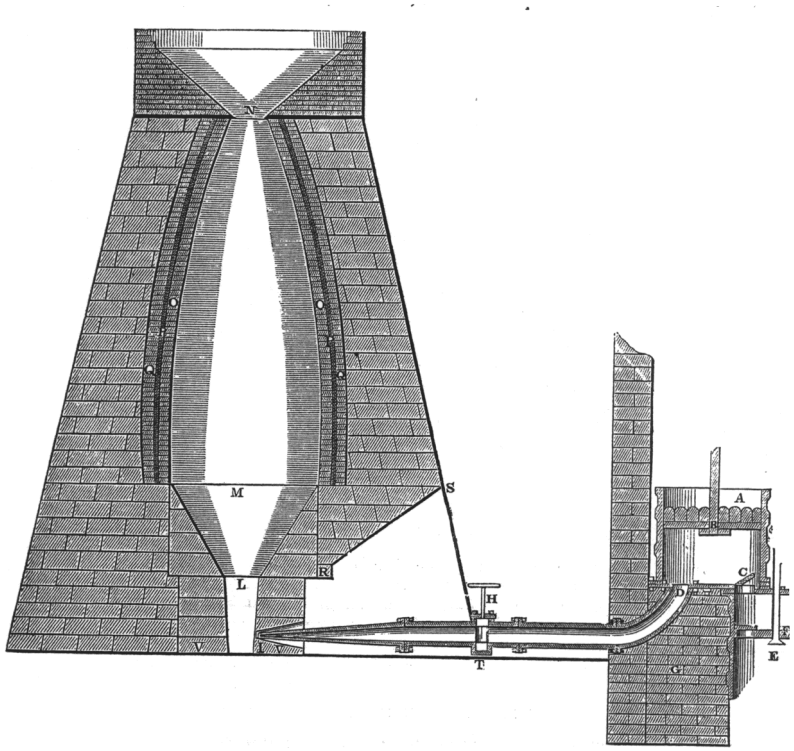
Children's Employment Commission.

REPORT by JAMES MITCHELL. ESQ., LL.D., on the Employment of Children and Young Persons in the Coal and Iron Mines of Shropshire, and in the Iron Smelting Works of those Districts; and on the State, Condition, and Treatment of such Children and Young Persons.



Edited by Ian Winstanley

THE EVIDENCE

SHROPSHIRE

Published by:-

PICKS PUBLISHING
83. Greenfields Crescent,
Ashton-in-Makerfield,
Wigan WN4 8QY
Lancashire.
Tel:- (01942) 723675

Coal Mining History Resource Centre

With Compliments

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COMMISSION

(UNDER THE GREAT SEAL)

FOR INQUIRING INTO THE EMPLOYMENT AND CONDITION OF CHILDREN IN MINES AND MANUFACTORIES.

VICTORIA, by the Grace of God, of the United Kingdom of Great Britain and Ireland Queen, Defender of the Faith: To Our trusty and well beloved Thomas Tooke, Esquire, Thomas Southwood Smith, Esquire, Doctor in Medicine, together with Leonard Horner and Robert John Saunders, Esquires, two of Our Inspectors of Factories, Greeting:- WHEREAS, an humble Address was presented unto to Us by Knights, Citizens and Burgesses and Commissioners of Shires and Burghs in Parliament assembled, humbly beseeching Us that We should be graciously pleased to direct an Inquiry to be made into the Employment of the Children of the Poorer Classes in Mines and Collieries and the various branches of Trade and Manufactures in which numbers of Children work together, not being included in the provisions of the Acts for regulating Employment of Children and Young Persons in Mills and Factories and to collect information as to the time allowed each day for meals and as to the actual state, condition and treatment of such Children and as to the effects of such Employment, both with regard to their morals and their bodily health; NOW KNOW YE, THAT WE, reposing great trust and confidence in your ability and discretion, have nominated, constituted and appointed and do by these presentiments nominate, constitute and appoint you the said, Thomas Tooke, Thomas Southwood Smith, together with, Leonard Horner and Robert John Saunders, to be Our Commissioners for the purposes aforesaid and We do hereby enjoin you to obey all directions touching the premises which shall from time to time be given you, and any two or more of you, by one of our principle Secretaries of State and for the better discovery of the truth in the premises, we do, by these presentiments, give and grant to you, or any two or more of you, full power and authority to call before you such persons as you will judge necessary, by whom you may be the better informed of the truth in the premises, and to inquire of the premises and every part thereof, by all other lawful way and means whatsoever and We do hereby also give and grant unto you, or any two or more of you, full power and authority when the same shall appear to be requisite, to administer an oath or oaths to any person or persons whatsoever, to be examined before you, or two or more of you, touching or concerning the premises and Our further will and pleasure is, that you Our said Commissioners, or any three of you, do, with as little delay as may be consistent with a due discharge of the duties hereby imposed upon you, Certify to Us, under your hands and seals, or under the hands and seals of any three of you, your several proceedings in the premises; And We further will and command, and by these presents ordained, that this Our Commission shall continue in full force and virtue, and that you, Our said Commissioners, or any two or more of you, shall and may from time to time proceed in the execution thereof, and of every matter and thing therein contained, although the same be not continued, from time to time by adjournment: AND WE HEREBY COMMAND all and singular Our Justices of the Peace, Sheriffs, Mayors, Bailiffs, Constables, Officers, Ministers, and all other of Our loving Subjects whatsoever, as will within Liberties as without, that they may be assistant to you and each of you in the execution of these presentimens. And for your assistance in the due execution of this Commission, We have made choice of Our trusty and well beloved Joseph Fletcher, Esquire, to be the Secretary of this Our Commission, whose services we require you to use from time to time, as occasion may require. In witness thereof, We have caused these Letters to be made Patent. Witness Ourself at Westminster, the Twentieth day of October, in the Fourth Year of Our Reign.

By Writ of Privy Seal,
EDMUNDS.

LETTER OF INSTRUCTIONS EXTENDING THE TERMS OF THE COMMISSION TO "YOUNG PERSONS"

Whitehall, February 11th, 1841.

GENTLEMEN,

THE QUEEN having been pleased to comply with the prayer of an humble Address presented to Her Majesty, in pursuance of a Resolution of the House of Commons, dated 4th. of February, 1841, 'That Her Majesty will be graciously pleased to direct that the Commission appointees in answer to an Address of this House, on August 4, 1840, for the investigation of certain branches of Infant Labour, do include within its inquiry the Labour also of Young Persons designated as such by the provisions of the Factory Act' I am delighted by the Marquis of Normanby to desire that you will include within your inquiry the Labour of Young Persons designated as such by the provisions of the Factory Act accordingly.

I am, Gentlemen,
Your Obedient Servant,
(Signed) F. MAULE.

The Commissioners for inquiring into the Condition of Children employed in Mines, &c.

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SHROPSHIRE OR COALBROOKDALE COAL-FIELD.

THE name of Coalbrook Dale has been bestowed on a district in Shropshire, extending from near Newport on the north to a little beyond Broseley on the south, being about seven miles in length, whilst it is upwards of two miles in breadth. Strictly speaking, Coalbrook Dale is the name of an exceedingly beautiful and picturesque dale, under two miles in length, the south end of which terminates at the river Severn.

Most of the coal and iron works are carried on by companies, who are the proprietors of their own mines and who employ charter-masters, the same who are called butties in Staffordshire, to work their mines at a certain charter for the ton of or iron delivered at the foot of the shaft and also employ ground-bailiffs, whose duty as in Staffordshire, is to see that the mines are properly wrought, so as to take out all the contents, both what may not be obtained without difficulty, as well as that which is most easily got.

Some of the mines are held by a long lease, at a fixed money rental, with full power to dig out the contents, how and when the lessees please. Of course, from the manner in which the iron trade is now carried on, it may be expected that the whole will be exhausted by the termination of the lease, or sooner. Such companies are in fact proprietors, subject to a rent-charge, and they manage their mines just as proprietors do.

Such property as has been let for some years past has been soon a plan more advantageous to the proprietor, namely, subject to a royalty on the ton of coal or ironstone raised and the proprietor employs his ground-bailiff to see that his mines are fairly worked, exactly in the same way as described in Staffordshire.

ON THE WORKING OF THE MINES IN SHROPSHIRE.

When it has been determined to attempt to open a new mine for coals, two shafts are sunk near to each other, perhaps 12 or 20 yards apart. The diameter of each shaft is usually about seven feet. The mode of sinking a shaft is precisely the same as that of sinking a well in the country round London. The shaft is built round with bricks as the work proceeds, by a process known to builders by the designation of underpinning and the water on the sides must be stopped out from getting into the shafts, in the same way as the water is kept out from the wells around London, by the use of cement, or, where that is insufficient, by inserting iron cylinders, which, when so employed, are in this district usually called tubs. In working the shafts, should they come to a bed containing a great body of water which cannot be stopped out by such means, then a cistern must be formed in this bed, from which it must be pumped up, and it is evidently much more economical to remove it in this way, than to allow it afterwards to find its way down to a lower depth into the mine, from which it would have to be raised at a greater labour and trouble. When the shafts have been sunk to a certain depth, a difficulty of obtaining fresh air for the men begins to be felt and a current is effected by making an opening from the one shaft to the other. The air descends one shaft, passing through this opening and then ascends the other shaft when the air has once been put into motion, it is not difficult to continue the current, and several modes are resorted to in order to make a commencement. A fire is lighted in one of the shafts,

which sends a stream of air upwards and thereby a flesh supply is drawn in from the other shaft. There is an instrument called the Blow George, which very much resembles the fan employed by farmers to winnow their corn and may be worked by six men, three and three relieving each other and in case of the work being continued at night, these six being then relieved by other six. The Blow George, when it is practicable, is worked by a band connected with the steam-engine. The air from it is forced into pipes and sent down with great force to the bottom. This instrument is chiefly used, however, whilst a deep shaft is being sunk, or a level is being carried forward, called a heading, and before the work is sufficiently advanced to be able to make a circuit and a current of air through it.

After the shafts are carried to a certain distance lower down, a fresh communication is made and the former one is stopped up; and when at last the coal is reached, all communication is stopped, except through the mine, in which as early as possible an opening is made from one shaft to another and a fire is placed in a grating, or, as it is called, a lamp, at the end of a stalk of iron, under one of the shafts and is constantly kept burning. When the men come up at night the last thing done is to put coals on the fire and it generally keeps alight until they go down to work in the morning. From the foot of each shaft a horse-road or gate way is carried forward into the mine. In Staffordshire, where there is the ten-yard coal, this horse-road is cut entirely out of the coal and such will be the ease everywhere, if the bed of coal be sufficiently thick, the coal being in most cases much more easily cut through than the measures above it and below it, and also because the coal taken out will in part cover the expense but in the Coalbrook Dale district, where two-thirds of the seams of coal are not exceeding three feet in thickness and many seams are worked not half so thick, it is necessary in forming the horse-road to cut away much of the top and of the bottom measures, in order to make the road sufficiently high.

In the mine called Hill's Lane, belonging to the Madeley Wood Company into which I descended, each road was about six feet high, and sometimes when the stones in the roof projected downwards, it was necessary to bend down the head to avoid being hurt. By stretching out the arms, both sides of the road might be touched at the same time. Occasionally the roof had to be supported by beams of timber. In the middle of the road rails are laid down 22 inches apart, on which are carriages with low wheels, which are dragged by horses. It is just barely possible to stand close to the side, to keep out of the way of the horses and carriages whilst passing. The two horse-roads having been carried a short way from the shafts, a working is made in the coal from the one to the other, but only to the depth of the coal and a small portion of the measure either above or below. When the communication between the two horse-ways is thus established, a door is placed in the direct passage which leads from the one shaft to the other, and is usually kept shut, so as to cause the air that conies down the one shaft to go forward and circulate through the mine before it ascends the other.

In the Staffordshire mines it is usual to extend at once the horse-ways from the shafts out to the farthest boundary of the mine and there to begin working, and gradually back to the shafts and the reason is that they are afraid lest the roof of the mine should fall in if they began near the shafts, and they should have to incur the expense of sinking fresh shafts but in the Coalbrook Dale district, where the roofs are very low, it is comparatively easy to support them and, accordingly, they begin near the shafts and work farther and farther away, and they extend the horse-way, and lay down the rails gradually as they proceed. By this method they avoid having capital unnecessarily lying dormant in horseways before they are wanted. As the mine advances, other horse-ways are made, so that they may be able conveniently to reach every part and then the system of ventilation becomes much more complicated, and many doors have to be erected in the horse-ways and a boy is placed at each to open it when it is necessary to let any one pass, and to see that it is kept shut at every other time. The safety of the mine much depends on this duty being well performed, and so young children are likely to err.

The men engaged in holing the coal lie on their sides in the workings, and with a pick undermine the coal, taking out a certain portion of the measure beneath it. Supports of wood are employed to keep the coal from falling down and crushing the miner thus engaged. When a large portion is undermined, wedges are driven in above and a mass of coal is brought down at once. Sometimes gunpowder is employed, sometimes it will happen that the measure below the coal is hard rock, whilst the measure above is indurated clay and in that case the holer, instead of cutting away part of the rock below, cuts away a portion of the clay above, as being the easier method of the two but the coal is less easily detached in this way than when it is undermined.

In face of the working is laid down a railroad, of which the rails are removable from time at pleasure when deemed convenient. Upon these rails, which are about 16 inches apart, are placed small carriages, called dans, with wheels only six inches in diameter, and on these low carriages the coals are placed, in order to be wheeled to the horse-way, where they are placed in the carriages which are to be

drawn by horses to the foot of the shaft. Many of the beds are exceedingly thin and hence the space in the workings is so low that the men lie on their sides and it would be impossible for men to push forward the little carriages or dans, as they could not possibly get room to move easily and between 14 and 15 even a boy of ordinary growth becomes inconveniently large. In all beds there are some places where the measures above and below the coal approach much nearer to each other than is usually the case, so that beds, which are in most parts 30 inches apart, may become so narrow as 18 inches and the men employed can barely creep through, and could not by possibility in these places drive the dans half as easily as do the boys.

It may be asked why may not the men clear away as much of the measures above and below the coals as to allow men and horses room to go into the workings? To this question the answer is very easy, namely, that if they were to do so the expense would be more than twice over what the coals would be worth after they were got out and, therefore, if the coals could only be got in that way, they would never be got at all and to order the working to be done in that way would be equivalent to depriving the proprietors and iron-masters of their property and all their work people of whatsoever description of their means of existence.

When the men have moved along the face of a working, and all the coals brought down have been removed, the rails are taken up, and a new railway is made farther on and on the ground in face of the working just cleared out the small coal or slack is pushed back, and all the measure taken from above or below the coal is built up also, and thus the space where the coals were is filled up, and the visitor who comes to look at the mine never sees large empty spaces, but only the horse-ways, and the narrow side lanes of the workings. This is done for various reasons. to get rid of the rubbish which would be an incumbrance. to support the roof of the pit and for a reason as important as any, that there may not be any room in which a body of carburetted hydrogen gas may accumulate and explode. A current of air may also be made to pass through the horse-ways and workings, which would not be made to pass through a large wide space.

The holers, or underminers, are paid at the rate of 3s. a-day, but then their work, by an arrangement between them and the charter-master, is worked off according to well-understood rules, and when a man has done his quantity, whatever be the time of the day, he may leave his work and go off. The getters and the boys have to stay after the holers are gone, and get the coal removed and sent off and up the shaft, so as to have clear the to go on the next day. The getters are paid 3s. a-day, the same as the holers, for, although their work may require less skill, yet it occupies more time. It is by many thought to be a great disadvantage to the holer that he is able by great exertion to get his work done in less than the time allowed, because he is often induced to overwork himself and his constitution suffers accordingly and this is one reason why the colliers of this district become old men at about 45 years of age.

In addition to the statements of witnesses as to the thinness of the beds known to them, a still more comprehensive proof is obtained from the account of the Coal-brook Dale, written by Mr. Joseph Prestwich, and published in the Transactions of the Geological Society. This gentleman has given the sections of 30 coal-pits but of these he considers that 15 are not now in work, leaving 15, which, as far as he knows, are still worked - viz., New Works; New Lawley; Inet, near Broseley; Annerfield, near Broseley; Snedshill; Langley Lodgewood, north of Donnington; Trial Pit, near Lilleshall; Old Hall ; Wombridge Pit, next the engine; Lime-stone Pit, Lincoln Hall; Langleyfield Pit, New Hadley; Holywell Pit, Malinslee; Dawley Pit; Meadow Pit, Madeley; Hill's Lane Pit, Madeley. Now in these 15 pits the depths of the beds are as follows:-

Beds.	
18 inches and not exceeding 2 feet	23
2 feet and not exceeding 3 feet	40
3 feet and not exceeding 4 feet	15
4 feet and not exceeding 5 feet	10
5 feet and upwards	8
	96

So that there are about two-thirds of the beds not exceeding three feet. The beds of coal most in esteem are in general thin.

In these 15 pits there are four in which the beds of best coal are under two and three beds above two feet and not exceeding three. As to the Randle coal, there is one bed under two feet and six beds

not exceeding three. As to the clod coal, which is highly esteemed, there are three beds under two feet and seven not exceeding three.

The general system of working, therefore, must be such as will suit these beds and there is not above one bed in twelve in which a man can stand upright.

The mode of descent into a coal pit differs a little from that most in use in Staffordshire. Instead of using the empty skip they take away the skip and then they hook on to the end of the chain from the engine a short chain by hooks at each end of it and then other chains in the same way, according to the number of persons going down. Every man takes hold of his chain, one part in each hand, and steps over the double of it and sits down like a boy in a rope swing. The engine draws all up a little until the cover of the shaft be withdrawn and then all go down together in a bunch. It is thought to be a safer way than going down in a skip, or in the tub, which is sometimes used when ladies or timid gentlemen venture to descend. Sometimes 20 miners, men and boys, come up in one bunch and in such case a boy puts his legs across a man's thigh, and takes hold of the chain if the long chain should break, all would perish together. Such an occurrence is rare but a man was killed last year near Wellington by a brick falling out of the side of the shaft.

There is much that is reprehensible in this mode of descent and ascent. Merely sitting on a chain and holding by both hands, is not nearly so safe as when the thighs pass through a loop, which is too narrow to let the body get through. In Leicestershire, Derbyshire and in the great northern coalfield, it is considered a point of the highest importance not to allow above a certain number of men or boys to descend or ascend at a time, and it ought to be so everywhere. In many collieries, also, in the districts mentioned, there is protection over the heads of the people and accidents do sometimes happen from stones, or wood, or coal, falling down the shaft such protection ought to be used everywhere.

Sometimes when a fire has got low in the course of the night, it is found in the morning that there is no current of air, and consequently it is dangerous to advance from the foot of the shaft for fear of the hydrogen gas and an explosion. In such case throwing a body of water down the shaft may excite a concussion along the pit, and put the current in motion. In either hot dry weather, or in wet and what is called heavy weather, a great deal of gas may accumulate. The miners at work in the remote parts of the pit said that they were able in such a situation to tell the change from dry to wet without any one telling them, by the nature of the current of air which was circulating.

It will happen at times, both in summer and winter, that men are unable to get down to work for fear of foul air, both choke-damp (carbonic acid) and fire-damp (carburetted hydrogen). When examining Hill's Lane Coal-pit, careful warning was given not to hold the candle higher than the breast and in that case there would be no danger, as the nose would give notice in sufficient time. Advice was also given not to stoop down in any deep hole which might be seen without holding the candle forward, in which case if there was choke-damp it would go out, which would be fair warning. The miner, therefore, has an enemy above him and below him, but using due care he may generally guard against both. He cannot, however, always do so, and from the medical evidence it appears that during the last year 100 persons applied for public medical aid of the surgeons of the Unions on account of burns. This is in addition to those sufferers who were attended by the surgeons of the field-clubs.

This is a very lamentable state of things and might be most easily obviated by better ventilation. It is not sufficient that the men should be able to breathe somehow, they ought to breathe pure air and the ventilation should be such as to remove all danger from noxious gases, and in this district it might very easily be done.

Directly under the shaft in the Hill's Lane Pit is a reservoir, into which water trickles from the side of the shaft and flows in from the bottom of the mine, accumulates and is drawn up by buckets in the evening after the men have left off working the coals. Mr. Joseph Jones, the ground-bailiff, stated, that this water was charged with much hydrogen gas and that if the naked arm was plunged into it and withdrawn, there would appear globules which would flash at the candle. The water drawn up from this reservoir has the reputation of being medicinal. Mr. William Lloyd, an old miner who was sent to me at the Iron Bridge, expressed a high opinion of it and said that six pints of it would do a man more good than 15 pints of the water of the much-frequented well two miles from Wellington. This miner was born in 1779, so that he was, as he said, of the same age as the Iron Bridge. He recollected when there was not a single steam-engine in the district to draw up the water or the coals. When he was a youth the village of Iron Bridge contained only a few houses and now there were above 1000. The boys, since he recollected, drew the coals by the girdle and chain, but now it was gone out of use in this part of the country. Bull-dogs were now become rare about the Iron Bridge, and evening-schools and Sunday-schools were now everywhere established, and were well attended by youths, which was not

formerly the case.

I now proceed more particularly to give an account of the work and condition of the children under the several heads stated in our instructions.

I - OF THE AGES AND NUMBERS OF THE CHILDREN.

Children are sent down to work in the coal-pits and iron-pits at a very early age and probably much earlier than the proprietors of the great companies can be aware. In fact, neither the proprietors nor lessees of the mines come into direct contact with the miners, but they make their contract with the charter-masters, or, as they are called in Staffordshire, the butties to pay a certain charter or price for every ton of coals or ironstone raised to the top and it is the charter-masters who employ and pay the work people and all the proprietors or lessees have to do with the charter-masters is to cause their ground-bailiff to see that the mine is properly worked, so as to get as much as possible of its contents. The charter-masters may be induced at the pressing instance of the men working under them to give employment to very young children, and neither the proprietors nor perhaps even their ground-bailiff be aware of it. A remarkable instance of this became known to me when exploring the Hill's Lane Pit belonging to the Madeley Wood Company; the ground-bailiff, two charter-masters, and a labouring collier, accompanied me:-

"I say, Jonas," said the ground-bailiff to one of the charter-masters, "there are very few children working in this mine, I think we have none under10 or 11." The collier immediately said, "Sir, my boy is only a little more than four."

This was said was, "Well, I suppose that you take good care of him. You take him down and up when you go yourself."

Mr. William Tranter, agent of the Coalbrook Dale Company, was requested by Mr. Alfred Darby, one of the partners and managers, to give full information in reply to the questions put to him. He states that "the has occasion to go down into the mines both of coal and iron. There are many children in the mines but only boys go below. Some are as young as about six, and they are at various ages up to manhood. Boys of from six to seven may earn in pits about 6d. a-day; about nine they may earn from 10d. to 1s., according to the work" (No.41).

Mr. Matthew Webb, a medical gentleman residing in a mansion at Coalpit Bank, states, "There are very few under six or seven, who are employed to draw weights with a girdle round the body, and those only where the roof of the pit is so low for short distances as to prevent horses of the smallest size, and asses, from being employed." (No.48).

The lowness of the roof or thinness of the bed of coals, as this gentleman says, is no doubt the cause of employing boys instead of horses or asses, which otherwise would be more convenient and cheaper, but at least two-thirds of all the beds of coal in the Coalbrook Dale district are of this thin description. From other evidence there is every reason to believe that very few so employed as substitutes for the animal creation are under six or seven. It cannot however be but a matter of regret that any so young as six or seven should be so employed, and nothing but long familiarity with the practice could reconcile the mind to the employment of children of still higher age at such labour.

II - HOURS OF WORK.

The hours of work, according to the evidence of Mr. John Anstice, of the Madeley Wood Company, are from six in the morning to six in the evening. (No.39).

Mr. William Tranter, (No.41), of the Coalbrook Dale Company, gives evidence to the same effect and it is confirmed by all the witnesses, the young men and boys working in the pits, who have been examined.

III - OF MEALS.

In most of the mines of the Coalbrook Dale district there are no regular times for meals, the principle being to keep the steam-engine constantly employed in drawing up coals or ironstone. The

charter-master is paid according to the number of tons brought up to the bank, and in his arrangements with the men he subdivides the work with a view for a certain number of tons to be dug. Accordingly all parties look to the quantity of coals or ironstone which can be sent up in a given time. The people manage to relieve each other in their work, so as to allow time to sit down by the side of the horseway and speedily eat their victuals. It is usual to take one good bait between 11 and 12, and to defer any further meal until the work is over.

It is not possible to name any custom or practice amongst the miners in any district to which there are not exceptions. In some of the Coalbrook Vale mines the people stop one hour to dinner.

The evidence of Mr. John Anstice is as follows:- "The usual working hours are from six to six during which time they relieve each other to allow time for their meals." (No.39).

Mr. William Tranter states, that "In some pits the work ceases for an hour to dinner but in others not, and the people take refreshment as they can, and in such pits it is the custom to leave off an hour earlier." (No.41)

IV - OF THE NATURE OF THE EMPLOYMENT.

The various purposes for which boys are employed are stated by Mr. William Tranter as follows:-

> "In the coal-mines some boys are employed in bringing the coals in small carriages called dans, to the horse-road and others in pitching them into the carriages drawn by horses. Some boys are employed to open doors. Some boys are employed to hook on the carriages to the chains in the shaft. Some boys go errands for the miners to another part of the pit and fetch what the men have occasion for. Boys are employed to drive the horses. Some will begin at 13 or 14 to work like men with the pick but the greater part from 14 to 16." (No.41).

OF DRAWING BY THE GIRDLE AND CHAIN.

The most remarkable part of the work of the children is drawing by the girdle and chain. It is not totally unknown in South Staffordshire in working some thin seams of coal and is still more in use in the thin beds of ironstone but it is not nearly so common as in Shropshire.

About 30 years ago it was a very general custom to employ young boys, both in the coal-pits and iron-pits, to draw carriages by means of a girdle put round the naked waist, to which a chain from the carriage was hooked and passed between their legs and the boys crawled on their hands and knees drawing the carriage after them. This custom is not yet entirely out of use, though the respectable companies have many years discontinued it and have substituted instead small iron railways and small carriages called dans, which the boys push before them. All persons who have spoken of the girdles both in Staffordshire and Shropshire have described the labour as very severe, and the girdle as frequently blistering their sides, and occasioning great pain. (See evidence of Mr. William Grove, No.5).

Mr. John Anstice, of the Madeley Wood Company, states on this subject, that:- "The employment of girdles by which boys in former times usually drew the carriages is now very much gone out in Shropshire." (No. 39).

Mr. William Tranter, an agent of the Coalbrook Dale Company says, "The company does not employ any boys who draw by the girdle and chain. It was formerly so but has not been for many years. Formerly the girdle was employed when there were no rails and the labour was very severe but now that there are rails there is no longer any necessity for boys drawing. by the girdle." (No.41).

Mr. William Lloyd, an old miner who was sent to me to the inn at the Iron Bridge with specimens of coal and ironstone, on being asked his opinion of he girdle, replied, "Sir, I can only say of it what the mothers say, it is barbarity!, barbarity!"

All the great companies have made an advance in civilisation and have substituted the railroad and the dan for the girdle and chain; but there are still some persons, generally of small capital, who lease a small pit, and instead of a steam-engine use a horse and a gin, and instead of laying down a small railway in their pits, employ boys to drag with the girdle and chain. Whilst we honour the desire

of these persons to advance the interests of themselves and their families, it is too much for them to expect that society can any longer tolerate such an antiquated barbarism and allow them, for the sake of saving a small outlay, to make a sacrifice of the health and happiness of helpless children whom all men are bound to protect. The Legislature has prohibited under severe penalties the drawing of carts by dogs, and cannot therefore allow the more inhuman practice of drawing of carts by boys.

The examination of the children shows there is much more of drawing with girdle and chain, in the smaller pits in this district than what from the evidence of the managers of the large companies we should have supposed. The great cruelty of the system is, when there are no rails laid down in the road and which poor masters from a difficulty of finding capital are unwilling to provide, whilst rich companies most readily and cheerfully spare no expense which their own interest, as well as humanity towards the work people, prompt them to undergo.

A perusal of the evidence of the children will amply show the severe pain which this manner of working inflicts, yet they endure it with great fortitude and resignation. Nevertheless this is no reason why the same means which the humanity and good sense of the larger companies prompt them to adopt should not be adopted by all. That the work can never be accomplished without suffering, there is too much reason to fear, but no means should be spared to render it the east possible.

In the course of this inquiry I have not been able to find any instance where machinery was substituted in place of boys in drawing coals from the thin beds of the mines. Some engineers have thought such a thing practicable, and others not.

The following is an instance in which animal power was employed near Alfreton, in Derbyshire as stated in evidence by Mr. Joseph Tomlinson:-

> In Summercoats pit, formerly, when working in the hard coal, which was a bed 40 yards below the surface, we had a gateway about four feet high, sufficiently high for asses to drag the waggons on a railway and at the corner of the gateway at the side of the workings there was a wheel, around which went a rope, by which the waggons were drawn from the workings down to the gateway. The workings were only 2 feet 7 inches high. It was too little room for boys. We should never think of putting boys to such work: I should consider it inhuman. No such thing would be thought of in this part of the country. We found this mode quite convenient. We every morning shifted the frame in which the wheel was fixed, and the work went on very regularly. We got on fully as quick as when the men drove the carriages before them.

An empty carriage was drawn back by a boy without difficulty, and another lad led back the ass to the proper place. It was quite easy and comfortable.

The bed got so thin at last that it would be a loss to continue working. In fact, it was a loss at last. We have left off working this bed about a year. It was not until the bed got too thin for the smallest asses we could get that we took to this plan, and we kept to it till the bed got too thin to be worth working at all.

V - THE STATE OF THE PLACE OF WORK.

The state of the place of work has already been sufficiently explained in the description of the mines and the manner of working them. The ironstone mines have in general thicker beds than the coal-mines and are therefore, in many respects, more comfortable.

The mine, with all its disadvantages, is not a disagreeable place. When it was observed to the men at work in the farthest part of the Hill's Lane Pit, that it would make an excellent gaol as the prisoners could not by any means make their escape, one of the miners said, that he would greatly prefer dwelling there day and night, than going into Shrewsbury gaol; for by being in the mine he should have his liberty. Persons who have done actions not deemed very heinous by the miners have been known to take shelter in the mines, and there are few constables that would willingly go down after them.

The boys in the pit were lively, cheerful, and playful and seemed to consider their work to be no hardship. Mr. Jones, the ground-bailiff, stated, that he had two sons, who became negligent of their lessons at school and he proposed to take them into the mine to drive the horses. They seemed not to

dislike it; however, at the end of six weeks they very willingly went back to school and stuck to their books, as after all the easier employment of the two.

VI - ACCIDENTS.

Accidents are in this district very numerous. Mr. Webb, of Bankhouse, states, that he has had as many as 500 cases from accidents in one year (No.48). Another surgeon estimates the accidents from explosions brought for relief to the Union surgeons as being about 100 in a year.

The particulars of the deaths by violence for the year 1838 were obtained from the Registrar-General, and the results are subjoined.

DEATHS BY VIOLENCE.

The mode in which the registrars in this district have performed their duty is exceedingly defective. We have 19 cases of deaths by burning, but we cannot, in any one of them, tell the mode of burning, whether by clothes catching fire, or whether by explosion in mines, or any other mode. Many of them, no doubt, are attributable to the explosions, but it is kept entirely out of sight. In the same spirit 11 cases are merely entered as accidental but nothing is told of the nature of the accident, whether falling down a shaft of a mine, or crushed by the fall of coal, or of the roof. In the seven deaths entered as occurring in the coal-pits no explanation is given. All this is very different from the manner in which the registrars have done their duty in Staffordshire, and is very unsatisfactory.

There is only one case of death entered as taking place, by being 'sulphured,' that is killed by carburetted hydrogen gas, or explosive gas; but as 100 cases of injury from explosion annually come to the Union surgeons, there can be no doubt that several must come to the coroner.

Nearly the same remarks which were made about the deaths by violence in Staffordshire are applicable to this district also, and need not be repeated.

Deaths by Burning.	
Brosely, ages 3 and 11	2
Dawley, ages 2,3, 3, 3, 7, 13, 22, 35	8
Madeley, ages 3, 5, 8	3
Wellington ages 2, 3.5, 5	3
Wombridge, ages 4, 15, 42	3
	19
Deaths by Drowning	
Brosely ages 41, 45, 49	3
Dawley, ages 3, 27, 38, 43	4
Madeley,age9	1
Wellington, age 9	1
	9
Deaths called Accidental	
Brosely, age 4	1
Dawley, age 9	1
Madeley, ages 18, 20, 22, 33, 44, 51	6
Wombridge, age 10 and 13	2
	11
Deaths in a Coalpit.	
Dawley, ages 12, 17,18, 25	4
Wellington, ages 0, 14	2
Wombridge, age 30	1

	7
Deaths in a Stone-pit.	
Dawley, ages 25, 42	2
Wellington, age 32	1
	3
Deaths by Scalding.	
Dawley, ages 2 and 2	2
Death by a Turnstile.	
Wellington, age 4	1
Death by Explosive Gas.	
Dawley, age 11	1
Death at a Lime Rock.	
Madeley, age 44	1
Death by falling into a Coalpit.	
Wellington. age 10	1
Death by falling into a Stone-pit.	
Wellington, age 16	1

These casualties, arranged into three Classes - for children not exceeding 13, for young persons above 13 and not exceeding 18, and persons above 18, are as follows:-

	Not exceeding 13.	13, and not exceeding 18.	Above 18.
Clothes taking fire	65	2	14
Burning (5 ages not stated)	4	2	2
Scalding (3 ages not stated)	9	..	..
Drowning (2 ages not stated)	12	1	10
About the shafts of coal-pits	6	4	18
Falling of clod, coal, &c.	8	7	39
Other deaths in coal-pits	2	1	8
Explosion of gas	2	1	5
Suffocation from noxious gas	..	1	4
About ironstone-pits	1	4	6
Iron-works	3	..	7
Lime-works	2	1	4

VII - HOLIDAYS.

Mr John Anstice states that the boys on the average do not work above five days in the week (No.39).

The miners are not certain of constant employment. If there be a large stock of coals and ironstone on hand, they will not be allowed to have 11 or 12 days' work in the fortnight, until the quantity on hand be somewhat reduced. About Christmas last the miners belonging to the Lawley furnace, near Wellington, stated that there was then only nine days' work in the iron-mines, and 10 days' work in the coal mines in the fortnight. They work solely to supply the furnace and it is not the interest of the proprietors to have a disproportionate amount of capital lying unproductive, in coke and ironstone, of which there cannot for some time be any immediate need.

VIII - HIRING AND WAGES.

The boys who open doors are paid by the coal-masters. Those engaged in pushing dans, attending to the horses, and at the foot of the shaft, are paid by the charter-masters.

"Boys from six to seven may earn in the pits 6d. a-day. At nine they may earn 10d. to 1s., according to the work. About 12 a boy get is. 6d. to 1s. 8d. and some as much as 2s. a-day."-(Tranter, No.41.)

IX - TREATMENT AND CARE.

The treatment and care of the children and young persons, as far as the present system of the work will permit, seemed to be unobjectionable.

Mr. Joseph Prestwich, who resided long in the district, says of the treatment of the boys, "Respectable masters, like those of the is district, would not allow any cruelty to be exercised." (No.88).

Mr. Tranter says, "The company would not allow any men to beat the children, and there are very seldom any complaints." (No.41).

Mr. John Anstice says, "The boys are a lively, cheerful, and apparently healthy set of lads as are to be seen anywhere, and when they leave work they are frolicsome as boys coming home from school." (No.39).

Mr. Robert Bailey says, "The boys are lively, cheerful, and playful after their day's work. They are generally fond of the employment. In frosty weather, at the dinner-hour and after work, they are fond of going to slide on the ice." (No.43).

OF APPRENTICES.

The system of taking apprentices in the mines, and binding them to work until 21, if not totally unknown, is at any rate exceedingly rare; and witnesses who were examined on this point stated that they had never heard of such a thing. That apprenticeship is very rare is best of all proved from the fact that no applications are made for apprentices to the mines by any of the charter-masters of the district; but charter-masters do come from the county of Staffordshire, and it is grievous to think that pauper or orphan boys should be delivered into their hands, to be compelled, for their benefit, to work until 21 years of age. From the Madeley Union children have been so bound, under 10 years of age, but in the Wellington Union not until some years afterwards. Such is the evidence of the clerks of these Unions (Nos. 46 and 47). All the charter-masters in Shropshire, of whom inquiry was made, spoke of it with horror, and said it was as bad as the African Slave Trade.

Mr George Jones, the agent of the Wombridge collieries, gave evidence as follows:-

> "It was formerly the custom of the butties to take apprentices from distant parishes, by indenture for seven years, to work in collieries till 21 years of age. The lads were usually 13 or 14. It was unjust, as the youths for three or four years were full-grown men and were working for the benefit of butties, and getting nothing at all, except sometimes a small gratuity. It was no trifle at last, and I put a stop to it in our collieries. I am Dot aware that apprentices are taken at all into collieries in this county. I should consider it very wicked to allow it." (No.49).

X - OF THE PHYSICAL CONDITION OF THE CHILDREN.

In reporting on Staffordshire it has already been noticed that out of 1000 deaths occurring from July 1, 1838, to June 30, 1839, amongst the people of all ages in the mining district of Staffordshire, with the part of Worcester which is included within Staffordshire, and of Shropshire, there were 467 of children under three years of age. On inquiring of the medical men the cause of such mortality, not on of them seemed to be aware of it and the reason assigned for not knowing it was, that medical men are very seldom called in to children of that age.

The lady of a surgeon at Wellington attributed much of the sickness and mortality to want of

cleanliness and also to the children being frequently left by the mother in charge of a young girl, who perhaps had several to take care of, and consequently they were sometimes neglected. But there is another cause which probably operates more efficiently still and that is the administering of quack anodyne medicines.

Mr. Cooper, a surgeon, of Bilston, stated in his evidence respecting the children -

> The chief evil which they have to endure is, that when very young their mothers injure them by quackery, and give opiates, such as Godfrey's Cordial, which is a mixture of treacle and opium. Many deaths are caused by quack medicines. Medical men seldom see the children until they are benumbed and stupefied with opiates (No.3).

Mr. Matthew Webb, a surgeon, resident at Bankhouse, in the parish of Wellington, in Shropshire, says:-

> "Much injury is done to very young children by giving them spirits in their food, and anodyne quack medicines-Godfrey's Cordial, also Dalby's Carminative, which consists of magnesia, tincture of asafoetida, penny-royal water, and opium, and various other medicines into which opium enters. The children are frequently injured by not obtaining a supply of milk, which is scarce in the district in winter, and by being fed with scalded bread, coarse -brown sugar, and gin. The extreme sweetness injures the stomach, and takes away appetite. Sometimes the girls left in charge of children give them gin to keep them from crying". (No.48).

When the young children pass through such an ordeal as this, of opium and gin, it is no wonder that so many of them should die.

The children who have good natural constitutions, and little sickness or pain, will not cry much and will seldom have these popular medicines administered to them, and will of course pass unimpaired.

A few days after I spent an evening with scone scientific gentlemen, at the house of Mr. John Gray, at Dudley, and conversed on this subject. They told me that it was usual amongst the working people for nurses to give a teaspoonful of gin to a new-born child. To children a little older gin is often administered 'to break the wind off the stomach.' Godfrey's Cordial is known by the name of 'comfort,' and is an article in constant demand. A little girl will come to the chemist's, and ask for a dose of it to give to the baby next day, telling him that her mother is going out to wash. A respectable chemist of the town joined the party. He stated that he made twenty gallons of 'comfort' in the year and that there were chemists who lived nearer the market-place and more in the way of the country people, who made a great deal more.

It must not be supposed, however, that such medical treatment of children is peculiar to colliers, or only prevails in places far remote from the light of the metropolis for, on making inquiry of a medical man, and of a chemist at Croydon, in Surrey, the same things were found to exist there, and in the country around, though not nearly to such an extent as in the mining districts.

After such a thorough drafting off by the use of gin and opium, it is no wonder that the survivors should be a very healthy race, until they have arrived at that period of life when the constitution yields to the effects of severe labour, and the air of the mines. That the miners, men, and boys, are healthy, all the medical men assert. By the advice of Mr. Matthew Webb, of Bankhouse, and on the hill called Coal-pit Bank, I went to see the Sunday-school at the Methodist chapel, said to be 700 in number, and certainly a more healthy set of children could nowhere be seen. The boys were all substantially and decently clothed. On the female side of the school the girls, more particularly the elder ones and the teachers, understand how to show themselves off to the best advantage.

At the same time it must be admitted that the miners, as a body, are of small stature. This is stated in the evidence of Mr. Tranter (No. 41), and is a matter abundantly obvious even to a casual observer. There are many instances of men never exceeding the usual size of boys.

An ordeal which takes away the weak and leaves the strong has not only an influence on the existing generation, but also on generations to come.

This early mortality of the feeble has also a tendency to increase the number of marriages, as the parents are speedily relieved of that part of their offspring which would be most troublesome and expensive, whilst the strong grow up and, as has been shown, are soon able not only to gain their own

living, but to yield a surplus profit. A young miner, therefore, sees no terrors of poverty beset the path of matrimony, and speedily finds an associate who concurs with him in opinion.

The colliers do not perhaps speculate in this manner, but although these things enter not into their thoughts, they are fully capable of feeling the practical effect. They see that marriage is not a burden and instinct does the rest.

XII - OF THE MORAL CONDITION.

Having very fully gone into the subject of education in the neighbouring district of South Staffordshire, it becomes unnecessary to say much about the district of Colebrook Dale, both being so much alike. The children of the colliers go to work at a very early age, and must chiefly depend for what little education the they receive on the Sunday-schools, of which there is an abundant supply. One of the largest of these is held in a large Methodist chapel at Coal-pit Bank, at which from 500 to 700 attend, boys and girls, but have to come out before divine service commences, to make room for the congregation. They assemble again at two o'clock. They appeared as fine a set of children as anywhere we might expect to see.

Two or three day-schools were mentioned as existing in the district, but with an exceedingly small number of scholars.

There is an infant-school in the Dale, established and supported by Mrs. Darby and family, which I visited. The children appeared exceedingly happy which is the chief thing to be desired in an infant-school and in their examinations they manifested a knowledge of many things which it would be highly useful for grown persons to understand.

There is another school in the same place for gins more advanced in age, in which reading, writing, accounts, and sewing are taught, and seemingly taught well.

There is one good point in the conducting of these schools deserving imitation. No parents are ever asked to send their children to them. The branches of education, times of attendance, fees to be paid, are all settled, and parents are not led to believe that it is any benefit to the founders that they should send their children. The good to be obtained is placed within their reach, and they are left to guide themselves by a sense of their own interest and that of their children. This independent course is considered as having had the best effect.

The evidence of the collier children of this district will show that those who acquire a capacity to read do not in fact make use of that faculty in after-life. Unless some elementary knowledge be communicated to excite curiosity, and lay a foundation 0£ knowledge the experience of every district tends to show that merely learning to know the letters, and to pronounce syllables and words, does very little good.

The Rev. Thomas Ward, of Dawley, on this subject says:-

"Many do not learn to read or write before they leave school, and have no time to improve afterwards, being employed all day in the mines, or works, or on the pit-banks. There are a great number of the miners who are unable to read and very few can write. There are not sufficient for instruction of the children of the poor."

STATE OF FEELING BETWEEN THE EMPLOYERS OF LABOUR AND THE MEN.

In the South Staffordshire coal-field, and in the Shropshire or Coalbrook Dale coal-field, there is the very best feeling existing between all ranks of society. Proprietors, iron-masters, ground-bailiffs, charter-masters, and men in office of every rank, uniformly expressed kind and respectful sentiments towards the men. The statements which both parties gave of the wages and advantages entirely agreed.

This good understanding between the employers and the employed is productive of the happiest results to both parties.

Mr. Joseph Prestwich, jun. (No.38). who resided several summers in this district, says in his evidence, that he found the miners civil and well-behaved, which he attributes to the district not being - extensive, seven miles long by two broad, and a considerable number of gentry residing in it, by which means a degree of refinement and civilisation is kept up.

No doubt every person who visits Coalbrook Dale will leave it with an equally favourable

impression.

That the great companies are disposed to do whatever is right there is no reason to doubt. The managers of the Coalbrook Dale Company, and Madeley Wood Company, most readily showed their works, and gave instructions to their people to afford every information. Mr. Alfred Darby said that it was a very proper inquiry and that if they were doing any wrong it was right to point it out to them, that they might avoid doing so any longer. Mr. John Anstice, on the day following, in like manner, made a declaration to the same effect.

OF THE IRON-MINES.

Whilst in the Coalbrook Dale district the coal-mines have thin beds as compared with those of Staffordshire; on the other hand the iron-mines have generally thicker beds, and are consequently much more easily worked. In general the miner is able in the iron-mines to stand erect, or, at the most, only need stoop a little. A far less number of boys in proportion to the men is required below ground and altogether the persons employed about the iron-mines is not a third of number of those employed about the coal-mines.

The ironstone, known by the name of pennystone, is the most abundant ironstone in Shropshire. The measure in which it is contained is a clod or dark indurated clay, which in the pit, or some time after it is brought to the bank, is quite hard; but as it gradually imbibes moisture it becomes soft, and is a good material for bricks. There is a brick-field for bricks made of the clod of the pennystone measure within half a mile of the Iron Bridge. The pennystone is found in pieces like flat cakes, generally round and about the size of a man's hand but many are four or five times as large and consist of clay and iron in intimate combination. Some pieces are thicker and make an approach to a globular form. Some beds of the pennystone measure are sufficiently thick to make it expedient in working them first to take down the upper half and then the lower half and keep going forward at two levels, the one a little before the other. All those pieces of the clod which do not appear to have any pennystone in them are thrown behind, and are used to fill up the gob, that is to build into the space left empty by the working to support the roof and afford no room for hydrogen gas, which sometimes is troublesome in the iron-mines, though far less frequently than in the coal-mines.

The carriages or waggons containing the pennystone are drawn to the foot of the shaft and are then hoisted up by the steam-engine or gin, and afterwards pushed by men, or drawn by horses, along a railway to a part of the pit-bank, and emptied out. Here may be seen at all seasons of the year a number of young women and girls breaking up the pieces of clod and gathering out the pennystone and putting it on baskets as they are called but which are small vessels made of iron, when one of these is filled a girl, with the assistance of another girl, takes it upon her head, and carries it and empties out the ironstone into a large heap in a place by itself where it lies exposed to the sun and air.

In cold weather the young women and girls are clothed in warm flannel dresses and great coats like those of men, with handkerchiefs round their necks, with hats or bonnets on their heads and seem to be comfortably protected from the weather. They are always smiling, laughing, and singing and when observed at their work manifest a consciousness of how well they would appear if in better attire. The employment seems very healthy, being light and in the open air. It has been stated by one medical gentleman that the loads which they took upon their were too heavy for them and caused injury but if so that might easily be remedied by giving to the smaller girls baskets of a less size and, besides this, it is their own fault if they load them more than they find agreeable. Young women at this employment earn about 8s. a-week.

Crawstone ironstone is found in a bed considerably lower than the pennystone and consisting of a friable sandstone, in which the cakes of crawstone are embedded. It is brought upon the bank and afterwards separated from the measure by the young women in the same way as the pennystone.

Occasionally an old woman is seen on the bank working amongst the young ones.

An old miner, Mr. William Lloyd, who brought to me specimens from Madeley, stated that he considered that young women on the banks led a far happier life than servants in a gentleman's family and would make far better wives for miners. They had their own liberty after their day's work and on Sundays they might dress in the morning and go about where they pleased. They were not spoiled, like women in a gentleman's family, by seeing extravagance which a miner could not afford. Their notions of things agreed better with those of the miner and when they married they studied economy and if they had no families they would go out to the bank to work without a murmur. In all this it is very probable

that the old miner was right. Many of the young women who work on the banks in Shropshire come up to London in the month of May, and go for about three months into the service of the market-gardeners, being employed at first in weeding, and afterwards in carrying vegetables, strawberries, and other descriptions of fruit to market. They are reputed to be very economical, and to make a great deal of money, which they bring back with them into Shropshire.

OF THE STEERAWAY LIMESTONE MINES.

In an iron-smelting country, limestone is as necessary an article as coal and ironstone. When all the three are smelted in the furnace together, the limestone and clay and silex of the ironstone combine together and the iron being thus disengaged glides down to the bottom.

The Steeraway Limestone Mines are about a mile and a half from Wellington, on the side of a hill which flanks the celebrated Wrekin. About 100 men and 20 boys are employed. There is the usual apparatus of a mine the steam engine, the chain over the pulleys which goes down the shaft to bring up the carriages loaded with stone.

The depth down to the bottom of the shaft is about 120 feet, the lowest 45 feet of which are through the limestone stratum, which is worked.

The usual mode of working the lime-mines is to drive forward a level from the foot of the shaft a considerable distance and then to work backwards towards the shaft and all the limestone is cleared out, except the pillars left to support the roof. The pillars also are at last cleared away. They then go forward and open another shaft. The level must be worked so as to allow the water to run off, for there is always water in the mine and after long-continued heavy rain there is strong stream running along which finds its way into crevices of the rock, The limestone is got down by undermining and then boring a hole and exploding with gunpowder, when an immense mass will fall down at a time. There is always temptation to run risks and to undermine more than is prudent.

The bottom of the mine being only 120 feet from the surface and the being now several shafts, there is abundance of air and in winter the cold is sufficient to render a fire necessary. Ice is even formed at the foot of the shaft, which is very different from the coal-mines.

The Lilleshall Company are the lessees of the mine. They employ four charter-masters, paying a charter of 20d. a ton, and these charter-masters employ the men and boys. The company finds the drawing power, that is the steam engine and its accompanying apparatus, the engine-man, the machine-man at the mouth of the shaft and also the railway down in the mine. The charter-master arranges the work so that the men are paid in proportion to what they do. The men work in parties, sometimes two together, sometimes six. eight, or ten. The average earnings are from 16s. to 18s. a-week. At present, Christmas 1840, the men said that they had plenty of work and that they had not stood for work for these two years.

The employment of the boys is to fetch things to the men, go with tools to the blacksmith and to drive the horses from the workings to the foot of the shaft. Some go down as young as seven. A lad of 10 years of age gets about 10d. a-day and the older lads get more but they have not constant employment, as the stone can be carried off faster than the men can get it ready. A lad continues driving the horses until the men begin to jeer him, and then his ambition is to take his tools in hand, and play the man

The work commences at six in the morning. The men and boys take which they call their bait about 11, after which they work till four and then come up for the day. Occasionally they may work until five, or half-past five, but only seldom. The two witnesses examined, Mr. Robert Rennie and Mr. William Bennet, said that the work being hard the strength was exhausted by four and of what use could it be to remain below any longer.

The roof of the mine being 45 feet high, whenever anything falls from it the consequences are serious. Stones also fall down on the miners engaged in under mining; accordingly, men are constantly meeting with accidents, some slight, some severe. Mr. Rennie estimated that the deaths out of the 100 men employed were about two in the year. Mr. Bennet stated that formerly fatal accidents were very common but there had been no fatal accident for the last two years.

The first witness observed that a man who was killed in the mine might have been killed at the

same time if he had remained on the bank and the second witness expressed his strong conviction that He that is above orders all those things. Such is a very consolatory creed to a miner.

About four years ago three undergoers were crushed by a heap of stones of 20 tons weight, at one time. One of them was killed outright, - protruded from his body. Another called out that he was saved, but he died as soon as he was taken out. The third man recovered. There is a field-club to which the men contribute 8d. a-month, and the boys 4d.a-month. There is a surgeon on a salary, whose duty it is to attend to all cases arising from accidents or diseases from the work. The sick and wounded are also allowed 5s. a-week for the first twelve months if they continue to require it, and that money for other six months, when their claim on the club ceases. Mr. Bennet belonged to two other benefit clubs. He once had £10 in the savings bank but that was too great an effort of abstinence for him and he felt compelled to withdraw it.

Boys have medical attendance, and half the allowance of money received by the men. If the funds of the club should get low by an unusual number of accidents, the company liberally assists to enable to keep up the payments.

The limestone miner may justly consider that he has a favoured lot. Instead of working on his side in a space less than three feet between the floor and the roof, in a close air, he has plenty of room for his work and abundance of pure air to breathe and he can enjoy his pipe in the pit, which the witness, William Bennet, considered the only enjoyment left within the poor man's reach. Instead of toiling like the agricultural labourer for 11s. a-week and being at the call of his master every hour in the four-and-twenty, he comes up early in the afternoon, and sits down like a gentleman to his dinner after the business of the day and has his whole evening to himself to enjoy the company of a friend over his tobacco and beer It is the danger which secures these advantages and he gets the reward of his valour.

Some of the limestone-miners will occasionally make an arrangement with charter-master, and go down to the mine at six o'clock on Sunday evenings, and work all night in order to get money and to have time to spend at their pleasure on the Monday all day. The witness, Mr. Robert Rennie, a Scotchman, was on one occasion tempted to go down to this Sabbath-breaking work but when he looked up, and saw the stones in the roof, as he supposed, ready to fall on him, and thought what must become of him if he should be killed when so employed and also thought of the pious instructions of his father and mother and minister in his he felt himself totally unable to work and got up the shaft as soon as he could and never since has ventured into such a scene of danger on the Sabbath.

There is a long tunnel, which descends by a gentle incline, by which the horses are introduced in the morning and go up every night of themselves as soon as they are ungeared One of the witnesses, Mr. William Bennet, when a boy, drove a Welsh pony which has an acute ear, and when he heard the least noise of a stone he would observe, and jump out of the way.

OF THE WENLOCK QUARRIES.

There is a range of hills extending for several miles, which, however, rises only for about 100 feet above the level of the surrounding country. The rock is limestone and the pieces are from two to six inches broad, lying parallel over each other horizontally, or a little inclined. A great part of the limestone consumed in the furnaces of the southern portion of the Coalbrook Dale district is brought this ridge. The stone is taken from open quarries of from 15 to 20 feet in height. There is some danger in the work from accidents and accordingly the wages are from 14s. to 15s. a-week, being a little above agricultural labour. There is not always employment. The work is too laborious for boys and therefore was soon found to be beyond the objects of the present Commission.

IRON-WORKS IN SOUTH STAFFORDSHIRE AND SHROPSHIRE.

The quantity of pig-iron made in 1839 in South Staffordshire is estimated 346,213.25 tons and in Shropshire at 80,940 tons, being about a third of the whole quantity made in the United Kingdom. The materials used are coals, ironstone, and limestone.

Of the modes of obtaining these three I have already reported, and I now attempt to describe the manner in which they are employed. The coal, if intend for the cold-blast furnaces, has first to be made into coke; the ironstone has to roasted or calcined, and the limestone has to be broken into pieces of small size and then the three are from time to time, during the day and night, to be thrown in definite proportions into the blast-furnace. The preliminary Operations coking the coal and of calcining the iron are first to be described.

OF MAKING COKE.

Coal is burnt into coke in large heaps in the open field, in the neighbourhood of the iron furnaces where it is to be used. The pieces are placed side by side, with only a sharp corner touching the ground, so as to let in the air beneath them. Other pieces of coal are placed above the ground layer, and the heap is built up until it is three, four, or five feet high.

In Staffordshire the heaps of coal burnt into coke usually are each a single boat load of about 21 tons. A little turret of bricks, hollow in the middle, two feet diameter and the bricks with interstices between them, is erected from three to five feet high. This is often called a tunnel and is supposed to be a corruption from funnel. Around this tunnel, since so it is called, the coals are heaped up and then the slack and coke dust around is watered and spread over the whole, an the heaps, in size and form, look not unlike the harrows on the downs of Dorsetshire.

Fire is set to the heaps and at the end of four days the coke is thought I he sufficiently burnt and water is poured upon it to extinguish the fire very nearly. The water carries off the sulphur in its vapour, and the coke is considered read for use.

The practice of watering coke is said to have been 25 years in use in South Staffordshire, but only of late introduction into Shropshire.

The men engaged in burning coke at the Broadwater furnaces said that they had known heaps in the northern part of the county of Stafford from six to ten times as large as a boat-load, which had been allowed to burn till extinguished of themselves, and that the time was 14 days.

The large pieces of coal at this place were taken to the hot-blast furnace in a raw state and the smaller coal was taken to make coke.

In Shropshire the heaps of coal are usually less than in Staffordshire, and are about 13 or 14 tons. There is a tunnel as in Staffordshire and sometimes iron pipes communicate air from the outside The coal burns 10 to 12 days, until there be only a light blue lambent flame, when the heap is gradually covered in by we dust, the top part last.

In preparing the heaps for being burnt, women, girls, boys, and young persons are employed. The work is wholesome, being carried on in the open air, and it is not laborious.

The same persons are employed in filling the boxes or harrows with coke to be carried and thrown into the furnace.

Sometimes as many as seven or eight, and sometimes 12 or 15, heaps of coal are seen blazing in the vicinity of the furnaces. The appearance in the day time is not very remarkable but at night the blaze is resplendent afar off and illuminates the sky so as to be seen at the distance of many miles.

Night views in Staffordshire and Coalbrook Dale are frequently equal, both on the ground and in the sky, to Vesuvius in an ordinary eruption.

OF CALCINING THE IRONSTONE.

The ironstone in Staffordshire and Coalbrook Dale is argillaceous. In some pits it is in bands, one, two, or three inches thick, with measures of indurated clay, perhaps several feet thick, between, and in other pits it is in boulders distributed through a bed of indurated clay, or of clay and sand. Young women and young girls on the bank clean the boulders from the dirt which is brought with them from the pit.

The boulders are of various sizes, some not larger than a small apple, many as large as a man's fist, and some as large as many hundred-weight. The usual form is that of a flattened spheroid.

The ironstone after it is got up out of the pits is laid in heaps exposed to the sun and air, the effect of which is that much of the water contained in it is evaporated. Before calcination the larger boulders ought to be broken into pieces about the size of a man's fist, the object being to have all pieces

of as nearly as possible one size, so as to be burnt alike in the fire. The pieces are however often very unequal in size. The ironstone is burnt on the ground like the coke. A layer of coals of several inches in height is laid down with the points touching the ground, so as to admit the air below. A layer of ironstone is placed above the coals, then a layer of coals, then a layer of ironstone, and so on till the heap getting narrower and narrower with every layer terminates in a point, after which small coal is spread over the whole, and fire is introduced at the bottom. The fire gradually spreads along the ground and penetrates upwards through the whole heap, and lambent flames are seen issuing through between the pieces of the ironstone. In 10 or 12 days the operation may be completed and the ironstone being cooled is ready for the furnace. It is often however kept heated much longer.

The effects of calcining are:-

(1) To drive off the remaining water in the ironstone, which would materially diminish the quantity of iron produced in the furnace and injure its quality.

(2) To drive off also the sulphur contained in the ironstone, which would injure the quality of the iron.

(83 To drive off also the carbonic acid, in the same manner as the carbonic acid is driven off from chalk or limestone when burnt into lime. It is from the expulsion of the carbonic acid that the calcined ironstone weighs much less than ironstone before it is burnt, precisely as in the case of limestone and chalk.

If the fire were to be continued too long, the ironstone, as all metals similarly treated, would begin to imbibe oxygen, and its quality would be injured thereby.

Children and young persons are employed in laying the heaps of ironstone and coals preparatory to burning. Boys and girls are also employed in filling boxes and barrows with ironstone after it is burnt and in riddling the smaller fragments the dust and ashes mixed up with it. There are always grown men along with them to see that the work is properly performed.

These operations are conducted in the open air, and are not laborious if not too long continued.

OF THE BLAST FURNACES.

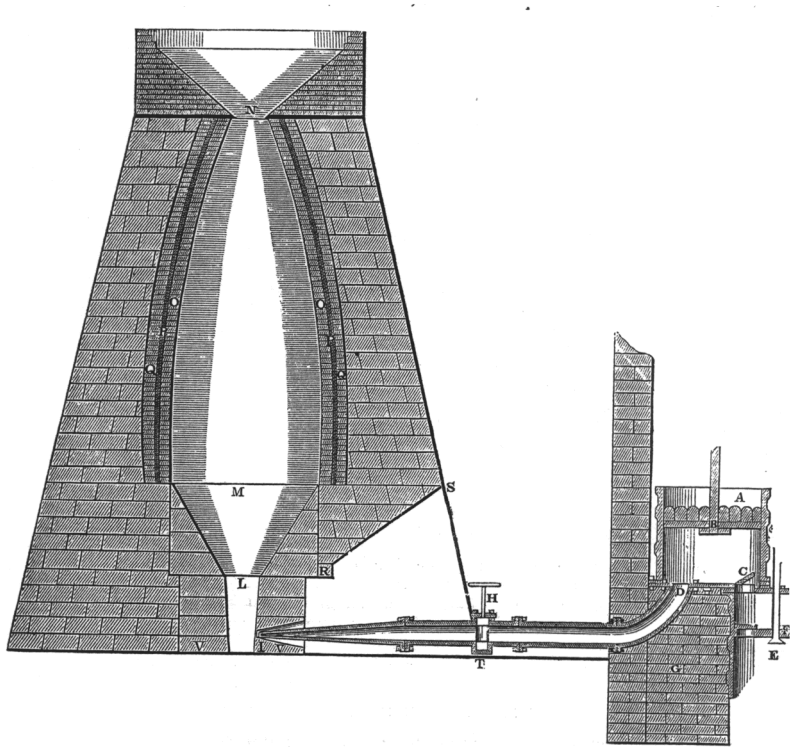
I shall endeavour to give a brief description of the blast-furnace just sufficient to assist in understanding the operations.

Externally the blast-furnace generally resembles a round tower, or it is square at the bottom and the upper part round but sometimes it is square altogether, but whether round or square the internal construction is the same. On the top is a roof which externally is flat and from the centre of it rises a cylindrical structure which serves as a chimney, about from 20 to 25 feet high On the side of the cylindrical structure is an opening called the filling place, into which the coke, ironstone, and limestone are thrown. In many furnaces the external wall round the top 15 raised 10 or 15 feet higher than the floor, sufficiently. so to protect the people employed from the cutting blasts of the wind, which would he the more severely felt in cold weather from the extreme heat of the furnace to which they are exposed. In some furnaces the top has an. iron rail surrounding it, and there is no shelter from the wind.

In Staffordshire where the ground is level the blast-furnaces rise like the towers of an ancient castle and the ascent to the top is by an inclined plane, and sometimes the materials and the fillers are hoisted directly upwards by the force of the steam-engine by ropes passing over a pulley at the top.

In Shropshire advantage is. often taken of the difference of level of the ground and the furnaces are built on low ground and their top is nearly about a level with the rising ground near them, so that the coke hearths, ironstone hearths and heaps of limestone, are on a level with the filling place and materials may be wheeled to the furnace without any ascent. Such is the case in other iron districts when the ground will permit.

To explain the internal structure of the blast-furnace I shall give a figure from the valuable work of Mushet on Iron and Steel, representing the blast-furnace with part of the blowing machine, and his letterpress description of the same.



A, the regulating cylinder, eight feet diameter and eight feet high. B the floating piston loaded with weights proportionate to the power of the machine. C the valve by which the air is passed from the pumping-cylinder into the regulator, its length 26 inches, and breadth 11 inches. D the aperture by which the blast is forced into the furnace; diameter of this range of pipes 18 inches. The wider these pipes can with convenience be used the less is the friction, and the more powerful are the effects of the blast. E the blowing or pumping-cylinder six feet diameter, nine feet high; travel of the piston in this cylinder from five to seven feet per stroke. F the blowing piston and a view of one of the valves, of which there are sometimes two and sometimes four distributed over the surface of the piston. The area of each is proportioned to the number of valves, commonly they are 12 by 16 inches. G a pile of solid stone building on which the regulating cylinder rests, and to which the flanch and tilts of the blowing-cylinder are attached. H the safety-valve or cock, by the simple turning of which the blast may be admitted to or shut off from the furnace and passed off to a collateral tube on the opposite side. I the tuyere by which the blast enters the furnace. The end of the tapered pipe which approaches the tuyere receives small pipes of various diameters from two to three inches, called nose-pipes. These are applied at pleasure, and as the strength and velocity of the blast may require. K the bottom of the hearth two feet square. L the top of the hearth two feet six inches square. K L the height of the hearth six feet six inches. L is also the bottom of the boshes, which here terminate of the same size as the top of the hearth, only the former are round and the latter square. M the top of the boshes 12 feet diameter and eight feet of perpendicular height. N the top of the furnace at which the materials are charged, commonly three feet diameter. M N the internal cavity of the furnace, from the top of the boshes upwards, 30 feet high. N K total height of the internal parts of the furnace 44.5 feet. 0 0 the lining. This is done in the nicest manner with fire-bricks, made on purpose, 13 inches long and three inches thick. P P a vacancy which is left all round the outside of the first lining three inches broad, and which is beat full of coke dust. This space is allowed for an expansion which might take place in consequence of the swelling of the materials by heat when descending to the bottom of the furnace. Q Q the second lining similar to the first. R a cast-iron lintel on which the bottom of the arch is supported. R S the rise of the arch. S T height of the arch on the outside 14 feet and 18 feet wide. V V the extremes of the hearth 10 feet square. This and the bosh-stones are always made from a coarse, gritted freestone whose fracture presents large rounded grains of quartz connected by means of a cement less pure.

This furnace is 38 feet across at the bottom, in height 55 feet.

Mr. Mushet observes that when he composed his description of the blast-furnace above given

this was considered as of very great capacity.

But since that period the blast-furnace has been increased both in height and contents, particularly in South Wales. So great has been the alteration in these respects, that those now used are two or three times the capacity of that described in the text.
The most advantageous maximum of capacity varies at different works. In South Wales that which is most approved is from 15 to 18 feet in diameter at the boshes or widest place and half this diameter at the top or filling-place. The largest blast-furnaces in South Wales, or perhaps in the world are those at the Plymouth iron-works at Duffryn near Merthyr, 18 feet diameter in the boshes and 9 or 10 feet at the top or filling-place, the height 40 feet. So that their capacity is equal to at least 7000 cubical feet, and when at work each must contain at least 150 tons of ignited materials for iron-smelting.

There are of these enormous furnaces three in number, into which are discharged per minute at least 20,000 feet of atmospheric air, under a pressure of 1.5 lb.. to the square inch.

The furnaces in Staffordshire, Shropshire and other parts of England, seldom exceed in their widest parts 13 or 14 feet diameter, and from one-fourth to one-third this diameter at the mouth or filling-place.

The grand moving cause of all is the air apparatus, which is worked by the steam-engine and which makes a noise which is heard afar off. The piston-rod pushes the piston F down to the bottom of the blowing-cylinder E and whilst it is doing so the two valves are forced open, and air passes above the piston. Then the piston is drawn up and the valves shut immediately from the pressure of the air above them. The air thus confined is brought into smaller space and by its pressure forces open the valve at C, and as the piston rises all rushes into vessel A; and also as piston F begins to descend, the valve C is shut close by the force of the air in vessel A. The heavy weights upon piston B now press it down and force the air through the opening D and along the pipe with great violence into the furnace, with a constant and unintermitting stream. The air in the furnaces becomes very much heated, and passes up with great force through the materials in the furnace, which by the great heat are gradually melted, and slowly subside downwards, whilst fresh materials are put on at the top. About 36 hours is the time that it takes for a charge put on at the top to get down to the hearth.

Instead of the vessel A, commonly called the regulator, just described, several furnaces now have a large vessel called a reservoir. The reservoir is formed of plates of wrought iron and is of the form of a cylinder and rounded at each end. The usual length may be about 20 feet and the width 8 feet. The air is forced into the reservoir precisely in the same way as into the vessel A and from the reservoir it passes in a continuous and powerful stream into the blast-furnace.

The diagram shows only one air-blast proceeding into the furnace, but in practice there is also a blast from the other side, and generally also a blast from the back of the furnace. In front of the furnace is the place where the melted metal is let out and there is a roof overhead to shelter the men engaged in the operation of casting and that place is called the casting-house.

The hot-blast has been introduced with effect into Staffordshire and Shropshire. The general principle is that, instead of forcing into the blast-furnace air at the temperature of the atmosphere, by this contrivance of the hot-blast air is forced in which has previously been raised to a high temperature, from 600 to 700 degrees Fahrenheit. To effect this the air is made to pass through air-tubes of heated iron before arriving at the furnace. Close to the furnace a building is erected, in which are the tubes of iron which are kept heated by a great fires and through these tubes the air is made to pass. In practice the air is thought to be hot enough when a jet from it striking against a piece of lead will melt it, and cause to fall in drops.

The effect of this invention on the iron trade has been very great. The operations of the furnace go on more rapidly; a greater quantity of iron is made from the ironstone, and there is a great saving in fuel and limestone. Also raw coals may be used instead of coke which is a great saving of expense. Materials formerly of little use are now found to answer.

In Staffordshire some hot-blast iron-furnaces are wrought with raw coal only, but in other furnaces a mixture of two parts raw coal and one part coke is preferred. At the Wombridge furnaces in Shropshire the proportion is half coal and half coke, but even this is a great advantage.

Not only is the iron produced by the hot-blast less expensive, but for some purposes it is more useful, for instance fine castings that is, for articles made by cast-iron on the surface of which are fine and delicate figures. The hot-blast iron when poured into the moulds will enter into every line, however fine, almost like a Daguerreotype engraving.

There are other purposes for which stronger iron is better adapted, chiefly the articles made by passing the wrought iron through the rolls.

In the districts of Staffordshire and Shropshire about one-third of the furnaces are blown by the hot-blast and two-thirds by the cold-blast.

That part of a furnace which first requires to be repaired is the hearth, or the lower part of the interior into which the iron glides down from the melted materials. This hearth is made of sandstone, which resists much heat. In Staffordshire the most noted quarries are at Gornal, about two miles from Dudley, on the west side of the road to Sedgeley and belong to the geological formation called the millstone grit.

A furnace may need to be renewed in four years, and sometimes it may last seven or eight years. As the furnace must be blown out when the hearth is to be repaired and this is attended with great expense, of course the furnace is kept going on without repair as long as possible.

When a new furnace has been built it takes a considerable time, and occasions a great expense of fuel and labour, to dry it thoroughly and afterwards to heat it; and then gradually to charge it with materials, ironstone, limestone, and coke or coal, so as to bring it into a fit and proper state for the making of iron.

So also, when an old furnace which has been blown out is again blown in, there is nearly the same loss of time and expense.

. Likewise when it is intended to discontinue a furnace they must blow it out, as it is called. It would not do merely to cease blowing the blast, for then the melted and half-melted materials would all vitrify into one solid mass and would also adhere to the sides of the furnace, so that it would be impossible ever to clear the furnace, and the whole must come down. Hence it becomes necessary to keep putting on fuel and keep blowing until all the material has descended in a melted state to the bottom, and has been let off.

From these circumstances it results that when a furnace is once lighted it must be kept on day and night and on Sundays as well as other days, with the exception of a few hours in the week in the case of some. furnaces and in the case of other furnaces with no exception at all, month after month, and year after year, unless it become imperatively necessary to discontinue working in order to repair the furnace, or unless the demand for iron be so small that the iron-master is obliged to make a sacrifice and blow out his furnace, rather than accumulate a stock of iron for which he cannot obtain the cost of making.

This state of things, this perpetual and never-ceasing work, affects the physical and moral condition of the grown men, the young persons and children employed about the furnace, and this subject deserves particular attention.

Let us suppose then that the furnace is in full operation, and charged with materials in a good condition, a set of hands, men, young people, and boys, come to work at six in the morning, and a set of men, young persons, and boys leave, and go home to bed. The boys are employed in filling coke into baskets or barrows and ironstone and limestone into what are called boxes, though a stranger would be apt to call them baskets. The young persons and the men convey these to the filling-place at the top of the furnace. A certain proportion of each of the three is to be thrown on, according to the orders which from time to time they receive, and to ascertain what is the proper quantity an acquaintance with coal and limestone of the district is necessary. A skilful and trustworthy person must see that the proper proportions are observed, and there are machines for weighing the ironstone and the limestone. As to coal or the coke the eye is sufficient, and the boxes or barrows are not weighed.

There are generally two furnaces together, sometimes three, and when the people have put the charge into one furnace, they go on to put a charge into the next. There are never many minutes to rest, but occasionally time may be got to snatch something to eat and drink. Thus they go on all day, until after four or five in the afternoon and at that time the furnace is usually quite full. The boys and young persons then are allowed to go home, and the blast is stopped for a time, until the melted iron and the cinder be let off.

. At the end of more than ten hours, that is, between four and five, and sometimes a little later, a hole is bored in the sand and clay at the bottom of the hearth, and out flows the liquid iron, and runs into a broad mould prepared for it m sand on the floor in front of the hearth, and from which mould it also flows into a number of small moulds on the one side. The long broad piece and the side pieces are called the sow and pigs.

In conformity with this expression the iron is called pig-iron. It is also called crude-iron, being iron in its crudest form after it first proceeds from the blast furnace. Sand is sprinkled over the pig-iron

to prevent its cooling too rapidly which would injure its quality.

After the iron is let off, then the cinder, or liquid mass, composed of the clay and lime with silex and a portion of iron, is also let off. It flows out just in the same manner as iron, but is very different on cooling. It flows round a piece of iron by which it is held fast as soon as it has cooled and by means of a crane pulling a chain which is attached to this piece of iron, the whole mass is hoisted on a waggon, by which it is carried off from the furnace to the further part of the cinder hill If it be intended to use it as road materials, water is thrown on it before it has quite cooled and it readily breaks up into pieces: a heavy shower rain will have the same effect upon it.

The cinder has to be let off several times in the course of the 12 hours, generally every hour and a half or every two hours. In other furnaces it is allowed to keep continually running off. The furnace-master, who superintends the operations, observes from time to time the appearance of the melted cinder and from it he is able to tell in what condition the furnace is and gives his orders accordingly, as to the proportion of the several materials.

Thus end the labours of the day, and the night set come on, and the men, young persons, and boys are relieved for 12 hours.

The men, young persons, and boys, who come to work at six in the afternoon, are employed for the next 12 hours just in the same way as their predecessors.

From time to time the cinder is tapped off; and towards the end of the 12 hours the furnace is tapped, in the same manner as on the preceding afternoon, the melted iron is let off, and forms the sow and pigs, and all the cinder in the hearth let off also.

The day-set then come on, and the night-set go home.

Thus the two sets go on performing exactly the same operations, the one set in the daytime and the other set at night.

Every week there is a change, and the day-set takes to working at night and the night-set now takes to working during the day. The change is effected in the following way:- The set which is at work during the day on the Sunday is not relieved at six o'clock in the afternoon but has to continue on working all night, till six o'clock on the Monday morning; this is what is called the double-turn. Then on Monday morning at six the other set comes to their relief and works during the day. The double-turn, when the men, young persons, and children work the whole of the 24 hours, is necessarily very exhausting, and cannot but be injurious to the constitution. It is by this mode that one set works the one week during the day and the other week during the night.

Happily many iron-masters have become of opinion that they may allow their blast-furnaces to stand for several hours on the Sunday and where that is the case, the set whose turn it is to work for the week during the night, is not required to come on at six o'clock on Sunday morning, and to work for 24 hours continuously on the first day of their night-turn; and this diminution of the time to l2, or even to 17 or 18 hours, is a great relief. The subject of the iron-furnaces standing on Sundays is of so great importance as to require a separate notice, which shall give at the conclusion of this Report.

OF MOULDING AND CASTING.

The pig-iron produced by the blast-furnace, as has been described, is found to be of various qualities, and some qualities are more adapted for one kind of the quantity of carbon which has entered into combination with the iron during the process of the smelting in the blast-furnace. The iron called No.1 in commerce is a highly carbonated iron and is the most fusible of all and most fluid when melted and therefore the best adapted for fine castings, giving a smooth surface and filling up the finest parts of the figure moulded. The pig-iron, called No.2 is less fluid when melted, but is better for articles requiring strength and The pig-iron, No.3, is used for castings where very great strength is required but it may also be made into bar-iron.

In order to be made into articles of cast-iron the pig-iron has to be melted a second time. Moulds, being in form of the articles to be cast, are made of a mixture of sand and clay in boxes, which are laid on the floor of the foundry. When the iron is melted in a furnace it is let out into large pans and it is carried and poured into the moulds and left to cool. The employment of boys in foundries is to assist the moulder in making his moulds and to be about him and bring him what articles he may require.

There is a great deal of cast-iron work made from the iron directly as it comes from the blast furnace, such as water-pipes, rails for tramways about the pits, broad flat pieces of iron for the flooring

in front of iron-furnaces, and for the flooring of iron-works and in general articles of a bulky and coarse description. The labour is greater for these bulky things, but the principle is the same as casting from iron which is somewhat refined from being melted a second time.

ON THE REFINING OF IRON.

The refinery, or refining furnace, is generally small, being about three feet square at the base in the inside; the bottom is of hearth-brick, and the front, back, and sides are of cast-iron made hollow, so as to allow the passage of a constant stream of water flowing through them. This is done to enable to resist the heat of the iron. There are holes in the sides, through which blasts of air, in the same way as in the blast-furnace, are admitted. The pig-iron is laid in the refinery with the coke, and blasts of air passing through, the flames are dashed against it and the iron is speedily melted, and in about two hours or less the melted metal is ready to be let run off into a mould. In the process of refining, a certain portion of the worst parts of the iron is left behind and the chemical change is effected by a separation of part of the carbon united to the pig-iron.

Boys are incapable, from want of physical strength, of being employed in this part of the work, excepting in bringing and putting on the coke.

After the iron has run off into the mould, and has remained some time to cool, it is broken up into pieces of a manageable size.

Much less iron is now melted in the refinery than was formerly the case, as a way has been found out of converting pig-iron into malleable iron without refining, which for many purposes answers exceedingly well, and is more economical.

ON MALLEABLE OR WROUGHT IRON.

There are several kinds of pig-iron which are unfit for casting, but which undergo other processes in order to be made into malleable or wrought iron. There are also some kinds of pig-iron which, though fit for some kinds of castings, are also fit to be made advantageously into malleable or wrought iron. The iron, after it has been rendered malleable, is not brittle like the pig-iron and it is so ductile as to be drawn out to considerable length, of which the most remarkable instances are seen in wire. It may be welded; that is, two or more pieces being heated may be hammered together into one. It is the iron which we see in ordinary use in the hands of blacksmiths.

In order to be converted into malleable iron, pig-iron has to be puddled in a puddling-furnace and then beat under the forge-hammer and passed through rolls or hollows in two iron cylinders round near to each other and by them forced into long bars; it has then to be cut into pieces by a great pair of shears and the pieces are laid over each other and are heated in a furnace and again made to pass between the rolls, by which it is forced into the shape intended. These several processes are one by one to be described.

OF PUDDLING IRON.

Either the pig-iron or the iron which has run off from the refinery may be easily broken up into pieces of manageable size, and the next process which it has to undergo is called puddling. The iron is put in a furnace, the fire being at one end, and a chimney of sufficient height to make a strong draught at the other. The flames raised by the draught are drawn upon the iron and pass on, and the heated air goes up the chimney.

In some iron-works each puddling furnace has a chimney to itself, and 20 or 30, or more, such chimneys may be seen; but in other iron-works the air from all the puddling chimneys is conveyed to one very lofty chimney, which, rising high into the air produces a very strong draught. In about half an hour or less the iron be comes soft, and then has to be beat, and it becomes fluid, and it is kept so, and it soon begins to boil as if undergoing fermentation. The puddler now has to stir it with iron rods, of which he has several by him, and the heat of the rod in his hand gives him warning to put that one down and take another. The puddler brings one part of the iron after another under the action of the flames After a time the boiling and fermentation cease, and the iron becomes thick and adhesive. The puddler

now divides it into parts, and rolls each part separately until it has acquired something like the form of a ball, when the pieces are taken out one after the other be subjected to the action of the great forge-hammer.

Boys are not employed, but the puddler has a young person about him to hand him rods, or render other service if required.

The work of the assistant-puddler is well described by two of the witnesses, ,Mr. Joseph Harrison, No.25, and Mr. James Simcock, No.26. After the iron, 4cwt. in quantity, has been in the furnace a quarter of an hour, it becomes soft from the flame drawn upon it and the assistant-puddler has to break it, or to tear it to pieces. When the iron begins to boil the master-puddler takes the work in hand and works till he is tired and then the assistant takes to it for a short time whilst the master rests himself and then he takes to it again and completes the heat

There are two sets of hands employed at puddling and at the forge-hammer, under which the puddle-balls are placed and at the puddling-rolls through which the iron is drawn after coming from the forge-hammer. The one set works by day and the other set at night and they take it alternately week and week about. When everything goes on properly, the time of changing the sets is six o'clock in the morning an six at night; but sometimes the six heats will occupy a longer time than 12 hours, and the succeeding set cannot begin till the other has left, but they try to get back into the regular time as soon as they can. The work at night is pleasanter than during the day, as it is not so hot. The puddle-furnaces, the forge-hammer and the puddle-rolls, are kept employed day and night, on account of the great labour and expense of fuel in heating the furnaces after they are allowed to cool, in order to bring them into a fit state to work. The capital invested in the buildings and the machinery being employed day and night, yields a better return.

These operations are all suspended on the Sundays, from the completion of the last turn on the Saturday until Monday morning. When there is a great demand for iron, the turns are so arranged that the last for the week terminates on Saturday night at 11 or 12; but more frequently the turn is over at 5 or 6 in the afternoon, and on Monday they do not commence until about 6 in the afternoon; the only work meanwhile being to keep up the fire of the engine, so as to enable them to begin the work when the proper time arrives and also warming the furnaces a few hours before the work commences. Unfortunately for all parties, when there 18 little demand, the works are suspended for a still longer time.

FORGING THE IRON.

The iron being made into ill-shaped masses, called balls, as just described, a ball is taken from the puddling-furnace, by means of a rod of iron, with a sort of hook at its end and is then laid down to be forged, which is a process effected either by squeezing it most forcibly between huge pieces of iron, worked by the steam-engine, and called the squeezers, or subjecting it to the blows of huge masses of iron, which are called the forge-hammers. By these instruments the ill-shaped mass is pressed or hammered; the cinder mixed up with the pure iron is driven off; and is thrown in a shower many yards off and the whole ends in the formation of a piece of iron, much in the form of a brick, but from four to six times as large. The squeezers do not act so powerfully as the forge-hammer, and less cinder is forced off; but the iron which has been squeezed, when it afterwards passes between the rolls, gives off more cinder than the iron which has been under the blows of the forge-hammer.

No boys are employed in this work, but there are a few young persons under 18.

Immediately, and before they have had time to cool, these brick-shaped pieces of iron are passed between the puddle-rolls and are forced out at last into bars, when they are allowed to cool.

Sometimes when the rolls are not in order, the brick-shaped masses cannot at once be passed through the rolls, but must be left to cool and when it so happens they must be heated again and then made into bars.

PUDDLE ROLLS.

The iron having been formed into a brick-like piece, as already noticed, it is taken out and placed so as to pass between two huge cylinders, in which, however, are grooves, something in shape to the mass itself, so that when they revolve the iron passes through them, and is squeezed into a longer form.

A boy on the side opposite to the workman lays hold with the tongs of the end of the iron, as it comes out and places the end which came out last against the upper cylinder and the motion of this cylinder carries it back again to the side where the workman, called the roller, stands. This man then places the piece in the next groove and, as it is passed through it, the piece is still further elongated and another boy now lifts the end which last came through and lays it against the upper part of the cylinder and it is carried back to the workman, who passes it in a third groove and it is now still more elongated and by a similar process it is elongate a fourth time. The iron is now a bar, though a thick one. On a line with the two cylinders already mentioned, or in some part of the building near to them, are two other cylinders, but the grooves in the lower cylinder are flat and broad, such as a bar may be laid upon; there is a corresponding flat piece of iron in the upper cylinder to press upon it. The bar is now under the care of a second workman, who places it in the groove, and it passes through and is elongated, and is sent back by two boys taking it and placing its end on the upper cylinder. It thus goes on through successive operations, becoming longer and more slender, until at last it is 10 or 12 feet long, and at the last operation it is attended to by a man who takes it by the first end with a pair of tongs, and drags it to a little distance, where it is laid along at its length on what might be supposed to be a long board, but it is a large flat piece of iron. Boys now stand by the bar and every now and then strike it with mallets of wood as it cools. This is done to keep the bar straight.

This seems to be the most laborious work of the boys in the iron-works and as it is obvious that there is no physical difficulty in employing men, the only reason for employing boys is economy, as the boys are just as useful as men could be at this work. It may be noticed that the least boy stands opposite to the mass of iron when it first comes through the cylinders and it is shortest. Gradually as the bar is elongated it requires more management and boys are of increased size. It is fatiguing work.

The usual method, until lately, was to puddle only the refined iron, or that which had been smelted first in the blast furnace, and then again in the refining furnace. Of late years a practice has been introduced of puddling a mixture of pig-iron from the blast-furnace and of refined iron, in Staffordshire called Plate, from the refining furnace. This is a more economical mode, as there is a saving of the expense of refining the pig4ron, and also of the loss of metal always occasioned by that process.

But there is a more economical mode still, and that is to puddle the pig-iron by itself, without any refined iron. This avoids the loss or diminution of material which uniformly takes place in refining, say l2.5 per cent., and also the expense of refining and altogether will make a difference of nearly two pounds per ton. It is true that the iron so manufactured will not be quite so good, and may lose something more in passing through the rolls, but altogether there is great economy in this method, and for most purposes the iron answers abundantly well.

For some purposes the iron made by first refining and then puddling must employed.

ROLLING MILLS.

The iron, having undergone so many operations, having been smelted from the iron-stone, having been refined in the refinery, having been puddled in the puddling-furnace, forged under the great forge-hammer and drawn through die-rolls, might be supposed now to have been brought to a perfect state of manufacture. But it is not so: there is still another process before the iron is in a state fit for sale and common use.

The puddle-bars are taken and cut into pieces of equal length by great shears made of hard steel and moved by the steam-engine; and this is done apparently with as much ease as if it were cutting paper. Several of these pieces are then placed one above the other, sometimes four or five, sometimes as many as seven or eight and these piles are placed in a furnace called a balling-furnace, very similar to the to the puddling-furnace and are there heated by a hot blast driven against them just sufficiently for the iron to become soft, so as to be capable of being welded, or made to unite together, but not to become fluid. These piles are taken from the furnace and made to pass between rolls just in the same manner as the puddle-rolls, the enclosed space between the rolls becoming smaller and smaller until at last the bar is drawn out to the length and size which is intended, it is now finished wrought iron. But it is not merely common bars of iron are so made. There is a very great variety of form, such as round rods, square and flat bars. There are rolls through which the iron passes and is made rails for a railway and there are small bars or rods for making nails. There are rolls through which the iron passes and is made into plates for the boilers of steam-engines and for making iron boats, or ships, and other things

requiring great strength. Thin plates are made for the purpose of being afterwards tinned, and used for variety of purposes, particularly culinary utensils.

For the purpose of tinning these iron plates there are vessels full of a solution of tin in sulphuric acid, which is called pickle. The iron plates are dipped into it and when withdrawn are found coated with tin, the acid having a stronger affinity for iron, which unites with it, and the tin is deposited on the surface of the iron. The plates are afterwards rubbed and polished. Young women are employed department and it appears to be a work not too laborious for them.

In the department of the rolling-mills many boys and young persons are employed chiefly for the purpose of laying hold of the bar, as soon as it has passed through the rolls and passing it back to the roller. They appear cheerful and able to go through with their work. Still they are exposed to great heat and breathe an atmosphere charged with effluvia from the iron and the coal; and, though immediate ill effects follow, it must be obvious that such is not the place for a boy to acquire strength of constitution and therefore he ought not to be placed in works before he has acquired vigour of body sufficient to enable him with ease to do his work and preserve his strength.

FURNACES WORKING ON SUNDAYS.

The furnaces in which the iron is smelted are kept in work day and night, because if they were to stand during the night they would cool, and there would be a great loss of time and much expense in bringing them back to a proper temperature and the materials would be in such a state that it would be impossible, for some time, to make good iron. Hence there are two sets of people for every furnace, men and boys, the one set working all day from six in the morning to six at night, and the other set working from six at night to six in the morning. Sometimes if the work require it the set about to go off will work a little after their time to assist the set just come on. The set which works by night the one week works by day the next week and the change is effected by their not leaving the furnace at six o'clock on Sunday afternoon, but continuing on till six o'clock next morning, being 24 hours in succession and thus the day set of the former week come on and take their week of night-duty.

For the same reasons that the furnaces are kept in work during the night they are kept in work during the Sundays and accordingly the workpeople, men and boys, have only every alternate Sunday on which to enjoy a day of rest, attend Divine service and benefit by the civilising influence of the Sabbath.

In order to mitigate the severity of this unhappy state of things many benevolent iron-masters have endeavoured to get their furnaces to stand during a certain number of hours and this was the more beneficial as the Sunday was the day of the double turn, and every hour of rest was a deduction from the long and wearisome period of 24 hours' labour.

Mr. John Anstice, a partner in the Madeley Wood Iron Works, and a son of Mr. William Anstice, the manager, gave evidence instead of his father, who was unable from sickness to do so. His account is as follows:-

> The Company began, about 25 years ago, to allow the people employed about their furnaces to discontinue labour for certain hours on the Sundays and have so continued to do ever since. The usual number of hours during which the works stand is from 6 to 8 being from 9 or 10 to 4 or 5; the time being longer or shorter according as the state of the furnaces w allow. We have found most decidedly that we have not sustained any loss by so doing, but on the contrary, it does good, because there is more care required before the stand commenced to see that the furnaces are in good order, and that care is of great benefit. We would willingly give more time if the nature of the manufacture could admit of it, but if the furnace stops longer the heat abates, and there then is an inclination in the material in the furnace to set and become stiff and cloggy. The men feel the stand a great comfort, and great prefer it. The stand takes place during the double turn, which is a greater relief, as the are only 16 or 18 hours labour instead of 24. (No.39).

Mr. Alfred Darby, a partner, and one of the managers of the Coalbrookdale Company, gives the following evidence of their experience on this subject:-

> About a dozen of years ago the Coalbrookdale Company, knowing that the Madeley Wood Iron Company had discontinued blowing their iron-furnaces for certain hours of the Sunday, determined to try what could be done in the same way, and adopted the practice which has been continued ever since, of letting the

> furnaces stand every Sunday from 10 the morning to 4 in the afternoon. They are not sensible that any loss has been sustained thereby, excepting that during such time no iron is made and the capital employed in the furnace department is for such time unproductive. They would willingly extend the time of cessation from labour on Sundays longer, if they could safely do so, but this they fear they cannot. The furnaces would in such case become too much cooled, and great injury would arise. As a proof of this, it often happens, when an accident occurs to the engine by which the furnaces are stopped for several hours (say 8 to 20 hours), that it takes several days to recover before they come to as good and efficient a working state as previously, and during this time they not only produce a less quantity but with a greater consumption of coal. The coal used at these works is not of the best quality; but experience only would show whether with the very best coal the blast-furnaces might stand longer than 6 hours. (No. 40).

Mr. George Lane, who superintends the furnaces at Horsehays, belonging to the Coalbrookdale Company, gives the following account:-

> For these 12 years past the furnaces have stood 6 hours on the Sundays and sometime a little longer. No injury arises if the furnace be at the time in a good working state but if not in a good working state, or if it was to stand too long. the iron would be thick and hard and would fall into the hearth and set; that is,, it would congeal and pass from a fluid into a solid state and consequently, when the time came for tapping the furnace to let out the melted iron, it would be necessary to make the opening higher up to let out the fluid iron and it would be perhaps three weeks before al the congealed iron came off by little and little, and cleared the furnace. If the furnace were to stand for 10 or 12 hours, at the end of that time it would not be in so good a state; it would not make so good iron and it would be at greater expense; there would be more fuel consumed and there would be more labour and less iron and that not so good in quality. When an accident happened by which the furnace was stopped 24 hours, it was from a week to 9 days before the furnace was set right. Has known a case where from an accident the furnace has stopped 8 hours, the furnace was not in good working order after it commenced, and it was not right until the third day. He has frequently known the furnaces in worse condition from stopping the usual 6 hours on Sundays. (No. 42)

The determination of these two great Companies to stop their furnaces for certain hours on Sundays proves their desire to do all in their power to relieve their men and their evidence founded on experience, that no more hours can be allowed, must be received as unquestionable as far as regards their district and other districts having coal of similar quality and we have, therefore, only to express approbation of what they have done, and our regret that the other Companies do not follow so laudable an example. The furnaces of Mr. Botfield in this part of Shropshire stop about the same number of hours as those of the Coalbrookdale and of the Madeley Wood Companies. Not being so fortunate as to meet with the manager, Mr. Thomas Onions, in May last, I wrote to him to inquire whether they sustained any material injury by standing on Sundays. In his reply he states:-

> We sustain no material injury by the furnaces standing on a Sunday only the loss of the quantity of iron that would be made in that time; or that of a few hours more before the furnaces regain the same intensity of heat they had before they stood, and the iron a little deteriorated.
>
> In the end of last December the men at the Lawley furnace in the same district made bitter complaint of the hardship which they sustained in not having the rest of the Sabbath-day. Very happily for them, I found in May last that the proprietors had determined to stand on the Sundays, and had commenced doing so the Sunday before I was there.

The other Companies in this district have not suspended their furnaces on Sundays.

As this subject was considered to be highly important, queries were framed and sent to the iron-masters to present their opinions.

Of these queries the following more particularly referred to the present subject of inquiry.

Is the working of your furnaces suspended on the Sunday; and if so, for how many hours?

Do you find that you are able to keep the working of your furnaces suspended for such time without any material inconvenience?

Have you made the experiment of trying to keep your furnaces suspended for a still greater number of hours? If so, state the result.

Do you find that your work-people derive comfort or moral advantage from the suspension of their labours for a certain number of hours on the Sundays?

Is Sunday the day of the double-shift or double-turn?

If the working of your furnaces is not suspended on a Sunday, will you have the to state

whether you have made any experiments as to the practicability of suspending them for a certain number of hours; for how long a period you continued those experiments for how great a number of hours you aimed at suspending the working of the furnaces and what was the final result of your trials.

In reply, Mr. Edward Jones, the manager of the Lilleshall Company, states:-

> The working of the furnaces is not suspended on Sunday, but as few hands as possible are kept in employment. These furnaces are very large, and they are fed with various of mines which make it nearly impossible to suspend the works. When the iron is produced from only one sort of mine, or when the furnaces are small, it may be possible to supply the furnaces so as to prepare for their being left for a few hours but the mixture of mines employed here, and the size of the furnaces, make it impossible to supply them in such a manner. The practicability of suspending the works has been repeatedly proved. They have been left for three hours, and the result has been seen in that time the quality of the iron produced has very much deteriorated, and on some occasions actually spoiled. If the works were suspended for a greater time the injury would be certain and to a great extent. It would be highly injurious to these works if the suspension whole quantity of labour were enforced. If the works were stopped for 12 hours it require 12 hours more to bring them round again, and there would be at least 20 tons of iron spoiled.

Mr. Francis Pearce, the agent of the Wombridge and Hadeley Company, states:-

> No experiment has been made purposely; but unavoidable stoppages of more than three hours are always followed by considerable derangement of the furnaces, and loss.

Mr Edward Vickers, the agent of the Ketly Company, in answer to the same questions, says:-

> The working of our furnaces is not suspended on Sundays. We do not find that we could lowing to the nature of our coal, iron ore, &c., suspend the working of our furnaces for any length of time without a great inconvenience. We have not made any particular experiment trying to suspend the working of the furnace for any length of time. We do in general find that those of our workpeople whose labour is suspended on Sunday do derive moral advantage from the suspension. Sunday is always the day of the double-shift or double-turn. We have made no experiments as to the suspending the working of the furnaces on Sundays, for, owing to the nature of the materials (as before stated), whenever we have been obliged to stop for six or eight hours for repairs at the engine, or other stoppages, it has been an inconvenience.

The only observation I shall make on the answers from these three Companies is that the same difficulties which they have experienced were experienced by the other Companies and yet by perseverance they have been able to overcome them, or at least so far as not now to sustain any material injury.

On making inquiry in the South Staffordshire district, in December last, as to what was the practice in regard to the furnaces on Sundays, information was received that about two years ago great exertions had been made by many of the iron-masters, aided by the influence of the clergy, to have all the blast-furnaces stand for a certain number of hours and at a numerous meeting it was decided a majority that the experiment should be universally tried. The decisions of such meetings have, however, only a moral influence, and have no legal power. Accordingly, some did not comply with the recommendation at all, and after a time the greater part resumed the working on Sundays, alleging that the experiment had proved a failure. Altogether about one-third of the furnaces stand on Sundays.

On this subject inquiry was made of Mr. Richard Bradley, who gave evidence as follows:-

> He is agent for Sir Horace St. Paul, and has under his charge six iron-furnaces in the neighbourhood of Tipton and has been so engaged for 14 years. He has there several times made the experiment of stopping the furnaces on Sundays, and on each occasion continued it for several weeks, for about 10 hours, from 7am.. to 5pm. and with every desire to succeed, and thinks that he should have done so but for the obstinacy of the men. Before the visit of the Sub-Commissioner he had given directions this day to stop three furnaces to-morrow (Sunday, January 3, 1841), with a hopes of succeeding. Sees no insuperable obstacle if the men can be got to do their best endeavours. Occasionally when the furnace is in a bad state it would impossible to stop without great loss and inconvenience. (No.34).

Not finding Mr. Bradley at home when I was at Tipton, in the end of May last, I wrote to him, making inquiry as to the success of his experiment in keeping the furnaces standing on Sundays.

His reply is as follows:-

> In reply to your letter of the 18th inst., I beg to say that I have had another trial made by stopping the furnaces on Sundays, but from some cause they were brought into a bad state for making iron and consequently have been blown on the Sundays since. I have give directions for another to stop and have blown two out, which are undergoing repairs, and altered in their construction, so that a greater quantity of materials can be carried at the top or the furnace, which I think will be less injurious in their standing a few hours at a time. In the course of a few weeks I hope to have them all standing on the Sundays.

Mr. William Baldwin, an iron-master at Bliston, gave evidence that his furnaces were suspended 11 hours on Sundays, from six in the morning until five in the afternoon. Being asked, 'Do you experience any loss by your furnaces being suspended?' he replies:-

> We lose in time, but nothing else except upon particular occasions. When the furnaces are in a bad condition we should lose if we were to stop, but that with us is very seldom. We have worked only two Sundays during the last 12 months. If the furnaces had water beneath them they might suffer by stopping, but I know only of one pair of furnaces of that sort in this part of the country. (No.35)

Mr. William Bagnall, a partner of the firm of John Bagnal and Son, stated that they had six furnaces which stand from casting-time in the morning till evening, about nine hours. He gave the following evidence on the subject:-

Do you sustain any loss thereby? - None: we consider none. Our men come refreshed on the Sunday, and are relieved from the double-turn, which involves 24 hours continuous labour, which necessarily has the effect to injure the men and make them less fit for their work.
Are there any instances where you have been obliged to go on? - Sometimes it will occur that the furnace is in such a state that it is necessary to go on, but such a thing is of rare occurrence. With our three furnaces at Gold's Green we have not had such a case for the last twelve months, and in respect to our other three furnaces we have not had more than one case; at all events if we have had so much I am not quite sure.
Is it your opinion that it is practicable to suspend furnaces on Sundays generally? - I consider it as perfectly practicable, and that this is now ascertained from experience beyond a doubt. The men derive comfort from stopping, and certainly our men would be very reluctant to be again brought to regular labour on the Sundays. Where they have shown any reluctance to suspend it has been because they considered that their wages would be proportionally diminished thereby. (No.36).

Mr. Elihu Smallman, the agent of Messrs. Lloyds, Fosters, and Co., in answer to whether the working of the furnaces was suspended without material inconvenience, replies:-

Without material inconvenience.

Other persons in the iron trade give a less favourable view of the result of furnaces standing on Sundays.

The following evidence was given by Mr. John Neve:-

He is an iron-master at Wolverhampton, the furnaces being within the parish. Has been so as a furnace-master for four years. Where the materials are very good, the furnaces may stop some hours on the Sundays without much inconvenience, and some iron-masters stop six and some even as much as twelve hours and say that it does not injure them. But in our works it is otherwise. The experiment has been tried and made with care and with a desire succeed and the consequence was, that the iron for a day or two afterwards was of inferior quality and to have continued this plan would have reduced the quantity made by one fourteenth per annum. The persons employed on a Sunday about a furnace are about ten, of whom two are boys. When from accident we have been obliged to stop six hours, there been a reduction in the make, but not any injury to the quality, at least to any great extent. (No.33)

Mr. Thomas Vernon, the agent of Messrs. Edward, John, and Henry Addenbrook, states that their furnaces are suspended from five in the morning to five in afternoon but, in reply to query says, 'We lose one-fourteenth make, and there are other inconveniences.'

The furnaces of Messrs. Firmstone at Lays, near Dudley, have been stopped on Sundays, from eight in the morning to four in the afternoon; but they say, 'not without inconvenience or loss.' If the furnaces are suspended for any greater number of hours, it is 'always at a great loss to the masters and men.'

An iron-master in Staffordshire, conversing on the blast-furnace, stated that he considered the reason why they were able in that district to let their furnaces stand a greater number of hours than could be done in Coalbrookdale was this, - that they began to let the furnaces stand immediately after the casting, when the hearth quite clear of melted iron and cinder, whereas in Coalbrookdale they waited some hours until the iron and cinder had filled the hearth up and then such iron more likely to become stiff, and impede the operations. On this subject I addressed a letter to Mr. Alfred Darby, and received the following reply:-

Respected Friend, Coalbrookdale, August 2nd, 1841.

I duly received thy favour of the 21st ult., and should have replied sooner, but wished to give the subject of it a mature consideration. In reply I may say that the Coalbrookdale Company have at various times tried the plan mentioned by Mr. Lloyd, and have not found it on the whole to answer so well as the plan usually pursued by them, viz., that of allowing the furnaces to stand on Sundays with iron and cinder in the hearths. It should be remembered that there is a very material difference in the nature of the coal used for smelting in Staffordshire and Shropshire. The former is universally admitted to be a very much hotter coal than the latter and I believe experience proves that the Shropshire furnaces are more difficult to keep open than the Staffordshire. It is natural to suppose that there exists a great diversity of material not only in different counties but even in the same districts, and such being the case, it is our decided opinion that it would be impracticable as well as very unwise to attempt to legislate in the matter. We think it ought to be left to the consciences of masters and men as to how much labour the former ought to require and the latter to perform on the Sunday.
A universal system of education, combining religious, moral, and intellectual training of the right sort, would assuredly accomplish more than all compulsory observance of the Sabbath.

I remain respectfully, (Signed) ALFRED DARBY.

The objections to suspending the furnaces for a few hours on Sundays, as collected from the evidence and the answers to queries, are as follows;-

1 There is a loss of time in the furnaces standing and a diminution in the quantity of iron made. If the furnaces in Staffordshire stand 12 hours, being a fourteenth part of the time of a week, the loss is alleged to be a fourteenth of the make of iron.
2. The iron is alleged to be worse for some time after the furnace begins to blow again.
3. There is alleged to be greater loss in large than in small furnaces.
4. It is said to be disagreeable to the workmen.
5. The workmen are said not to make a good use of the time given to them.

As to the first consideration, the diminution of the make of iron by the furnaces stopping a few hours, the iron-masters will find it difficult on that account to establish their case. If the health and moral condition of the workpeople are to be benefited they must give way. When the proprietors of all the factories in the kingdom are not allowed to keep their mills it work more than 69 hours out of the 168 hours in the week, the iron-masters can have no right to complain if they are restricted to 160 or 162.

As to the argument founded on the alluded loss and damage from the furnaces being put out of order, it is for the iron-masters to show that what their neighbours are able to do, not only without loss, but even with advantage, impossible for them. Otherwise it will be but fair to believe that they have tried the experiment fairly, and that they are actuated by a consideration of loss they consider that they sustain by their not obtaining from their furnaces the iron which might be made in 168 hours, that is, by working unceasingly every hour in the week.

If there be a pecuniary gain, as is supposed, by working the whole 168 hours of the week, it is an undue advantage over those iron-masters who are willing to allow their furnaces to stand a few hours on the Sunday for the moral a physical good of their people.

If a regulation be adopted which will apply to all the iron-masters alike none of them will suffer.

The prices now obtained for their iron are the result a keen competition amongst themselves, by which profits are reduced to a fair remuneration for labour and capital and to any diminution or increase in the cost of production, prices must necessarily accommodate themselves.

As to that part of the iron trade which depends on exportation to foreign countries, the advantages with which iron can be made in Great Britain are decided as to set all competition at total defiance and no regulation as to furnaces on Sundays could in the slightest degree affect this branch of commerce.

When we consider that about one-third of the furnaces in Staffordshire and Shropshire have now been blown out on account of the impossibility of obtaining remunerative prices for all the iron made, it is obvious that if all the furnace for some time past had been suspended for some hours on the Sundays, and there had been a diminution in the make of iron, the consequence would have be beneficial to the masters instead of injurious.

Some iron-masters who have very large blast-furnaces say that, although standing for a few hours may not prove injurious to say that although standing for a few hours may not prove injurous to small furnaces, it would be so to theirs.

Now, this argument is directly opposed to all scientific principle, and also directly contrary to the evidence of the managers of some of the largest blast furnaces in the kingdom.

If a globe be twice the diameter of another globe, its solid contents are eight times as great as the solid contents of the small globe, but the superficies of the larger globe is only four times that of the small globe. In like manner, a globe be three times the diameter of another globe, the solid contents are twenty-seven times as great as those of the small globe, but the superficies are only nine times as large; and so on. The proportions of the solid contents are as the cubes of the diameters, and of the superficies as the squares of the diameters.

The same rule applies to all bodies of similar form of whatsoever description.

The larger therefore any furnace is as compared with another, the greater is the proportion of its solid contents to the outward surface, and the longer time will it take for the heat to radiate from the surface.

So far therefore from a large furnace cooling more rapidly than a small one, it will, according to a law of nature, take longer time to cool.

The evidence obtained in the inquiries of the present Commission has produced a confirmation of what from scientific principles might be expected.

The furnaces at Old Park near Wednesbury are amongst the largest in Staffordshire, and yet the manager states in his answers to queries that they sustain no material inconvenience. The workmen who are interested in the question, being paid by the quantity of iron made, say the same thing.

I have seen a copy of the evidence given by the manager of the furnaces of Sir John Josias Guest and Co. in South Wales to Mr. Rhys William Jones.

This company has eighteen furnaces which in size are amongst the largest in the kingdom, and these stand a certain time every Sunday. The manager states that no loss is thereby occasioned, and that, from whatever cause it may be, the furnaces make more iron than they did when they were kept in active operation without standing at all during the whole of the week.

The managers of large furnaces, who dread that they will experience more difficulty than the managers of small furnaces, are therefore in error.

It is also made an objection that if the furnaces were to stop on Sundays it would be disagreeable to the men.

Every change is, as a matter of course, opposed at first. Men do not like to be obliged to alter their habits and the less enlightened they are the stronger is the dislike, and it will be very great if they suppose that their pecuniary interest will suffer by it. As the men are paid by the ton of iron made, they of course suppose that stopping on Sundays will diminish their wages.

About 15 years ago, when the firm of Lloyds, Fosters, and Co., at Wednesbury, began to stop their furnaces on Sundays, the men not only were discontented but they actually did positive injury to their employers; for instance, they stopped the nozzle- pipes of the blast so that sufficient air should not be admitted, and this was done in order to put the furnace out of order and to cause the matter in it to thicken, so as to take many hours to be set right again. But the firm were determined whatever might be the consequences, not to work on the Sundays, and the opposition gave way and experience has now brought the men to be zealous uphold what in their ignorance they at first so much disliked. Such was the origination given by the men themselves and evidence to this effect was taken from Mr. Isaac Guest, one of their number.

You are the keeper of the furnaces of Messrs. Lloyds, Fosters, and Co., at Old Park, Wednesbury, in Staffordshire? - Yes, for 10 years.
Do the furnaces stand on Sundays? - Yes, from six in the morning until five in the afternoon.
Do you consider that it occasions any loss? - I do not. The men are paid by the number of tons made, and they consider that they are not losers at all by the stopping. Our double-turn formerly was to go on Sunday morning and remain at work until Monday morning, the whole 24 hours; but now, instead of coming on at six in the morning, they come on at five in evening. The double turn was very unhealthful. After a man had worked six days in week, then to come on the seventh and work the whole 24 hours was very destructive to the constitution, and very much injured us. I think we do as well, and we make as much iron as before to a mere trifle; only very little difference. The men are all very thankful for change and would be very sorry if ever they should have to go to work on the Sunday morning again.

The wife of this witness zealously corroborated his evidence (No.37).

One of the objections to stopping the furnaces for a certain number of on Sundays is, that the men, instead of employing the time in an edifying manner would spend it in dissipation. Now it must be admitted, that it is not unlikely that men who have not had the opportunity of attending to their public religious duties for many years past, may not all at once make the best use of their time but it is so much the more the bounden duties of the masters to lend their aid and influence to the ministers of religion, to bring the men to a more correct conduct and to wean them from those habits which only show the sad moral degradation to which perpetual unceasing labour on Sundays had reduced them.

This subject, though not exhausted, has I fear become tedious, and I therefore conclude, not doubting that more perfect information will be received from researches of the Sub-Commissioners engaged in the other iron districts of the kingdom.

There are two other descriptions of work by which the rest of the Sabbath day is violated, which I shall now notice.

REPAIRING THE PUDDLING-FURNACE.

There is a considerable violation of the tranquillity and rest of the Sabbath by the repairs of puddling-furnaces. Not infrequently a bricklayer contracts to keep these furnaces in repair at a certain rate for every ton of iron which is puddled in them. He comes round on Sundays when the furnaces are not at work, and cool, and repairs perhaps an hour or two with his men, and goes on to other works and a high price is paid for this labour. At times, when there is great demand for wrought iron, there is this excuse, which ought not to be undervalued; at if the repairs did not take place on Sundays the furnaces must stand some other day, and both masters and men, and the public at large, would be losers. Sometimes the puddlers are so fully employed that the first set begins at 12 on the Sunday evening, and the second finishes about 12 on the Saturday evening, coming as close to Sunday as they can without trespassing on it.

At the present time, however, the case is very different. The first set begins on Monday at six in the evening and only in some cases at six in the morning. The second set of men finishes at six on the Saturday afternoon. There is ample time therefore for repairing the furnaces without violating the sacred institution of the Sabbath and depriving the workmen of the civilising influence of one day of rest and intercourse with their families and society as well as opportunities if sacred instruction and the better disposed of the iron masters at once respect the law and consult their own good and the good of the workmen.

CLEANING THE BOILERS OF THE STEAM-ENGINES OF THE PITS.

This is an operation which is usually performed without any reasonable excuse on the Lord's-day inasmuch as there are other days as well as the Sundays when the pit is not at work on which it might be done. It is necessary that the boiler should be cool and when the fire is put out early on the preceding afternoon the boilers are ready for cleaning in the morning. This operation is then completed

after which water is them pumped into them and the fire being lighted in the evening the engine is ready for work by the usual time of the people coming into the field.

The butties' apprentices are made to do this work as there will not be any wages to pay them.

As the boilers are cleaned out only about once in two months, nothing would be easier than to find a day when the work was standing still and when it is done on the Lord's-day it is a gross violation of the Christian Sabbath for which there can be no good excuse.

I have the honour to be,

Gentlemen,

Your most obedient servant,

JAMES MITCHELL

36, New Broad Street, London
August 7, 1841

THE EVIDENCE SHROPSHIRE

No.38 - Joseph Prestwick, Jun.

You are a Fellow of the Geological Society, and author of a long paper, (upwards of 100 pages) in the fifth volume of the 'Geological Society's Transactions,' descriptive of the Colebrook-dale coal field? -I am.
What were your opportunities of being acquainted so minutely with that district? - I resided part of several summers in the neighbourhood of Coalbrook-dale, and devoted much time to geological pursuits.
Did you ever go down into the coal-pits? - I went down into a great number of them, and observed the mode of working them.
What may be the thickness of the seams of the coal?. - Some are as much as six feet in depth that is not often the case. Some are only three feet, other seams which are worked two feet some inches and there are seams wrought which are only 18 inches thick.
After sinking a shaft down to the seams of coal which are thought worth working, in what manner they then proceed? - They commence two or more levels, which are spaces sufficiently wide and sufficiently high to enable them to lay down a railway and drive horses and carts, and men may walk upright. These levels they carry forward in a line as straight as possible, working as they proceed to the right and left but removing no more of the overlying shales or sandstone than sufficient to enable the men to work in a sitting posture. Where the seam is very thin, they will have to work almost lying on their sides. Sometimes the space they have to work more than two feet high. When the seams are still less, and the coal is sufficiently good to make it desirable to work it, the men cut away a little below the coal, but chiefly above it, so as to make room but they are content with the smallest room possible, so as to conduct their work with as much economy of labour as possible. In all the seams the men first cut away a few inches of the indurated clay under the coal and so undermine it, and then get it down in as large blocks as possible.
What is done then? - Boys put the coal into wooden sledges and draw them along to the levels, where it is put into carts and drawn by horses to below the mouth of the pit, where it is hoisted up.
How are the boys equipped and how do they draw the sledges? - The boys are dressed like the grown men in trousers, shoes and stockings but with no other clothing, the heat not rendering more necessary. There is a rope put round the waist; when the height of the work will not admit of their standing upright, boys run on all fours, drawing the sledge after them.
The boys do not go on elbows and knees? - They go on all fours, hands and feet.
Of what at ages are the boys? - They are quite small. I speak from their appearance, they are 8 years of age to 12.
Are any girls employed at such work? - I never saw nor heard of any being so employed.
By whom are the boys employed? - By the charter-masters.
Will you explain what they are? - The proprietor usually employs a ground bailiff who acts for him and marks out the work to be done and he employs men who contract to do portions of it and to deliver the coals under the pit's mouth at a certain price. These met who so contract are called charter-masters. They work themselves, and employ other men to work for them.
Do they work by night as well as by day? - I never heard of work being done by night in this district.
Have you heard what were the wages? - I have understood that the charter-masters paid to the men 1s. 9d. and 2s. 6d. or even 3s. a day, depending upon the nature of the work, and the boys from 8d. to 1s. 3d.
How many hours a day do they work? - From 6 to 12 hours, according to the description of work.
The breathing must be difficult in the narrow seams, there being so little open space? - I never felt any difficulty; at the same time, certainly the space is small, not only from its small depth, but the system of throwing the rubbish behind them into the space from which the coals have been taken. The strata above are usually supported by wooden props but after the coals are dug out the props are removed and brought forward to near the place where the men continue their work and into the empty space the rubbish is thrown. After the removal of the props, the roof falls in, and there may be seen in many large works a great subsidence of the ground above.
How did the children look as to comfort? - They generally appeared cheerful and looked healthy.

Did you hear of cruelties inflicted on them? - No, I never did. There might possibly be hardships of which I know not, but on the surface all looked well. Respectable iron-masters like those of this district would not allow any cruelty to be exercised.
What sort of men were the miners? - They were civil and well-behaved men, generally. Certainly not brutal, as I have heard that the miners were in some districts.
What education do the children receive? - They attend the Sunday-schools.
Do you know any cause for the millers of Coalbrook-dale being more civilised than the miners are in some other districts? - The district is not extensive, only seven miles long, by from one to two broad. The surrounding country is very beautiful and populous, and contains a considerable number of resident gentry, by which means a degree of refinement and civilisation is kept up. There were formerly nine iron furnaces on the south side of the Severn, but these have been blown out, as they express it, from the exhaustion of the proper description of coals in that part.
Are any children employed above ground? - Girls are employed to separate the ironstone from the shales. It is hoisted up from the mine and emptied out on a mound. The girls kneel on the edge of the mound and pick out the iron-stone and put it in baskets placed before them; and when the basket is full, the girl places it on her head and carries it to the heap or stock of iron-stone. The shale they throw behind them down the slope of the mound. The girls work in companies, and seem cheerful and contented.
Are any boys employed above ground? - Some are employed in the foundries in assisting the men, and doing any work for which their strength is adequate.
Do the boys become miners when they grow up? - Many of them do so, and there are find vigorous amongst them.

No.39 - John Anstice.

Is a partner in the Madeley-wood Iron Company, and son of William Anstice, the manager. Is thirty years of age and has resided all his life about the works. The company began about 25 years ago to allow the people employed about their furnaces to discontinue labour for certain hours on the Sundays and have so continued to do ever since. The usual number of hours on which the works stand is from six to eight, being from nine or ten to four or five, the time being longer or abated according as the state or the furnaces will allow. We have found most decidedly that we have not sustained any loss by so doing, but on the contrary, it does good, because there is more care required before the stand commences, to see that the furnaces are in good order, and that care is of great benefit. We would willingly give more time if the nature of the manufacture could admit of it; but if the furnace stops longer the heat abates and there then is an inclination in the material in the furnace to set and become stiff and cloggy. The men feel the stand a great comfort to them, and greatly prefer it. The stand takes place during the double turn, which is a greater relief, as there are only 16 or 18 hours labour instead of 24.

The coal-pits in this district have beds of various thickness but very many are very shallow, in consequence of which it becomes necessary to employ boys to push the carriages on railing, as it would be impossible in such beds to introduce horses or asses for the purpose. Wherever horses can be employed, it is much more advantageous for the proprietor and for his own interest, if he had no higher motive, he certainly would not employ boys. The employment of the girdle, by which boys in former times usually drew the carriages, is now very much gone out in Shropshire.

Our boys in the collieries on the average do not work above five days a week. The usual working hours are from six to six, during which time they relieve each other, to allow time for their meals. The boys are a lively, cheerful and apparently healthy set of lads as are to be seen anywhere, and when they leave work they are frolicsome as boys coming home from school. The boys usually begin by driving horses, and when they are at a more advanced age, they are put to the carriages.

Many of the boys attend evening schools kept by masters on their own account, after the hours of the day. The Sunday-schools are most numerously attended by the children of Church, and of the connection of the Wesleyan Methodists, which are the schools which we have in this neighbourhood.

No.40 - Alfred Darby.

Coalbrook-dale Company. About a dozen of years ago the Coalbrook-dale Company, knowing that the Madeley-wood Company had discontinued blowing their iron furnaces for certain hours of the Sunday, determined to try what could be done in the same way and adopted the practice, which has been continued ever since, of letting the furnaces stand every Sunday, from ten in the morning to four in the afternoon. They are not sensible that any loss has been sustained thereby, excepting that during such time no iron is made and the capital employed in the furnace department is for such time unproductive. They would willingly extend the time of cessation from labour on Sundays longer if they could but this they fear they cannot. The furnaces would in such case become too much cooled and great injury would arise. As a proof this it often happens when an accident occurs to the engine, by which the furnaces stopped for several hours (say eight to twenty hours), that it takes several days to recover before they come to as good and efficient a working state as previously and during this time not only produce a less quantity but with a greater consumption of coal.

The coal used at these works is not of the best quality but experience only would show whether with the very best coal the blast furnaces might stand longer than six hours.

No.41 - William Tranter.

Is the agent to the Coalbrook-dale Company, and in that capacity has occasion to go down into mines both of coal and iron. There are many children in the mines, only boys below. Some young as about six and they are at various ages up to manhood. In the coal-mines, some boys are employed in bringing the coals in small carriages, called dans, to the horse road, and others in pitching them into the carriages drawn by the horses. The mines are too low for men to do such work. Some of them are two feet in thickness but there are places to go through at times no more than 18 inches, or perhaps 20 inches. The boys crawl on their hands and knees. The face of the work along which the dans are drawn is made as straight as possible, in order to get out the coal in as good a state as we can. There are no complaints of injury, except when a boy may meet with an accident and then he leaves off he gets well. The boys do the work cheerfully, and have no dislike to it. The dans are pushed on rails; it is very low, but the work is not heavy. The company does not employ boys who draw by the girdle and chain; it was so formerly, but has not been for many years. Formerly the girdle was employed when there were no rails and the labour was very severe but now that there are rails, there is no longer any necessity for boys to draw by the girdle. Witness does not see any way by which the labour of pushing the dans can be avoided but considers that the labour by the girdle is not now necessary; not the least. The witness has never seen the bye-chain.

Some few boys are employed to open doors. Some boys are employed to hook on the carriages to the chains in the shaft. some boys go errands for the miners to another part m the pit, and fetch what the men may occasion for. Boys are employed to drive the horses. Some will begin as early as from 13 to 14 to work like men with the pick but the greater 14 to 16.

The usual hours of work are from six to six. In some pits the work ceases for an hour to dinner but in others not and the people take refreshment as they can and in such pits it is the custom to leave off half-an-hour earlier.

Boys of from six to seven may earn in the pits about 6d. a-day; about nine they may earn from 10d to 1s., according to the work about 12, a boy may get 1s. 6d., 1s. 8d. and some as much as 2s a-day.

The generality of the colliers are small. In the iron-mines there is not so large a proportion of boys and the reason is that the mines are in general higher and consequently there is room for men and boys are not so much wanted. There is room for small horses and donkeys and in some of them for large horses. The earnings are much the same as in the coal-mines. The company would not allow any men to beat the children and there are very seldom any complaints.

No.42 - George Lane.

Superintends the furnaces at Horsehays, belonging to the Coalbrook-dale Company. For these twelve years past the furnaces have stood six hours on the Sundays and sometimes little longer. No injury arises if the furnace be at the time in a good working state but if not in a good working state, or if it was to stand too long, the iron would be thick and hard and would fall into the hearth and set; that is,

it would congeal and pass from a fluid into solid state and consequently when the time came for tapping the furnace to let out the melted iron, it would be necessary to make the opening higher up to let out the fluid iron and would be perhaps three weeks before all the congealed iron came off by little and little and cleared the furnace. If the furnace were to stand for 10 or 12 hours, at the end of this time it would not be in so good a state; it would not make so good iron and it would be at greater expense, there would be more fuel consumed and there would be more labour, and less iron and that not so good in quality. When an accident happened by which the furnace was stopped 24 hours, it was from a week to nine days before the furnace was set right.

At the furnaces there are boys from eight to nine years of age employed in filling boxes. They earn 6d. a day, some more. Boys of 14 may earn 1s 2d. a day. Boys are now scarce. There are boys of from eight to nine at work in the rolling-mills.

Some girls of eight to nine on the banks get 6d. a day, girls about 12 get about 1s. a-day, and there are young women earning 1s. 3d. or 1s. 4d. a day.

Has known a case where from an accident the furnace has stopped eight hours; the furnace was not in good working order after it commenced and was not right until the third day. He has frequently known the furnaces in worse condition from stopping the usual six hour on Sundays.

No.43 - Robert Bailey.

Is superintendent of the mills and forges of the Coalbrook-dale Company. Boys an employed in this department, but no young girls. The ages of boys are from seven to all ages. Very rarely any as early as seven, but from eight upwards. There is such a variety of work that a person may be employed from an early period of life to old age.

Some children straighten the bars with wood hammers. Of the bars there is a great variety and some of the youngest boys straighten the small bars and stronger boys are employed where strength is required.

Boys are employed in piling the bars before being heated for passing through the rolls. Boys are employed for catching bars and passing them round the rolls to the men. Boys are employed according to their strength, there is such a variety of employments.

The usual hours in the mills are from six to five, out of which is half an hour to breakfast and about an hour to dinner. There are two sets of people, who work alternately day and night. This branch does not work on Sundays. The boys are lively, cheerful and playful after their day's work. They are generally fond of the employment. In frosty weather, at the dinner-hour and after work, they are fond of going to slide on the ice.

No.44 - Joseph Jones.

Is now 58 years, and has all his life from a boy been engaged in coal-mines. For some years he was a charter-master, and for 12 years past he has been ground-bailiff to the Madeley-wood Iron Company, which is one of the largest in Shropshire, employing from 500 to 700 persons of all ages in the mines.

Many of the beds of coal which are worked in Shropshire are very thin, and are under two feet and oftentimes it happens in beds which are thicker that at particular parts the roof and the bottom may consist of hard rock, and may bend so as to approach nearer to each other and in such parts as these the mine is very low, though it may not be so generally.

There is a large roadway made through the pit, at a heavy expense, where there are carriages drawn by horses but the coals must be brought from the workings on each side in small carriages, in this district called dans and horses and asses could not get in or walk alone and the dans are pushed before them on iron rails by boys. He is not aware of boys under 10 being employed to drive dans in the Company's mines and boys of 10, 11, 12, 13, and 14 are employed for that purpose. Boys even approaching to 15 sometimes drive dans but in general their size makes it very inconvenient for them when arrived at about that age.

Tommy-shops, which are said to be usual in some other districts, are not so in Shropshire; and all the great companies would be totally above having anything to do with them, and would discourage all improvidence in their workpeople as far as in their power.

Sometimes in the Company's mines a workman will take down his child under 10 and the boy will be used to go errands from one part of the pit to another, such as bringing candles and Opening doors, and such like.

No.45 - A Surgeon who did not wish his name to be published.

Has practised 13 years in the district. There was no epidemic in 1835 in this district, except scarlet fever, which was not very fatal. Cannot state any distinct reason why deaths within the first three years of life should be more than in other districts, as very few cases of the very young are brought to surgeons. Children go to the iron and coal-works at as early an age as from 6 to 10. They carry on their heads loads of iron-stone and of limestone. They are frequently diseased, chiefly of chest affections, that is of the heart and lungs. Scarcely one in 10 escapes. They work beyond their strength. He has almost always cases under his care of vomiting of blood, frequently brought on whilst actually employed at their work. This he thinks arises from exertion beyond their strength, and takes place in children between 8 and 13. The children are not fit for such work until 13, or at most only some few who are exceptions. Down in the pits the children draw the carriages when the beds are so that asses cannot be employed. They are geared like beasts of draught. In afterlife they suffer from the same diseases, as the suffering at their early age lays the foundation of diseases of the heart and lungs. Can see no mode of putting an end to such work, as the size of men makes it impossible for them to do it.

Most colliers at the age of 30 become asthmatic. There are few attain that age without having the respiratory apparatus disordered. They are subject to hypertrophy of the heart that age, no doubt laying the foundation of such disease at the early age of from 8 to 13 years. Few colliers attain the 51st year. This may be said in every respect the same with persons of all description.

Does not know how machinery could be substituted, as the roads in the pits are so intricate.

The children being injured in early life continue to suffer all their lives after. Many die young from consumption and suffer all their lives from diseases of the lungs. There is very little difference between the coal-mines and the iron-mines. There is no danger to persons who do such work after 15. Apprentices are seldom bound till 15 and then for five or six years. Girls do not go below into the pits but they work on the top, and suffer from the same causes but not so much.

A child of eight or nine will gain 6d. a-day and the expense to his parents will not be 2s. or 2s. 6d. a-week.

Accidents in the coal or iron-pits are not very numerous. There are few accidents from broken limbs but chiefly from contusions and explosions. As many as 80 or 100 may suffer from explosions in a year. On the average about 40 a-year in one of the districts, and 40 to 60 in other parts of the coal-field. He has known of no case of death from carbonic acid, nor has he heard of any case of death from water, hot in 20 years. It is exceedingly rare for the chain to break and it is exceedingly rare for the miners to be drawn over the pulley. Scarcely any accidents happen by pieces falling from the roof of the pits but one accident occurred by a brick falling out of a shaft.

No.46 - George Marcy.

Is clerk to the Wellington Union, in the county of Salop and has been so since its formation, which is now five years. There are about 30 children in the workhouse. Children are bound out as apprentices at about the age of 14. Some have been bound to colliers in the neighbouring district and others have been bound to the colliers in Staffordshire but not exceeding six in number during that period. It is not considered that the children are fit to be sent out until towards 14 years of age. Many applications are made from miners for relief on account of sickness and chiefly from asthmatic complaints when arrived at an advanced age. At 40 perhaps the generality suffer much from asthma. Those who have applied have been first to the medical officer, who has confirmed what they said. About 40, the greater part of the colliers may be considered as disabled and regular old men, as much as some are at 80.

No.47 - George Potts.

Is clerk to the Madeley Union, which comprises the parishes of Barrow, Benthall, Broseley, Buildwas, Dawley, Linley, Little Wenlock, Madeley. Much Wenlock, Posenhall, Stirchley, and Willey, being 12. Of these, Madeley, Dawley. Broseley, and Stirchley are in the mining district, the others are agricultural. There are about 20 children in the workhouse. The guardians bind out boys as apprentices to the collieries but only three such have been bound within the last two years to colliers in Staffordshire, being about ten years of age, and were bound till 21. The other was bound to a shoemaker in the neighbourhood about the same age and for the same period. The colliers often apply for relief on account of accidents in the mines and from sickness. They begin to apply on account of permanent debility at about from 45 to 50, and after that time it is considered that a man is unfit for his work as a collier, but can still work on the bank or attend to an engine or other less laborious work than going into the pits.

No.48 - Matthew Webb.

Resides at Bankhouse, in the parish of Wellington. Has been in practice in the neighbourhood 36 years and has a large general practice amongst the colliers. Has had 5000 people at one time under his care, including workmen of all descriptions. Has had as many as 500 cases from accidents in a year. Considers that there is very little illness or disease, beyond mere accident, arising directly from mining operations. There are very few under six or seven who are employed to draw weights with a girdle round the body and those only where the roof of the pit is so low for short distances as to prevent horses of the smallest size, or asses from being employed and knows of very little injury from the use of the girdle. There is less deformity than in manufacturing towns. In the manufacturing towns, deformity arises from diseases principally scrofula and the constrained position in which many of the artisans are compelled to work. In the collieries the people have the free use of their limbs; the air in the pits generally speaking is not unwholesome and the children are not over worked, nor suffer in their health from the labour. There is no disease to which their labour has a peculiar morbid tendency. Very seldom consumption brought on. When witness first commenced practice there was much deformity from bad clothing, bad food, bad nursing in infancy, and premature work but not so now. Scrofula has much diminished within the last dozen years and when it does appear it is less destructive. This is proved by it being much less frequent to have perform operations to remove diseased joints. Of hernia there is only the usual proportion, as in agricultural or manufacturing districts. There is abundance of employment with good wages, and therefore ability to live so as to support strength and respectability. Much injury is done to very young children by giving them spirits in their food and anodyne quack medicines, such as Godfrey's Cordial, Dalby's Carminative, which consists of magnesia, tincture of asafoetida, penny royal water, opium, and various other quack medicines into which opium enters. The children are frequently injured by not obtaining a supply of milk, which is scarce in the district in winter, and by being fed by scalded bread, coarse brown sugar, and gin. The extreme sweetness injures the stomach and takes away appetite. Sometimes the girls left in charge of children give them gin to keep them from crying. Malt liquor is the favourite beverage but there is a good deal of spirit drunk as well. Thirty-six years ago within a mile of Bankhouse there were 12 public-houses but now there are 50; the population, however has increased three-fold. Thirty-six years ago, there was constantly typhus fever as an epidemic, and also scarlatina in its most destructive form but there are occasional cases of typhus, and also of scarlatina yet they are comparatively rare. This is attributable to the moderation of the price of soap and consequently greater cleanliness, the cheapness of cotton linen and woollen apparel, the improvement in building colliers' houses and the superior ventilation. Thirty-six years ago, the houses were a sort of barracks in long rows, with no upstairs apartments, but entirely on the ground-floor and very damp and dirty; their privies and piggeries too near to the dwellings and there was not proper drainage but within the last 20 years great improvements have taken place. The houses have all well ventilated upstairs chambers and several roods of garden ground and the piggeries and privies are put at the extremity of the premises. Every man now has from a sixth to a quarter of an acre to grow cabbages and potatoes and the cultivation of these greatly benefits the health and morals. There are many amateur cultivators of flowers and most of them feed a fat pig. There was not much cholera, only 15 cases in Wellington parish, containing a population of 12,000. At Madeley the cholera was very destructive. The cheap and plentiful supply of salt has been very beneficial to the health. The meat is better salted than before. The general use of aperient medicines of late years has been of great use in preventing typhus and other infectious

diseases. There are few colliers' houses not well provided with Epsom salts, and where a pound was taken 40 years ago, a ton is now consumed.

Cases of suffocation from carbonic acid gas or carburetted hydrogen are very rare. Has seen only one case in the last six years and that case was in the open air. Smallpox is much diminished, from the liberality of medical men vaccinating all parties gratuitously.

No.49 - George Jones.

I am the agent of the Wombridge Collieries in Shropshire. It was formerly the custom for butties to take apprentices from distant parishes, by indenture, for 7 years, to work in the collieries till 21 years of age. The lads were usually 13 or 14. It was very unjust, as the youths for 3 or 4 years were full-grown men and were working for the benefit of the butties and getting nothing at all, excepting sometimes a small gratuity. It was no trade at last and I put a stop to it in our collieries. I am not aware that apprentices are taken at all into collieries in this county. I should consider it very wicked to allow it.

No.50 - John Phillips.

I am 28 years of age. About 8 I went into the coal-mines to open doors I had 6d. a day. I went to the bank at half-past 5, and sometimes a little before. About 6 in the afternoon we gathered at the foot of the shaft to come up. We came about 10, say 7 men and 3 or 4 boys. If all boys, we came up 15 or more. We came up in chains. Men sat down in the chain and laid hold with their hands, and little boys jumped between. We seldom had any accidents going up or down. I opened doors about 2 years. I then assisted a man to load coals. I had 10d a-day. I worked the same time as when a door-boy. When a door-boy I fell asleep very often and if the horse came against the door the young man would lace me. The butty coming along and finding me asleep would give me a slap. I deserved it. Filling the coal was harder work but I had more money. We were paid every fortnight on the Saturday when we came up out of the pit. The man laid the coals in the skip, and I built them in order. It was easier than filling. When I was about 12 I went to draw with the girdle and the chain. We went down at half-past 5 and worked till 6. I stripped off all but trousers, stockings, and shoes, and had a small cap round my head. I had a girdle put round my middle. The chain was about 3 feet long, or hardly. It was fastened to the girdle, and we hooked it to the skip. It was very hard work.

No.51 - Thomas Hale.

I am between 14 and 15. I went down 4 years ago at Lawley to pump in the pit. I had 10d. a-day. I took my money home to my father. I was paid on the bank. I was half a year at this. I then went down and hooked on the skips to the chain at the bottom of the shaft, and got 1s. a-day. I went to the pit bank at half-past 5, and got down by 6. At 6 at night we began to come up. The big ones shove the little ones to one side and get in themselves first but sometimes the little ones will pop in notwithstanding. If I hooked on the skip on the on the wrong link it would overturn the skip and then they would beat me. I deserved it. If I complained of other boys they would beat me for it, that I might not do the like again. I now draw a dan with a girdle and chain. I do not like it at all. It is hard work. I have 1s. 8d. a-day now. I have marks on my side. It was cut by the girdle. The work too low for dans. It is only three-quarters high. I never saw any dans pushed. That would be a deal better. I have heard the men say so. We have no time allowed for meals.

I do not go to Sunday-school now. I do not like it. It is too much confinement to us, who have been at work all the week. I read a little of the Testament every Sunday to my father I had read Ready-ma-daisy (Reading-made easy). Nothing else that I know of. I cannot say the Lord's Prayer nor any of the Catechism.

There have been fires in the pit but I was never burnt. I have had coals fall upon me and hurt me. A man, Samuel Beech, was killed by a tree falling down the shaft upon him. They were sending trees up and, standing watching for the other chain coming down, a tree tipped and came down and killed him.

No 52 - Samuel Ball.

I am 14. I was so a month ago. I went down to the pit at 8 years old. I went to draw. Before that I went to a horse in a gin at 7 years old. I had 8d. a-day. I worked from 6 to 6 but had half an hour for breakfast and an hour for dinner. I had a hovel and a fire in it in cold weather. I used to stand in the hovel and throw stones at the horse to keep him going. If master saw me he would tell me to use the stick and when he saw that the horse behaved roguish he would tell me to thresh him the more. When it was very wet it was disagreeable but in fine weather I liked it pretty well, particularly if I could sit on the side of the ring and make the horse go. I gave over. It was too much of a thing to give only that much, 5d. a-day. So I went down into the pit and got 10d. a-day. That was something worth having. I wore the mobby when I went down, that is the girdle and drew with the chain. I had on trousers, stockings and shoes, and a cap on my head. I drew iron-stone with the help of another. I was sometimes behind and pushed, but some part of the way it was and I held the skip back from going two fast. I was down 12 hours nearly, but I a quarter of an hour for breakfast and half an hour at dinner. I think it is not easy work The skin was often chafed. It was not much blistered. I did not like the work at all and I was glad when I could get away from it. It was very hard. The mine was very I had colds from the work. We had a down shaft and an up shaft, but sometimes we could hardly live in it; that is, in summer-time. I have been at that work 6 years. I have often got hurt by the skin being rubbed off. Boys often leave through it. They cannot stand the pain nor the fatigue. Many are taken through it. We sometimes have foul air in the pits. Very bad air in summertime. In the winter it is much better air, better a deal than in summer-time.

I can read only very little. I can read only very little. I can write my name. I go to Sunday-school at 9 in the morning and at 2 in the afternoon. The school is at Coal-pit Bank. At 11 o'clock they turn us out, to make room for the congregation. I go to church, to the new church. I come back dinner, and then go to school. I cannot read the Bible much. I am learning to read the Testament at a school at night. When we have a holiday I go to school. I have read in the spelling book. I have read a little at Jack the Giant Killer. I never sleep in the Sunday-school for fear of being beat for it. If I was to go to sleep in the church, the beadle would come with a stick as long as from this to the door, with a knot at the end it and come and knock on your head and make you clap your hand to it. The boys do like to have it themselves, but they like to see other boys get it, and they laugh at them. We always have a good dinner on Sundays; it is very wicked to omit that. After tea on Sundays I go to church again. It is for our own good when we go. I like to go sometimes. My father sometimes threatens us but he does very little, although he threaten. I go for fear. Perhaps when be threatens it comes all at once.

Last Sunday I began to play with other boys but my father called me in, and bade me sit down in the house and he read to me, and talked to me about it. He is a Wesleyan. There are a great many Wesleyans and Wesleyan Chapels. The people flock to them.

No.53 - Isaac Tipton.

I am 16 years of age. I work in the coal-mines; I went down nine years ago; I waited on the holers; when their picks went wrong they gave them to me and I went to the shaft and sent them up and when they came down I went and fetched them. I fetched candles or anything they wanted; such as wood to keep up the roof, to keep them safe. I worked 4 months at this. I got 1s. a-day. The men did not thump me very often. I was not very bad only middling. I Sometimes deserved it because I would not do as they told me. They sometimes thumped me with the fist and sometimes with the stick; they made marks; I seldom complained unless they gave it me too bad. The butties gave it me sometimes when I neglected to do what I was told. There was nobody to whom I could complain of the butties. I often fought with the other boys. I generally threshed them; I never began with them unless I thought I could. I always fought with boys as big as myself. We never went to tell of each other. If the fight did not satisfy us we used to fight on the bank when we went up and all the boys and men came to see it. I have not fought for the last 12 months and do not expect to have to fight any more.

I next went to draw with the girdle and chain. I had a girdle round the middle and chain under my legs; it was very hard work. If I had a bit of time in the pit I laid myself down on my back. We had no time unless something was the matter with the engine, Long before night we were so tired that we

could hardly walk home sometimes. In some pit there is no time for meals; in other pits it is done different. When I went home at night got a hot supper. Before supper I washed face, neck, and hands. After supper I slept a little by the fire and then went to bed and slept sound; and sometimes they were forced to come and shake us before I could wake to go to work.

The girdle often makes blisters. I have had pieces like shillings and half-crowns, with the skin cocking up, all full of water and when I put on the girdle the blisters would break and the girdle would stick and next day they would fill again. These blisters give very great pain.

There is no railway in the pits in which they use the girdle and chain. In all the pits about this part they use the girdle and chain.

In some pits the butties give beer the Saturday after the reckoning only; 2s. worth; it is pretty good stuff. I have now 2s. 6d. a-day.

I attended the Sunday. school; I read middling. I understand when I hear reading. I sometimes go to church. I read the Bible sometimes. I can say the Lord's Prayer, and say it every night before going to bed. I could say all belonging to the Catechism when I was at the Sunday-school, but I have almost forgot all since I left off attending. I have read Reading made Easy. I have read about Turpin and Jack Sheppard I have read about Robin Hood. I read song-books; I have not sung a great while now. I have read a bit of Robinson Crusoe. I have read about the pigs and the cows dying of distemper.

I have had a holiday to see a fox-chase. I have gone to Shrewsbury races. I have seen many a fight at these races. On holidays I used to play at marbles. When I am tired on holidays I go and lie down anywhere for two or three hours on my back, with my hands under my head; sometimes sleeping and sometimes dozing. On Sundays I lie in bed till towards the middle of the day; I do not get breakfast until I get up. After breakfast I sit down an hour or two, and then get dinner. I then clean myself and go to church or chapel. There is no difference between the one and the other. I then go and have my tea; then I walk out and come back and go to bed at 7 o'clock.

There are 10 or 12 lads who draw with girdle and chain; some 10, 12, 14, 16, and 18. A fortnight's notice is sufficient when we can leave. The Company never gives notice.

No.54 - James Pearce.

I am 12 years of age. I went down to the pits about 7 years and a half to open doors. I had a candle and a fire beside me to show me light. There was one door. The horse coming with empty basket and skip could open it with his head, but when he returned with his load I opened it then. I was 12 hours a-day, and got 6d. a-day. I attended and got the money. When I was paid I took it home to my mother. I was a year and a half at this work. I once fell asleep and was well threshed by a driver. The horse was fast. It was down-hill and the horse could not draw back. He laid well into me; I cried out, but nobody would come and help me. I did not tell my father. I never thought anything about it afterwards.

About a year and a half I went to walk with a candle before the horses and pick the coals off the road; I had 15d. a-day. About a year and a half ago I took to the girdle and chain; I do not like it; it hurts me; it rubs my skin off; I often feel pain. I get 15d. a-day. I do not go to the Sunday-school. I go to chapel sometimes. I cannot say the Lord's Prayer, nor the Creed nor the Ten Commandments. I cannot read. I never heard of Liverpool, nor of Manchester, nor of Bristol, nor of Birmingham. I have heard of London.

I had not time to eat a bit of meat from morning till night I often had blisters on my side but when I was more used to it it would not blister, but it smarted very badly. The chain was made of the same stuff as the rope that goes down the pit. I crawled on hands and feet. I often knocked my back against the top of the pit and it hurt it very sore. There was not room to stand to that height. The legs ached very badly. When I came home at night I often sat down to rest me by the way I was so tired. The work made me look much older than I was. I worked at this drawing with girdle and chain 3 or 4 months. I thought that if I kept at this work I should be nothing at all and I went and worked upon the bank. I had 1s. 6d. when I first went to draw, and had at last 2s. 4d.

I went to drive two horses on the bank, and got 12s. a-week. I was three quarters of a year at this. I then took to the pit. I filled the skips for the boys to draw. A boy must go 4 or 5 times to bring a horse-load. I got 3s. a-day. I made up the day's work by holing a little. Many boys draw with girdle and chain now. They draw in Ketley fields and in Lawley fields still. The seam in Lawley field is

about a yard thick; in some places less. There is not the railway and the dam. It is like drawing on the roads. I think it is a great hurt to a boy: it must be, to draw the same as a horse draws. A great many boys find that they are unable and give over drawing with girdle and chain. It is very hard, very hard, sir. If they were to lay down rails and push the coals on dans, it would be very convenient for the boys though the expense might not be convenient for the masters.

I now work in the iron-mine. It is 6 feet thick. We work by the piece. We get done by 5, or half-past 5. We have 3s. 3d. a-day. The mine is filled upon dans and the dans run upon a railway and are brought to the foot of the shaft.

No.55 - John Richards.

I am between 17 and 18. I came to this country 5 years ago, and went down to draw in Ketley fields with the girdle and chain. I had 2s. a-day. It is hard work. It did not hurt me much. Some boys complained of it. Some young chaps, not used to the pits, it will hurt; strong ones 6 not mind it so much. The coal was 2 feet 4 inches thick. I was obliged to leave because was wet. It would be much too low for me now. I have seen a boy of 8 employed to open doors. I have seen a boy of 10 drawing dirt against the wall. Boys are scarce. I now work with a pick, and get 2s. 4d. a-day. It is driving a road a yard and a half wide, and 5 feet high.

I worked 3 months at Steeraway pits and two men were killed. I then left. I went again and worked a fortnight, when one man was killed, and I left, and never went to work again.

No.56 - Robert North.

I went into the pit at 7 years of age, to assist to fill the skips. I stopped at this work a years and a half. I got 6d. a-day the first twelvemonth and was then raised to 10d. I then went to drive a horse and got 10d. a-day and after twelve months I had 13d. a-day and I continued driving 5 five years and at last got 20d. a-day. I then took to drawing coal by girdle and chain and got 20d. a day. We cannot stop at what work we like: we are shifted I drew about twelve months. I then took to filling skips for half a year. I then took to holing, and have taken to fill again. I now get 3s. a-day. When I drove the horse I got hurt. The first time was this on my head, of which the mark like a horse's foot is still to be seen very conspicuously. I was laid up a month. The second time was on the leg; the skip was drawn over my leg. I was laid up 4 months. The third time was a great coal, which fell off the skip on my arm and some more fell upon it. I was laid up 5 months. I felt no pain for two days, but afterwards I was alarmed lest I should loose my arm.

When I drew by the girdle and chain, the skin was broken and the blood ran down. I durst not say anything. If we said anything, they, the butty, and the reeve who works under him would take a stick and beat us. Men could not do the work and they compelled us. seen lads of 9 drawing with the girdle and chain. I have seen many draw at 6; but they were not able to draw the full day out. If they are put to do the work, they must do it beat. The butty must not beat big ones. I was beat when I was drawing, and I did not deserve it. I had been ill and was exhausted and could not work longer but the reeve beat me. I complained to the butty. He said that he did not allow a boy to be beat unless he deserved it. He said it was not likely that he could get boys if he let them be beat when they did not deserve it. I was once beat by a man who bullied me to do what was beyond my strength. I said I would not do it, because I could not. The man threw me down and put out two of my ribs. I had to keep from work 11 months. My father was too quiet to before a magistrate. I have seen little boys get a slap, to make them mind but never to hurt them.

I had two fingers broke at one time and one at another all on the right hand. It was my right arm that was cut. I have nothing the matter with my left hand at all and it is as strong ought to be. (Witness showed the marks of his wounds.)

I have been singed by gas twice, but nothing to hinder me from my work. I was burnt a little yesterday but it was not much. The roof had fallen and we were clearing the horseway more of the roof fell in, and sent down a body of gas. The fall was 9 yards in height 9 yards in length and 4 yards in width.

Our road is wide where we work and we make it narrow after we have gone farther off by side walls on each side, which leaves only 6 feet width. Gas came down and exploded. It did but little harm.

I can read print some little, but not much. I never came to the Testament. I cannot the Testament I say the Lord's Prayer every night and every morning before I go to work. When we go to our work we do not know how we are to come back, whether or dead We have often a great deal of water in the pit and have to work in our wet things.

We go down 7, 8, 9, and even 10 at a time. We had 8 chains to sit upon, and the others were in the chains and between us. One was on the hook and the other two sat on the lap. I once saw a man fall; something had broken the chain, but it was not seen when the man got in. It suddenly gave way when he was near the top and he dropped down. I saw a man killed by the coal falling on him as he was sitting at his work. I once saw a man have back broke when at his work. I once was in an old working with another young man, and we lost our way and were not able to find the shaft for two days and a half. At last we did fond out the water engine shaft and shouted up and we were taken up. My companion next day had his leg broke.

No.57 - James Brady.

I do not know exactly what age I am. It is 16, 17, or 18. I have been a year and three-quarters down in the pit. I like it very well. I stand at the slobs to which the lads bring the dans. I turn over the dans on the slobs, and then put the coals into the skips, in which they are brought by the horses to the foot of the shaft and drawn up. I get 2s. 2d. a-day and we work 5, 9, or 10 days a fortnight. I take the money home to my mother. I never take a farthing out of it first. I like it very well. We have sometimes accidents; sometimes it fires but it has not killed anybody since I went down into the pit; but when I work upon the bank, it has. It sometimes burns people. It never burnt me. The men holing and getting the coals are more likely to get burnt than persons who stand where work. We have boys of 9 and 10 years old. Sometimes the turn begins at half-past 5, and ends at half-past 5. We never work beyond 12 hours. The engine never stops. We must and go on. We have no regular time for meals. We must take them when we can. Sometimes we are very wearied, sometimes not.

I cannot read much, some little. I have read the Testament. I have read the Spell book and Reedy-ma-deasy. I cannot write. I can say the Lord's Prayer. I sometimes say it, but not regularly. I go to church keep awake. I go home to dinner. I do not go out to play. I never go to the public-house on Sundays.

No.58 - Henry Canning.

I am 13 years of age. I went to work about 8 years of age. I went to carry stones on top of the bank. I had 6d. a-day. It is heavy work to carry the ironstone. I was always tired at night. I found myself get stronger as I grew older. I was 2 years at this work. They were all girls on the bank, except myself and another; six girls and two lads. The girls were tired at night. They were stinted. So many had so much to do. They gained about 8d. a-day. A young woman will get 1s. and 1s. 2d. Some of the young women say the work is hard, they have nothing else to do.

I then went down to draw coals with a mobby and chain in Thomas Roden's pit. There was a railway in the bottom of the pit. It was a moveable railway shifted from time to time about every week, and brought close to the workings. I like very well to draw with the mob-chain but sometimes it tore the skin. I was obliged to work all the same and come back next day. It sometimes made large blisters. I had 1s. a-day when I went down first, and 16d. a-day when I left it. I am now pushing a dan for Mr. Anstice at the Madeley Wood Company. There are some mobbies in their pit. I liked it very well. We worked 12 hours. If we work hard so as to get coals enough for the horses, we may stop to eat.

We have no mice in our pit but there are many in other pits. We have many rats, almost as big as rabbits, quite as big as half-grown rabbits. They rob our bait bags and tear candles sometimes. They have caught a lighted candle in their mouths and run away with it and have exploded gas. The eat the horses' corn. We had cats down, but they took them up. We have thousands of gnats and many spiders at the farthest part of the pit from the shaft and forty-legs, and earwigs, and black bats (beetles). Nothing else, except the four horses. Mushrooms will grow in the stables fifty yards from the shaft.

I can read a little. I read the Psalter. I never read anything else. I cannot say the catechism. I can say the Lord's Prayer. I go to the Wesleyan Methodists' Chapel and their Sunday-school. I cannot write.

No.59 - William Canning.

I am the brother of Henry Canning. I am turned 15. I have heard my brother give evidence and it was all true, and will in general apply to myself, as I have gone to the same work and to the same school and chapel.

I now get 19d. a day. I like the work very well. It is rather wet. I never got cold through it. I have been only 5 or 6 weeks. I have known other people get cold through it. Some are laid up, so that they never get any better in it. The butties never threshed me. I have seen them thresh other boys and the lads have threatened to get warrants and the lads have done so, and the magistrate has made them pay. The boys often quarrel amongst themselves but they never tell of each other. If a boy tell of another boy, they will serve him out and hard upon him. The boys quarrel about dans and things but they are good friends with each other for all that.

Some young women work on the hank after they have married, until they have two or three children, if their husbands cannot support them. It is thought more respectable to leave working on the bank when they marry. The boys at the Sunday-school are obliged to mind what is said for fear of the cane. If they misbehave in chapel, they have no tickets of me and they may have the stick, or a pinch of the ear. We have no preaching or singing praying in our pit. I have heard of it in Staffordshire.

No.60 - Samuel Edwards.

I am going 12. It is going on to 4 years since I went down to the pit. When I first went down I pitched the draught of coals, that is, I placed the lumps of coal so that they should not fall off. I came on to the bank at half-past 5. If we were not to come in time, we would be obliged to go home again and would lose the day. If one stops away, they take another in his place. I had 4d. a-day. I took it myself and I then brought it home to my father. I worked a year at this.

Next I went to draw clod-coal in the pit belonging to Mr. Harris. I put the girdle, called the mobby, round me. Some are made of a strap and a chain. Some of a rope and chain. It is hooked to the dan. There is a railway. The boys crawl between the rails. Drawing is easier than pushing. I draw upon my hands and feet. I like it very well. I get 10d. a-day. We have lately worked only 8 or 9 days the last two or three fortnights. They reckon on the Saturday. Sometimes we work the Monday after the reckoning day and sometimes the go to the alehouse and drink, smoke, sing songs sometimes and make knocks on the table when the song is done.

I cannot read. I never go to the Sunday-school. I do not like to go. I get up at 6 or 7 on Sundays; I wash; I put on my Sunday trousers. I have no other Sunday clothes. I take breakfast. We have tea and coffee for breakfast. On other mornings I have gruel. I then go and play about. We run after one another, and catch one another; spin tops. I never go to church or chapel. Sometimes my father goes, but I do not go with him. We dine at 1. We have always a good Sunday dinner. After dinner I go and play. I have tea at 4 and then go out and play again. I go to bed at 8 or 9.

I never heard of Birmingham, or Manchester, or Liverpool, or London. I know twelve pence make a shilling. I do not know how many shillings make a pound. I sometimes throw stones at dogs. I call drink a pint and a half of strong beer.

I do not feel very tired before the work is done. I play sometimes after work is done at *take*, that is running after one another. I sometimes play at marbles.

No.61 - William Sankey.

I was 15 this month. I am tall and strong of my age. I worked on the bank at 7 years old. I worked at the brick-kiln. I assisted to bear away the bricks. I got 8d. a-day. I worked at the brick-kiln 3 years, and got at last 7d. a-day. I then went down into the pit to draw with the girdle. I began at 6 and left off at 6 at night. We came up sometimes 10, sometimes 12 men and boys. There were sometimes accidents. A man was coming up 6 by himself and when he was near the top the chain in which he

hung unhooked and he fell down and was killed. The shaft was upwards of 200 yards and he was near the when the chain unhooked. The chain has broken in many a pit. Many chains and ropes have been broken and people been killed. At Dawley, about 2 years ago, the people were down dropped, and it appeared that the rope had been cut. I am now in an iron-stone and push a dan to the horseway, to the place called the levels. The dans are turned and the ironstone is collected into another larger carriage and drawn by the horse to foot of the shaft. I like the work very well. I get 20d. a-day and work sometimes 9, 10, or 11 days a fortnight. We generally play on the Monday after we get the money. After money is received at the butty's house, most of the men go and drink some drink. On Sunday very few drink but a good many more on the Monday. On the Tuesday morning all come to work.

There are teetotallers, but not amongst the miners. We call the teetotallers water-bellies. A miner could not do without drinking beer. It is good for the constitution.

I can read very well. I have read the Bible, and the Prayer-book, and the Pilgrim's Progress and I can say the whole of the Catechism. I always say the Lord's Prayer before go to bed, and in the morning when I waken. I have read many other books, such as Bunyan's Holy War, and some sermon-books. I do not know where America is. I have heard of France. I do not know what sort of people the French are. It is my duty to fight them. An Englishman could beat seven Frenchmen any day.

I keep, my health well in the mine. We strip to our work. We put our clothes on again up. We have a cabin and a fire at the top of the shaft; but we get no beer but we warm ourselves and go home. We then strip off our upper garments and coat, coat, and shirt, and wash face, neck, breast, hands, and half up the arms, with cold water and soap and wipe the rest with a towel. We put on our working clothes again, and sit down to victuals. It is generally a hot supper and the principle meal of the day. The engine in the pit never stops, and we eat when we can. Between 8 and 9 I go to bed, and sleep very sound.

I get up at 4 or soon after. I get some warm coffee, and some bread and butter, and sometimes a bit of cheese, or some ham. I then go off to the pit, taking with me something eat when I can. We wash all down to the middle on Saturday nights sometimes with hot water.

On Sundays I get up at 7, and wash ace and hands. I breakfast about 9 and go to Iron Bridge Church School a little after 9 and after school the boys walk into church at half-past 10. We come out at 1 and go to dinner always a good dinner on Sundays. We sometimes have not much in the week. After dinner I go to school and remain till 4. I go home and have tea. Then I go to church at 6 and come home and have supper and go to bed.

I have no idle time. On holidays I gather horse-muck off the roads, and put it on our garden. It is a small garden. We grow potatoes in it and cabbages, and greens, and nothing else. I dig it and like to see the things grow. I cannot write. I never went to school but on Sundays.
