaster's office, being "very ancient, and of great trust" had been "anciently wont to be granted by a distinct patent separate from ye grant of the duties of Lott and Cope, and to sev'all and distinct p'sons, that soe ye same p'sons might not bee his owne Judge in taking what profitts he pleased."

The lead miners naturally did not consider that the Barmaster and the Farmer should be the same person,

¹⁰ In 1649, "the king's Moothall" was still standing, and was built of timber "conteyning Three Bayes of Building under wch Cort Roome are built Six Butchers Stalls and Twoe Butchers Shoppes on the West side." The shops paid a yearly rent of 26/8.

and later they petitioned that the Barmaster should be chosen by them "according to ancient custom . . . and that some indifferent person may do them justice", and they asked that Francis Archadine,¹¹ partner of Marcellus Vandurne, should be elected. They were on one side of a dispute, and the then Barmaster was on the other side, so neither was indifferent. There is no mention in the Phillip and Mary Act of the election of a Barmaster, but the 1665 law, possibly with the Dovegang troubles in mind, stated "that by the ancient custom of the mines . . . the Miners and Merchants at first chose themselves an officer called a Barmaster, to be an indifferent person betwixt the Lord of the Field, or Farmer, and the Miners and the Merchants."

When in 1629 Barmaster Carryer gave possession of the Dovegang to Sir Robert Heath, who as Attorney-General was to work the mines for the King, as well as for his own profit, the petition of the Earl of Dover and partners was dismissed, as it was held that the mines had been deserted for long enough. But evidently pressure was put upon Carryer (perhaps his unpopularity made his office difficult) for Sir Robert Heath thought that if he could procure the office of Barmaster, even if only for a time, it would be useful to him. Carryer "saw fit to consent to an order" of the Duchy Court, and Thomas Allsopp was made Barmaster of Dovegang for certainly about a year, though Carryer seems to have protested about this later, and in 1636 a Commission was appointed to enquire into the "default of the Sequestraters of the Barmaster's office and their Deputies" and the alleged loss and damage to Carryer.

The office of Barmaster of Dovegang had been separated from that of Wirksworth, for in 1651, John Gell and John Milward were the Barmasters of Wirksworth mines, except the Dovegang, and in 1654 the office of Barmaster of Dovegang was bought by Col. Wm. Mitchell and transferred to Richard Wollaston. They were not the acting Barmasters, but had the right of appointment. In 1637

¹¹ He rented a garden and part of a house in Wirksworth, and in Charles I time had paid 2d. a year as rent. The Commonwealth, which re-valued the Manor at much higher rents, stated that it was worth 3/- a year.

the right of Barmaster of Dovegang was assigned to Sir Cornelius Vermuyden, and his servant and agent, Johannus Couradus Molanus, acted as Barmaster. Later, in 1652, Edward Hopps, *alias* Peate, was Barmaster, with at least three deputies, Ralph Poyser, Tho. Spencer, and John Wilson, with Anthony Cheadle, clerk and deputy also.

Turning to the disputed phrase "deserted mines", here we come to an exceedingly interesting aspect of this particular 17th century lead mine, and that is how the disputes reveal the contemporary Derbyshire lead mining laws and customs. I have a theory, which I hope to make reasonably convincing, that the Dovegang disputes were probably responsible for some of the articles made in the 1665 Barmote Court, and which, with a few additions, were to remain the law for nearly two centuries.

First it must be made clear that only the laws of the King's Field of the Low Peak are being considered. There are variations of the laws at different periods and in different places. At the time when Dovegang mines were said to be deserted by Sayers, there were the written laws of the Barmote, and the customs, and time and again we find these customs identically repeated in depositions of witnesses. At a period when so many could not read or write, unwritten custom, which was old "time out of mind" as they said, was accepted by the Barmote like the written law.

The first written laws, at Ashbourne in 1288, were eleven articles, and had nothing about deserted mines. This law was still known, and is referred to by the miners in the 17th century as the Quo Warranto.

The Inquisition of Edward VI is practically the same, and then there was a main set of laws, the thirty-four articles of the Barmote of Phillip and Mary 1554.

The next set of laws, of fifty-nine articles, was laid down in the Wirksworth Barmote of 1665, and the main "tumultuous course" of Dovegang had occurred in the 1650's, and one can see how apposite many of these new articles were, for Dovegang was not, like most of them, just one mine among many. It was enormously rich, in

the 17th century its value was reckoned in thousands of pounds, not in hundreds.

In one of the suits, in 1648, it is mentioned that 7,500 loads of lead were sold at 16/- to 22/6d. a load. Nine dishes made a load, each being the size of the dish kept at Wirksworth Moothall. As this was by measure, not by weight, it depended on the quality of the lead ore as to how many loads and dishes equalled a ton. In later times, elaborate tables were printed to enable the miner to calculate, and for instance, if a particular dish of lead weighed 60 lbs., then four loads and four dishes made a ton of lead ore.

The Phillip and Mary law states that no one can claim another man's ground if he is working it truly, but that it must be kept "in Occupation with stowes and timber in all men's sight." These possession-stowes were small models of a windlass, made in a particular way and with wooden pins. One of these had to be set on every meer — twenty-nine yards — of the vein. There is nothing in this law about no new claim to the mine being allowed if it was troubled with water.

There is one other printed 17th century record which refers to customs as well as to laws, and that is the rhyming chronicle of 1653, by Edward Manlove, Steward of the Barmote Court.¹² The first line begins "By custom old, in Wirksworth Wapentake", and after describing the making and setting of the possession stowes, and stating that if these were not made correctly and kept "timbered in all men's sight", the miner could lose his mine. Or if the mine was left unworked, the Barmaster nicked the spindle of the stowe three times during a period of nine weeks, and if the mine was not re-worked by then, he could give it to another,

"Unless the work by water hindered be,
Or else by wind, the miner then is free
From losing any meer of ground or grove."

So it is clear that, although not then stated in the printed law, the custom said that a mine drowned by water could not be forfeited.

¹² He lived at Ashbourne, and was a J.P. in 1648 and through the Commonwealth, and in his period was the greatest living authority on the lead mining laws and customs.

water could not be forfeited.

But the lead mine laws are simple and practical, once their peculiar terminology and specialised background are understood. They have been pieced together, growing to a coherent whole, during seven centuries, and just as the lead miner learnt his work "the hard way" by experience so each law is built on a practical issue. Until the 17th century the question of mines deserted because of water was not likely often to be a concern of the law. If a mine was so wet that it could not be worked, even in summer, the mineral field was still sufficiently unworked for the miner merely to go and open up another mine elsewhere. And if a mine was so watered that the former owners did not know how to unwater it, no one else would know how to do it economically either.

There were places where a mine could be drained to a valley with little trouble, generally along a vein, and they were so drained, but at Dovegang, for the first time, expensive and extensive draining was attempted. The practical lead miners who formed the Grand Jury of the Barmote realised that to allow an owner to retain a mine unworked because it was flooded, was hindering, not helping, the one fundamental idea behind their laws — that the mines should be *worked*. So, in the 1665 laws, they stated that when a mine under water "hath stood many years unwrought" and the owners "do not use some effectual means to get forth the water", and when it could be unwatered "by means of a Sough or Engine", anyone who wished to "lay forth money" for this purpose could declare their intention at a Great Barmote Court. After announcement by the Cryer at the Court, those intending to drain the mines must demonstrate to the Grand Jury the ways in which they proposed to do this, and the Grand Jury should go down the mine and examine it. If the former owners wished to join in, paying their share, they could do so. If they did not join in, their share in the mine was to be forfeited to the new owners. The miner was also admonished that "diligence ought to be used to gain wind, and let out water."

This is the first mention of a sough in the printed laws, and in the 1630's, soon after Sir Robert Heath and Sir

Cornelius Vermuyden took possession, the latter began to drive a sough, which it was said "no man els" had done before.

No documentary evidence as to its exact position has come to light except a vague reference to a sough "between Gang House and Dean Wood." I hope to give reasonable proof as to the position of Gang House, and as this was the main Gang Mine, any sough would lead to this. There is Dean Hollow less than a quarter of a mile north of this, and there are scrubby bushes and trees in this hollow, but there is no evidence of the extent and position of Dean Wood three hundred years ago, and it could easily have stretched to the wood which is still between here and Longhead shaft-top.

Cromford Sough drains the whole length of Gang Vein for a depth of four to five hundred feet, and this sough was made before the end of the 17th century. Longhead Sough drained the nearest (east end) of the vein (the contour of the vein varies within about a hundred or more feet) for approximately 300 ft. and after Vermuyden's sough was made, it is stated that Dovegang was drained to this depth. Longhead Sough is marked on an old plan, and the exact position of a 36-fathom shaft is shown, which brings its tail to Cromford hill; at a later date it has been diverted, down a steep gradient, into Cromford Sough.¹³

Sir Cornelius Vermuyden handed over the Dovegang Mines to Marcellus Vandurne in trust for his son Cornelius Vermuyden, and when the latter came of age in 1648, Vandurne refused to hand over the mines until Sir Cornelius Vermuyden had paid his debts of several thousands of pounds, in interest and money which Vandurne had paid out in making the sough and in other mine-charges. Vermuyden said that Vandurne had retained the profits to cover this.

When the sough was finished by 1650, Edward Wheatcroft was called in to "sett and plant pumps and engines" in the rake. He was born about 1615, lived at Wirksworth, and was a carpenter and "engineer". The mine

¹³ *Mine and Quarry Engineering*, March 1951, pp. 91-94.

was then "wrought many weekes together upon the Soule", that is the lowest level, and Vandurne intended to set the engine and Wheatcroft to work again "this spring proving very seasonable." For it was common then for Derbyshire mines which were called "wet-works" to cease, or to slow down work, in winter wet weather. Vandurne said that "Engines were the Best" for drawing water "forth of such work where there is much gravile small stones and sludge", and that the weather was so dry in early 1652 that the springs were smaller than had been known formerly. Then Sir Cornelius Vermuyden and his son, in trying to claim the mine back from Vandurne, interrupted the work and stopped Wheatcroft "from setting up the said engine in frame" and with many threatening words discharged Wheatcroft, and "threatened they will pull up all the Engines, Pumps, Forces there set and planted" the previous year.¹⁴ Wheatcroft used threats in return, so that, by the beginning of the 1650's, both Vandurne and Wheatcroft were in angry opposition to the Vermuydens, and the trouble flared up in another direction.

Whether Vandurne or Vermuyden was the rightful owner, the latter's action in disturbing the work of the mine was illegal by the lead mine law. He ought to have gone to the Barmaster, who would then what was called "arrest" the mine, and within ten days appoint a Barmote Court to try the title. The law said that "no workman shall come to any workman that doeth worke his ground truly, by any colour to claim his ground or take him up to stop the Field of the Mine, but the first workman shall worke, and the Claimer take the law, and the Barmaster shall do him law."

At this point one needs to get a mental picture of the layout of the surface of Dovegang vein.

The position of this has already been given, and its present-day appearance, but when this area is studied and walked over carefully, and all the scattered pieces of 300-year-old information are fitted together, it is possible to get a reasonably clear view of Dovegang mines when

¹⁴ *D. of L. Decrees and Orders*, D.L. 5/35. *D. of L. Pleadings*, D.L. 1/388.

they were working. The vein, running west to east, was then stated to be 31 or 32 meers, each meer being a measurement along the surface of the vein, that is roughly a total length of about half a mile. Cross veins branched from this on north and south. The west end was measured from two ash trees,¹⁵ and here, in Milkham Bottom (Milkerholme, Milnecome), there are still a few ash trees, though now this area is cut through by the railway, and partially filled-in with quarry heaps. From Middleton-by-Wirksworth a narrow old packhorse roadway runs on the north side of the vein, and its continuation can be followed through the area of deserted mines to join the main Cromford to Wirksworth road. Off the north side of Middleton Green, which used to be called "The Basin", there is a path with very old worn stone paving-slabs leading to the end of a building with a very small old window, with the lintel, and one side, of very old wood. Beside it is the ruin of a roofless building, which has had stone-mullioned windows, and here tradition says are the remains of Middleton Hall, where Cornelius Vermuyden, the son, was living in 1652, and the old packhorse roadway was his way to the mine.

There are numbers of references to Gang House, which was definitely on the mine. There were groves (this can mean shafts, or mines) to the east of Middleton in Milkham Bottom. From this, many meers to the east, the mines were named Upper Dovenest and Nether Dovenest. Gang House was east of these. To the east of Gang House there were "many meeres of the Ginpitts". East of these was the meer of the Forefield Coe, and the shaft here was sunk where Sliding Pitt Rake, running north to south, cut through Gang Rake; Doveston Leys Close was immediately east of this. This narrows the position of Gang House, and 200 ft. east of Middleton Vicarage, and a few hundred feet east of the SE. corner

¹⁵ A note of Sir John Gell's states that "Thos. Spencer of ye Ash had a composition from Mr. Vermuyden to make a trench in my ground to turne ye water besides ye gange rake, yt so it might not prejudice neither rake nor sough." I was kindly allowed to examine the outside and some of the inside of Ash House, Rise End, Middleton-by-Wirksworth. It appears to have been built in at least three periods, part of it 17th-century or older, and one room used to have a very wide fireplace with a stone mantel. *Add. MSS.* 6682, ff. 140-141, B.M.).

of Middleton Recreation Ground, is an enclosure marked on the O.S. 6-inch map, and here, in the limestone walls, are pieces of dressed gritstone. On making local enquiries I was told that until a number of years ago there used to be the remains of a building, with gritstone corners, much bigger and better built than the small coes. This house would have been in the centre of the mine, and in a most convenient position, and I have no doubt it was Gang House. It stood only a few hundred feet away from the west-to-east packhorse road, and in front of it a trackway runs north, crossing another old packhorse roadway called Longload Lane going down to Cromford, while the northwards one goes direct to Bonsall (in a 17th century list of Dovegang groves there is one called Bonsall Gate Grove).¹⁶

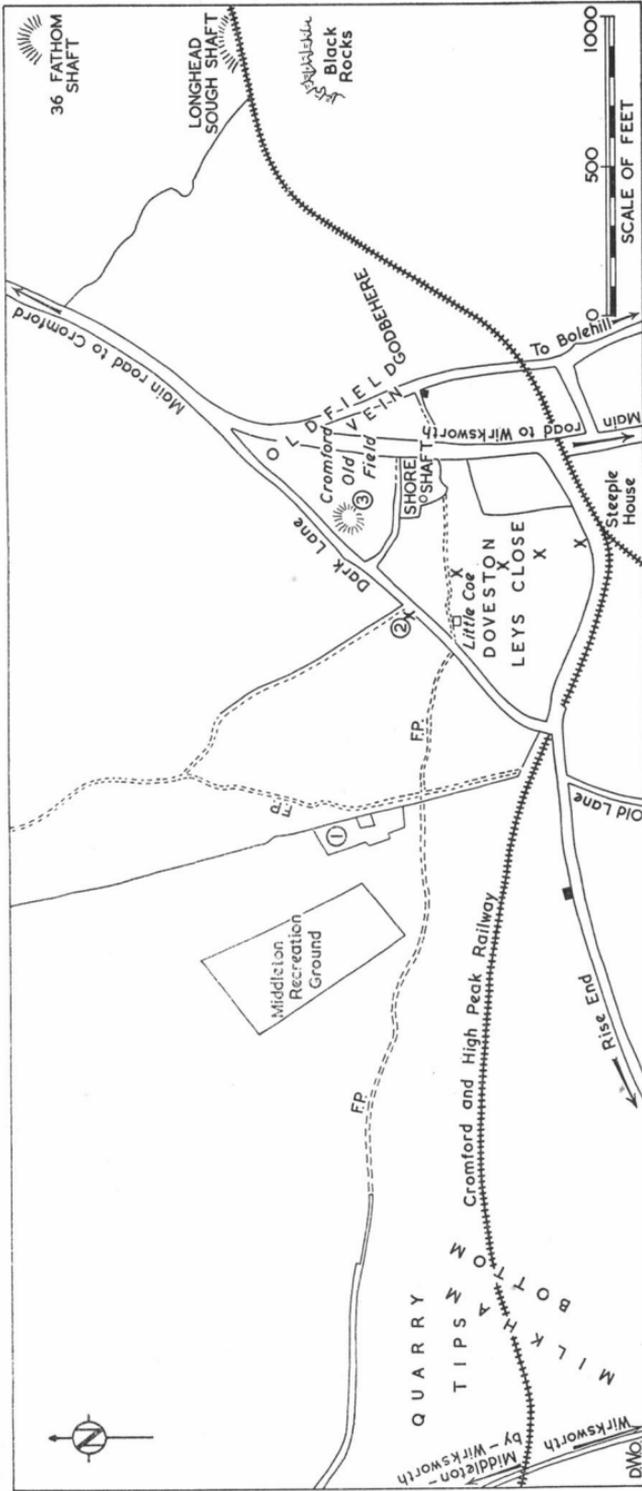
Just to the east of this position for Gang House the land has not only been closely pitted with shafts and much worked, but also the hillocks have been much disturbed in later times. By one shaft, which is on the highest contour of the vein, there is a flat space which could have been a gin-circle, though in this disturbed ground the evidence is not now as good as it often is.

Dark Lane is about six to seven hundred feet to the east, and this is the old highway from Wirksworth northwards to Cromford, and here the east end of Dovegang is described as "keeping betwixt its two woughs under the highway leading from Wirksworth straight towards the old engine pit." Woughs are the limestone cheeks of the vein. The direction is given as ranging N.E. Doveston Leys is fixed by the tithe maps, and is the land in the corner formed by the junction of Porter's Lane with the main Cromford road. North of the northern boundary of this Leys, on the east of the old highway, is a flattened mound which the evidence seems to indicate was the site of the Old Engine Pit of the 1630's, and which was stated to be in Cromford Old Field. (Extensive enquiries have not enabled me to confirm this field-name, except for the position of Oldfield Vein). Shore Vein (or Old Engine Pit Rake) is definitely fixed by mine-maps and information of to-day.¹⁷

¹⁶ Soc. of Genealogists, D. Colln., Heath Papers, Wirksworth.

¹⁷ See sketch map.

THE TUMULTUOUS COURSE OF DOVEGANG



Roads, pathways, and printing in small letters from O.S. 25" to 1 mile map
 CAPITAL LETTERS Positions known definitely but not on O.S. map
Sloping Letters (see text) ① Gang House ② Old Engine Pit X G.B. Stones

MAP OF THE DOVEGANG L.F. AD MINE AREA.

Based on O.S. Map. Crown Copyright reserved.

The Forefield Coe is mentioned frequently; it was to the east of Gang House, and west of Shore Vein, and the shaft originally was sunk "for the more easily getting down to find" the Gang Rake. There is one mention of "the Little Coe in Doveston Leys Close", and here there are still the remains of a particularly small coe with a shaft in it, so I think the position of Little Coe is certain. But the only reference is in a cross-suit, and one side complains that the other side is bringing up a new suit with new names to what is really an old suit. So there is the possibility that the Little Coe and the Forefield Coe are the same, but I do not think so, for weighing up all the evidence, and studying the ground carefully, it seems as though the Forefield Coe must have been at least 100 ft. or more to the north. In one reference it is stated that the ground to the east of the Forefield Coe was in Cromford Old Field, but the next meers to the east of this coe were measured in Doveston Leys. So this coe must have been somewhere near to the north-west corner of Doveston Leys Close, and the south-west corner of Cromford Old Field.

The Forefield Coe shaft was sunk on the north to south Sliding Pitt Rake, and there is a vein in correct position here. It is interesting to note that the stones with "G B" on them cross the Leys in the range of this cross-rake. I have no evidence of the age of these stones, but as Dove Gang Vein was supposed at one time to be cut off by Sliding Pit Rake "before it came to Doveston Leys", placing the site of the Forefield Coe just north-west of Dark Lane, about six to seven hundred feet from the lane's junction with Porter's Lane, fulfils all conditions. The cheek of the stile here is a "G B" stone, and here approximately is the junction of Gang Rake and the cross rake. The forefield of a mine is the farthest point to which the vein has been cut, but later (in this case 1650?) the forefield would extend. So, in these 17th century records Sliding Pit Rake and the Forefield Coe must be here, on the edge of Doveston Leys, but on an undated map (but almost certainly last century) in the possession of Mr. Hodson, a Sliding Pit Rake is marked about 1300 ft. to the west.

As it was 31 or 32 meers on Gang Vein from Milkham Bottom to the Forefield Coe, it is quite impossible that the 17th century Sliding Pit Rake could have been so far to the west, but, after a lapse of centuries, misplacing of or re-naming veins and soughs does occur occasionally.

Evidence was given in the disputes¹⁸ that the north to south Sliding Pit Rake cut off and determined the "pride and richness of Dovegang Rake", but in October, 1650, "one came up out of the ground forth of the Dovegang Rake" who said that "he believed this rake went on or brake through the Sliding Pitt Rake" and that Dovegang vein continued to the east. And this was another source of trouble, for in 1648, when Vandurne was holding the mine in trust for Cornelius, the ground to the east of the Forefield Coe was said to lie open "without any stowes or timber of Yokings standing . . . free and lawful for any miner to take", and Cornelius appointed his brother, John Vermuyden, to take possession of two meers east of the Forefield Coe as part of Dovegang Rake, and which extended into Cromford Old Field. In the same month Vandurne and Sarah Vandewall took possession of two meers on the vein at the east end of Vermuyden's meers. A quarrel arose as to whether there had or had not been possession-stowes east of the Forefield Coe previous to this.

The law then said that when anyone found a new vein, he could mark that place with a cross, which would only be lawful for three days at the most. Then the Barmaster measured out the new vein, after the finder had given him a Freeing Dish of lead ore obtained from the vein. The Barmaster gave two meers, called Founder Meers, of twenty-nine yards each, to the finder, and then claimed two half-meers for the King, and then other miners could have Taker Meers "as far as the said Rake will continue." The Barmaster or his deputy was required to walk the mining Field once or twice a week to see if the possession stowes and all else were in order. On Dovegang there was trouble over lack of stowes at this east end of the

¹⁸ *D. of L. Pleadings*, D.L. 1/bdle 391.

vein, so it seems clear that the Barmaster could not have walked the ground. It is interesting to note that the later laws of 1665 insert a provision for stowes "gone by some sudden accident or indirect means", in which case no one could come along and claim the vein from the rightful owner without going to the Barmaster, who would then take one or more of the Grand Jury and make open publication in the Mineral Time of Day (8 a.m. to 4 p.m.) and the original owner was given four days to make good his possessions again.

Mr. F. N. Fisher, as an authority on the Vermuydens through the whole of their lives, holds the view that *they* were the trouble makers wherever they went, though they received much the same treatment from others; I do not feel so sure that this is so in these Wirksworth affairs. During the centuries, the same sort of trouble occurs again and again all over the Derbyshire lead mining area. Also one cannot imagine lead miners easily accepting foreigners into their close community. Thomas Buschell, at almost the same time, was having similar trouble in Wales and Mendip (Aubrey, *Brief Lives*, ed. Powell, 1949).¹⁹ Besides the general "quarrelsome Temper", as Defoe said of the Derbyshire miners, Wheatcroft was actuated by fury and spite, and Vandurne appears in as poor a light as the Vermuydens.

When Cornelius, the son, stated in the Duchy Court in 1648 that meers to the east of the Forefield Coe were already in his possession, one is inclined to believe him, for the Barmaster would have staked them out, and the matter could be proved. Some witnesses said that he had kept the possession stowes there, some said that there were no stowes. And one feels inclined to believe him that if "the Yoakings²⁰ were not there it was neglect on the part of Marcellus Vandurne", and one can suspect truth in his comment that if the ground lay open and

¹⁹ It is an entrancing speculation to wonder if the two sough-makers, Buschell and Vermuyden, ever met. For the former also "was master of the art of running into debt", he was once in Chester with "one Spanish 3d." and owed £50,000 at the time — not that that was any curb on his schemes. And in his mining work in the Mendips local miners turned water into his mines "to drown his men that came from foreign parts" and pulled down timber supporting a shaft, so that earth fell into his level.

²⁰ Yoakings were the possession stowes.

free to any man for lack of Yoking, it was so that Vandurne and his partners "should come and seize upon the same as new or neglected works."

Trouble mounted up when in April, 1652, Wheatcroft discovered a new vein to the east, and Hopps, the Barmaster, and the Grand Jury of the Barmote, gave him and his partners possession of two founders meers on Cromford Moor.²¹ The total of these, with the Farmer's half meer at each end, was 261 ft., and the east end of them was about 500 ft. east of Forefield Coe (i.e. leaving a gap unclaimed between the west end of this new vein and the Forefield Coe). Then two months later the Barmaster measured the same partners three Taker Meers westwards, in Doveston Leys, i.e. towards the Forefield Coe. All these were measured as part of a new vein, Godbehere Rake.²² He also gave them a cross rake called Wheatcroft Rake. In one deposition it was stated that Godbehere was sixty yards distance from Dovegang vein, but north to south cross rakes must have brought the workings very close to each other, and the whole of this trouble took place in an area of only a few acres, and in the usual maze of underground lead mine workings there is infinite possibility of trouble.

Wheatcroft said that John Vermuyden, who was working the east end of the Dovegang vein, "set or removed some stowes and sunke one or two shafts" in or near the new vein, some of the shafts being actually between the cheeks of Godbehere vein, and got lead, and by paying meer dishes (freeing dishes) to the Barmaster claimed it as a new vein. The Barmote Jury went down the mine workings to "view" them, and the Jury judged it all to be the same vein, "unless further work reveal it otherwise", and on June 18th, 1652, they ordered it to be worked as one. So Wheatcroft and partners and John Vermuyden and partners all worked it.

A little later Wheatcroft said that, taking advantage of this arrangement, John Vermuyden and his partners went down into Godbehere Rake to see what cross rakes

²¹ *D. of L. Pleadings*, D.L. 1/Bdle 391. *Decrees and Orders*, D.L. 5/35.

²² There was a Thomas Godbehere, a husbandman and miner of Cromford, born 1591, who was still alive in 1648.

went in and out of it, and that afterwards they drove out of Gang Rake into a cross vein south of it, and "by firing and unlawfully working it, there being no rake or ribb of ore" they "broke into Shore's Cross Rake" then made a drive southwards to this, and on to Godbehere's vein. They "filled up the old drifts in the Dovegang Rake and . . . obstructed all the other cross rakes which they had driven", and then they did what later times called "salted-the-vein", by fixing "small ore got elsewhere . . . to make it appear a leading." The only place they had left open was their drift "so unlawfully wrought" which they had driven through the cheeks of the vein by strong firing. By the law they had the right to follow their vein; if there was a leader, or leading, a thin string of ore, going through the limestone, they could follow it. But they could not drive through solid limestone without a vein, and into someone else's vein, nor into a new vein unless they claimed this from the Barmaster. In this case they were accused of faking a vein, "by glancing and smithoming" — by placing large and small pieces of ore in such a way that they appeared to be a vein, in a place where really there was no vein.

It was legal to "appoint a trial upon the Rake", and on December 23rd, 1652, a Small Barmote Court was held upon Dovegang Rake, at which John Vermuyden and his partners — probably in return for the above accusation — complained that Wheatcroft and partners had trespassed on the three meers east of the Forefield Coe. These were called "the meane works" in Doveston Leys.²³ The paper is signed Edward Manlove. It is interesting to note that the names of the Jury include Edward Morte, as Mr. John Mort is the Barmaster now, three hundred years later. Edward Hopps kept three Barmaster's books, in which Anthony Cheadle, Clerk and Deputy Barmaster, twenty years younger than Hopps, kept the account of the ore obtained from Dovegang, because, as Hopps admitted in Court when asked about four to five hundred loads of lead, they must refer to his books, for he "dare not presume to guess within

²³ For detailed account of the trial, see *D.A.J.*, 1952, p. 108.

400-500 loads, because he cannot write nor cast up the same exactly." Hopps was a husbandman of Wirksworth, born about 1600.

Evidently Vandurne and Wheatcroft were furious because the Barmote had given the result of the trials against them; they protested that by the "partiality of the Barmaster" no indifferent Jury could be returned, and they brought a sweepingly comprehensive suit against the whole of the Twenty-Four, the Barmaster, the Deputy Barmasters, as well as against the Vermuydens. So the following year it was ordered that a fresh trial at the Barmote should be held, and the three Barmasters should return the names of forty-eight miners, out of which each party was to strike twelve, and the Jury were to be sworn out of the remaining twenty-four, each side to be at liberty to take exceptions until there were twelve left.

But to return to the momentous day of December 23rd, 1652, not only was it the day of the Small Barmote, but also there was a Commission at Derby for the examination of witnesses with reference to the dispute about Gang and Godbehere.²⁴

A bond for his debts owed to Vandurne had been served on Cornelius Vermuyden previously, but he had refused to seal it until he had communicated with his London lawyers. They advised him not to sign it, as Vandurne was still in possession of the mines and had not rendered accounts, or paid what he owed out of the profits, and — typical of these affairs — Vandurne refused to hand over the mine until *he* was paid what Vermuyden owed *him*.

So, at the end of November, 1652, I could sit quietly on the Dovegang hillocks, in winter sunshine, and remember December 29th in 1652, when Edward Wheatcroft came on to the mine, six days after his defeat at the Barmote Court trials, to serve a warrant from the Sheriff at Derby on Cornelius Vermuyden, the young Dutchman of about twenty-five years old, for his arrest at the suit of Vandurne. Word of this must have gone round, for about forty or fifty people were present, including a number of women, and Hopps, the Barmaster, also was

²⁴ *D.A.J.*, 1952, p. 106.

present. They must have been a threatening and furious crowd, for afterwards there was an order that if any further disturbance occurred, a troop of horse must be sent from Derby to quell rioting. Wheatcroft evidently was alarmed, for he showed the warrant at such a distance that it could not be read. Vermuyden said that he would give bail for his appearance at Derby, but Wheatcroft refused this, and said that he intended to arrest him on the spot. The Barmaster asked to see the warrant, but Wheatcroft refused to show it to him. Witnesses described Wheatcroft as nearly pulling Vermuyden's coat off his shoulders, and the Barmaster stepped between the two men to quieten them. A number of people, including the Barmaster, rescued Vermuyden and guarded him to his Middleton house, and he agreed to go with Wheatcroft to Derby.

Probably what inflamed the crowd was that it was illegal by the lead mine law for Wheatcroft, as Bailiff of the Sheriff, to serve the warrant on Dovegang; the law said that "no officer shall execute any Writ, Warrant, or Precept, upon any Miner being at his work upon the Mine, nor when the Miners shall come to the great Courts of Barmote, but only the Barmaster or his Deputie." And, with the history of quarrelling over the mines and the pumps, Wheatcroft cannot have been an unprejudiced bailiff for the serving of the writ.

The troubles still continued underground, and above ground there was still a fine feast for the lawyers. In May, 1653, John Shore²⁵ and his partners brought a trial in the Barmote against John Vermuyden for "the Cross Rake Mere next the Little Coe Shaft in Doveston Leys", and the defendants stated that this was really a trial for the same title that had been given to them already in three Barmote trials the previous year, and that the plaintiffs had got ore there and secretly taken it underground to another mine and drawn it out. Possibly this is a recurrence of the trouble in Shore's Cross Rake in the summer of 1652.

In August, 1653, Vandurne requested the Grand Jury

²⁵ John Shore was a miner of Wirksworth, born in 1596.

to go down the Forefield Coe Shaft and underground to Shore's sump (an underground shaft, not coming up to daylight) and also descend that, and question John Vermuyden's workmen, for they were driving a level to make a water-gate and turn the water into Gang Rake to its "utter ruining", for Shore's sump was already sunk to water. But when the Twenty-Four came to the underground shaft there was a trap door on it with a horselock²⁶ and the miners said the key was at Middleton. The law, and Manlove's Chronicle, provides for the Twenty-Four to "view" the mine in cases of disputes, but no mention is made of obstruction to the viewing until the 1665 law, which states that if any person or persons "resist or hinder" all or any of the Grand Jury in their viewing, the offenders were to be fined £5, and if need be the Barmaster could call on other miners to assist him. If the Grand Jury or the Barmaster were hindered from viewing by the miners lighting fires underground, "or any other ways or means whatsoever" from going down the shafts or underground, the miners were to be fined 20/-, as long as the Barmaster and the Jury came at lawful and convenient times of the day.

In 1654 there is again a reference to riots, and Richard Wollaston,²⁷ the Steward, and Farmer of Lot and Cope, as he claimed, had been interrupted in his duties by "persons meeting tumultuously."²⁸

In 1673, when Cornelius Vermuyden recovered the Gang mine from Mr. Manlove, he had to spend four to five hundred pounds in repairing the shafts, etc., so it looks as though Vandurne had not handed over the mines in good condition. About a year later he stated that he could "reach no great benefit there without the advantage

²⁶ A Fetterlock, as fixed to the fetlock of a horse to prevent it running away. A U-shaped piece of iron, with a bar through it which could be padlocked. See illustration of an ancient shackle, *D.A.J.*, 1905, p. 205.

²⁷ He bought the office of Barmaster and Lot and Cope of Dovegang from the widow of Sir John Coke, while the son, Thomas Coke, claimed that the office descended to him upon his father's death. This raised a query, to which no answer has come to light in the papers concerned, as to whether the office of Barmaster "being a Judicial place can pass by Administration to a woman, and whether she can execute the said office or make a deputy, or assign it."

²⁸ *S.P.*, Dom. 1654, vol. LXXIV.

of a sough which he had no interest in", and continued that he compounded with the soughers that it should be brought up for the benefit of the Gang, and agreed to give them £700 to be paid yearly, though some years later the soughers declared that they had only received £100. The sough is not named in this document,²⁹ but there can be no doubt that it was Cromford Sough.³⁰

This sough, or Longe Sough as it was called at first, had been driven some way by 1676, but they had not yet reached Tinley Vein, approximately 2,000 ft. from the tail. The partners in this sough were Sir John Heath (son of Sir Robert Heath), Jo. Lowe, Esq.,³¹ John Greatorax, Mr. Burrows, Mr. Fra Bunting, Edw. Hichenson (? Hutchenson), and formerly Robert Sages³² had held nearly half the shares. The shares were divided into 24ths, as with lead mine shares. Many of the soughs cannot be dated for lack of documentary evidence, and although there are a few soughs dated to the 17th century, I believe that Cromford Sough was the longest of the early soughs, and the notes, and articles, preserved among the Heath papers, are documents of outstanding importance, and set the pattern for agreements for the centuries to come. The owners of this sough were possessed of several meers in several veins, Dunrake (which has a branch sough on to Cromford Sough) Roase Rake, Horsecroft, and others unspecified. For the unwatering of all the

²⁹ Soc. of Genealogists, D. Colln., Heath Papers, Wirksworth.

³⁰ The tail of Cromford Sough is an oval sunk walled-in enclosure, behind the houses on the east side of Cromford market place. From the tail the water goes underground, appearing on the far side of Allen Hill, crossing over the road which leads to Cromford Bridge, by an aqueduct which took the water to the water wheels which used to work Arkwright's Cotton Mill. On the tithe maps it is called "Cromford Sough Shuttle" and "Mill Goyt", and years ago boys used to play with the shuttle, which was where a garage is now. The sough ranges south, with a number of bends, until, after a great loop, it turns to Gang Vein. Rogden (or Rondon) Coe Shaft is on a large hillock at the bend of Baker's Lane, and was used for winding up the rubbish when the sough was being made; it is on Tinley Vein. A hot spring was struck in Gang Vein, and the water of the sough is warm.

³¹ Probably John Lowe of Alderwasley, 1616-1677. His family were strongly Royalist, and were interested in lead mines and smelting.

³² There was a Robert Sages (or Sage), a gentleman of Wirksworth, who was a partner in Godbehere Mine with Vandurne, who was born in 1620 and was dead by 1667 (who was also an Adventurer in a sough at Crich), so either the agreement for Longe Sough was made before that date, or there was a son of the same name.

other meers of ground in the veins they were to have one-sixth of the ore, and one-fourth in Tinley Vein, "drest and made marketable". Marks were to be made by four indifferent miners, Will Bomford, Edward Collinson, Theo. Parker, and William Silkstone, and they were to mark the water-level in the mines before draining. The miners must launder³³ their own mines and drive drifts at the level of the sough. If they refused to do this "in regarde to the hardness and other wayes", then the soughers were to have three-fourths of the ore in Tinley Vein, and five-sixths in Dunrake. The soughers were to have liberty to send in their Agents and Servants to see the "effectual workmanship . . . for the benefitt of Driveing on the Sough" and to see that the "Coap³⁴ paid of all Oare (except Duty Oare) got under the water-marks." When all the mines were connected with the sough, then the soughers were to draw off the water by pumping or how they pleased. If the soughers ceased to draw off the water, then the mine-owners were to undertake it and then only pay the soughers one-twelfth and one-sixth of the ore, or if the miners preferred not to do this, then the soughers were to become joint partners in the mines and have half the meers and pay one-half of the charges of the mines. If any miners refused to seal the articles, then the soughers were "to have Liberty to dam up the Water in some convenient place." (This was actually done in at least one sough in the 18th century). If disputes arose, differences were to be referred to the above four indifferent miners, and if they could not settle them, then they were to be referred to the umpirage of John Wigley of Matlock.

The articles and paper are not dated, but the latter states that the twenty-fourth part of the charge at the

³³ A launder is an open wooden channel for water. They were also used above-ground. In the 17th century a Mr. Morrice paid Sir John Gell 10/- a year for liberty to lay launders at Holly Hole Mine, between Gang and Wirksworth, to carry the water away. And underground, in old mines, one can still see the remains of launders at the side of a level, which carried the water, so as to keep the floor of the level dry. Lead miners still use the word to mean a rain-water gutter, and say "I can see the roof is well laundered."

³⁴ So far as I am aware this is the first use of the word "Cope" to mean the composition ore paid to soughers; one meets with this meaning frequently afterwards. For the usual meaning of Cope, see p. 12.

reckoning at Christmas 1676 was £5. 7s. 6d.³⁵ and adds that the adventure was proving very expensive, "being now very hard though in a veyne." One could wonder if the rather puzzling curving of the sough, and its position so far to the east, was due to an attempt to discover less hard rock in which to drive it. I have been told that Cromford Sough is driven in shale until it is approximately under Black Rocks. Possibly the same reason explains the position of Longhead. In Godber, or Godbehere, Mine, where it is on the east side of the present main road, the limestone dips north.

In 1679, under, or in, the clay, at the west end of the vein, near Middleton, rich ore was found, so that the whole mine was judged to be worth £20,000. But the clay haded into the water, so that it could not be worked without great cost. It was thought that Longe Sough would speedily unwater the veins, and that the mines would become very profitable. In this undated paper, Heath is warned that he would "speedily be Stript Forth of" his possessions for not paying wages. In the Phillip and Mary Act, and in Manlove, there is no mention of wages, though no one could sue any miner for ore, for debt, or for ore on any ground on which there was a dispute re the title, except in the Barmote Court. The 1665 Act had said that "one verdict for wages, due to workmen, shall fully conclude and determine." If any miner working for wages should have had them wrongly detained or withheld, then, within ten days after demand, the ore and other materials could be arrested, and the

³⁵ The accounts of Derbyshire lead mines in the 18th and 19th centuries were kept on the same principle as the Cornish mines old Cost-book system. It is certainly interesting to find it applied to 17th-century soughs. A Derbyshire mine which had a shared ownership was divided into 24 parts. Any miner, or someone investing money in the mine, could hold any number, or any sub-division, of the 24 parts, and these were subdivided among them when anyone "turned-up" their shares — generally because they were tired of paying out losses. So that a man might for example own 1/6th part of a mine (= four 24ths) and when he turned-up his four 24ths, these would be divided among his partners, so that it is no wonder elaborate tables were printed — "A 6th added to a 7th is equal to 7 24ths and a 56th." At the Reckoning days, which appear often to have been the Quarter days, if the mine had made a profit during that quarter, this was divided among the partners according to the proportion of 24ths which they each held. If the charges, or lack of ore, made the reckoning a loss, then this was divided, and each man had to pay his proportionate share.

matter brought before the Barmote Court, and if the Jury gave for the workmen, and the arrested ore was not sufficient to pay the wages, and also ten shillings towards the cost of bringing the suit, then the Barmaster should have the power to sell the defendant's ore or "mineral materials", if any, or otherwise allow the workmen to work the mines until all charges and costs were fully paid.

In November, 1682, it was stated that it was generally believed by all the workmen "yt ye Sough would bee perfected within one week in October last" and great things were hoped of it, for it was expected to carry away the greatest part of the water. Up to date no evidence has come to light to prove that Longe Sough did unwater Gang this year, and an interesting possibility arises from a Chancery suit (*Lediard v. Vermuyden*) in 1693. The history of the Vermuyden family was sprinkled with unpaid debts, and, as we have seen, in the original agreement for this sough it was never primarily intended to be driven to Gang Mine, but that Vermuyden compounded with the soughers. Before this fact came to light, when discussing Cromford (Longe) Sough with lead miners, I could not think of a reason why it was driven so far over to the east, and not more directly to Gang Vein, and one miner told me that, far from going even more or less directly towards Gang, it was more like a branch off the sough towards this. So one could suggest that if, as was stated, Vermuyden did not pay the soughers the agreed money, the final connection with Gang was purposely withheld, for the Chancery suit of 1693 states that Cornelius Vermuyden had raised great quantities of lead until about 1686 when the mines were worked out to the depth of 300 ft. (the depth drained by the earlier sough made by his father), and "no more could be worked until the water was drained, which would cost many thousands of pounds, which the said Cornelius Vermuyden being much indebted was not able to pay."

There is silence for a number of years, until in 1706 another Great Barmote Court was held at Wirksworth, and just over a month later was adjourned to Gang House. William Barnes, Henry Gilbert, Esq., Michael Burton,

Esq., John Hutchinson,³⁶ John Thornhill, and Daniel Wood, presented a Bill to the Jury, saying that the Great Mines on Cromford Moor, Godbehere's Great Vein, the mines in Doveston Leys Close, Gangrake, Middle Peak, and Pinflatts, had not been worked for many years because they were troubled with water, and the owners had not attempted to unwater and work them, so these partners asked if the 34th article of the 1665 Barmote could be read in the Barmote. This was the article already referred to which states that when a mine was deserted and under water and the owners took no means to unwater it, claimants wishing to make a sough and work the mines could bring their case to the Barmote.

The claimants said they would be willing to undertake the working of Dovegang Mines and unwater them, and if a day of meeting was published in open court, they would say how they proposed to do this. So they met again at Gang House, and the Grand Jury ordered all the partners of these mines either to come in and pay

³⁶ John Hutchenson was one of the sough-masters in a Winster Sough in 1691, Henry Gilbert of Burton-on-Trent was also connected with it, as also was a John Wigley. In correspondence in the Cowper MSS it is revealed that John Beresford was "a known Jacobite", that he lived at Ashbourne, and was a friend of Michael Burton. Holmesfield Manor came to Michael Burton in 1648 on the death of his brother, he was High Sheriff in 1648, and died in 1656, but he had a younger relation of the same name who lived at Eckington. Lead mining affairs over the county are intricately mixed, and there is an interesting connection with the Tinley Vein mentioned with Longe Sough. Lionel Tynley of Holmesfield, who married one of the Wigleys of Wigwell Grange, was a friend of Michael Burton, he died in 1653, and Michael Burton, and Francis Allen (who comes into some of the Dovegang affairs) of the Lea, Ashover, were witnesses to his will. The accounts of his executors mention his lead mines on Cromford Moor, and to his partners, and his clerk for the mines, he left "five shillings a peece for the remembrance of my love". It is a fine and a kind will, he had thought and remembrance for numbers of people, his executors paid out 1/6 for workmen for ale in his groves on Cromford Moor where he had a 4th part in "Godbeheare veyne", also parts of other lead mines and soughs. This will enables another sough to be dated among the early ones. This one drained Maury (Mawley, Mowrie, Morie) Mine, and the run-in sough-tail can still be seen, although from the way in which the rake comes down to the river, this is almost certain to have been a sough-vein, not a true sough like Longe Sough. The mine is about $\frac{1}{2}$ a mile E. of N. of Priestcliffe, near Taddington, on the 1,200' contour, the vein runs N.E. The run-in tail is on the S. bank of the River Wye, which here flows on the S. side of the road from Millers Dale to Cressbrook. It is about 200 feet upstream from the footbridge below Ravenstor House. From the foot of the steep hillside, the stone-lined channel runs about 30 feet and joins the river; there is still clear water flowing from under the run-in. About 30 feet above there is a shaft, and the cheeks of the rake vein are visible. Tynley left to his partners there and to the workmen 50/-, to be spent as they should think fit "either on a Dynner or any other wayes."

their proportionate parts from the beginning of the sough or soughs, and sign the articles for the composition to the soughers, or the Barmaster would dispossess the owners, and this also was to apply to any other mines that the Grand Jury considered would benefit by the sough. Michael Burton and Hutchinson were the soughmasters making the sough at their own charge for one-fourth of the ore. There is no name or position given for this proposed sough, and ideas one might have on the subject are too long to discuss here, but certainly the already-made Cromford Sough had been driven from the lowest contour possible here for any sough going direct to Gang Vein, and therefore it is possible that this agreement could refer to an extension of this and its repairing or re-making.

There is a letter in the Cowper MSS. which is interesting in that it is probably connected with this sough-making. In 1706, John Beresford, Henry Gilbert, and Michael Burton wrote from Derby to Thomas Coke, saying that about seven years previously, John Tatum (or Tateham) was impressed as a soldier. He had killed a hare, "which had given umbrage to a gentleman in the neighbourhood of Wirksworth", but at the time of his impressing was reformed, and was actually a hired servant of Mr. Hutchinson, one of the eminent lead dealers of the county. The man was very diligent and absolutely necessary to his master. The matter was managed so that the person who wished him to be taken up did not bring him before the justices of Wirksworth Hundred, but of Morleston Hundred, "so that his master and other people had not an opportunity to show he was not within the meaning of the Act." The man was a great loss to Mr. Hutchinson, and to those writing the letter, "being engaged in the drawing of some lead works of great consequence which Tatum formerly worked at and by whose direction we can almost only depend upon to succeed." The letter asked Coke to make application for the man's discharge from the Earl of Orrery's regiment in garrison in Ireland.

A month later they wrote to Coke, thanking him for his kind letter relating to John Tateham's discharge, "who

is a labourer so useful and wanting among miners, especially the soughmasters (in which art he excels)."

Finally, there is a vivid account of a visit to Dovegang, described by Pettus in 1687.³⁷ He and Sir John Bendish when visiting Derbyshire "spy'd several wells near the roads over Dovegang (which abound with the poorer sort of mines) so we rode up to know the use of them, and we were answered that they were not called wells, but shafts. Whilst we were speaking, a basket of lead ore was drawn up, as our buckets are from wells. I asked whether I might be safely let down in the basket to see their work. They assured me I might, so with Sir Thomas's consent (who in respect of his corpulency thought it not fit to lead the way) I was let down not in the basket but by a strong stick laid across the hook of the rope. I sat on it between my legs, one hand holding the rope, the other guiding me from grating on the sides. So soon as I was down (being about 24 fathoms or 48 yards) the labourer, who waited for the basket, fetched me two candles lighted by which I saw into the mine. By the time we had gone half-way both candles went out. "Sir," said my conductor, "I pray you stay here, and I will fetch more candles, for it is nothing but a damp." At which my spirits were much discomposed, yet I had so much left as to crawl back to the shaft, and sucked in as much air as relieved me. My conductor soon returned and assured me that such dampes were not killing . . . So I went to the mine, where their constant lamps and candles, which they lighted for my sake, did make the glittering of the ore very pleasant to me, by which I also saw their method of digging; I was well-treated with good ale, besides good beef and bread."

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³⁷ Pettus — *Fleta Minor*, 1686.

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